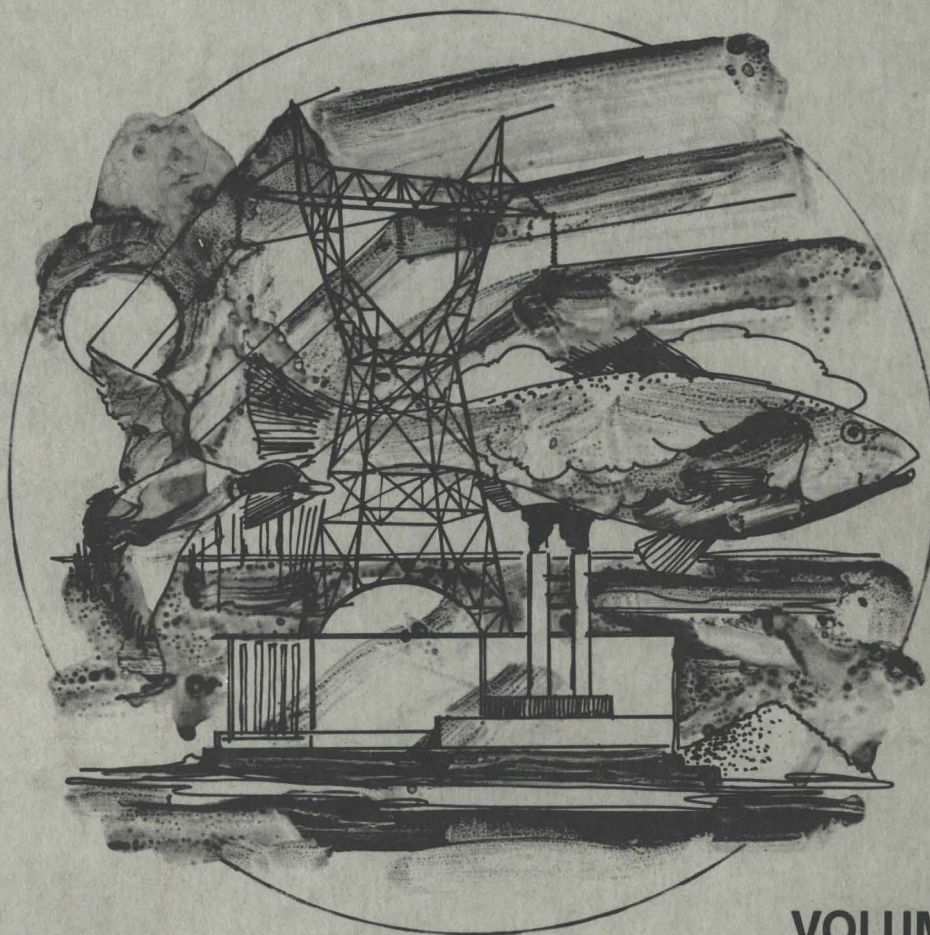


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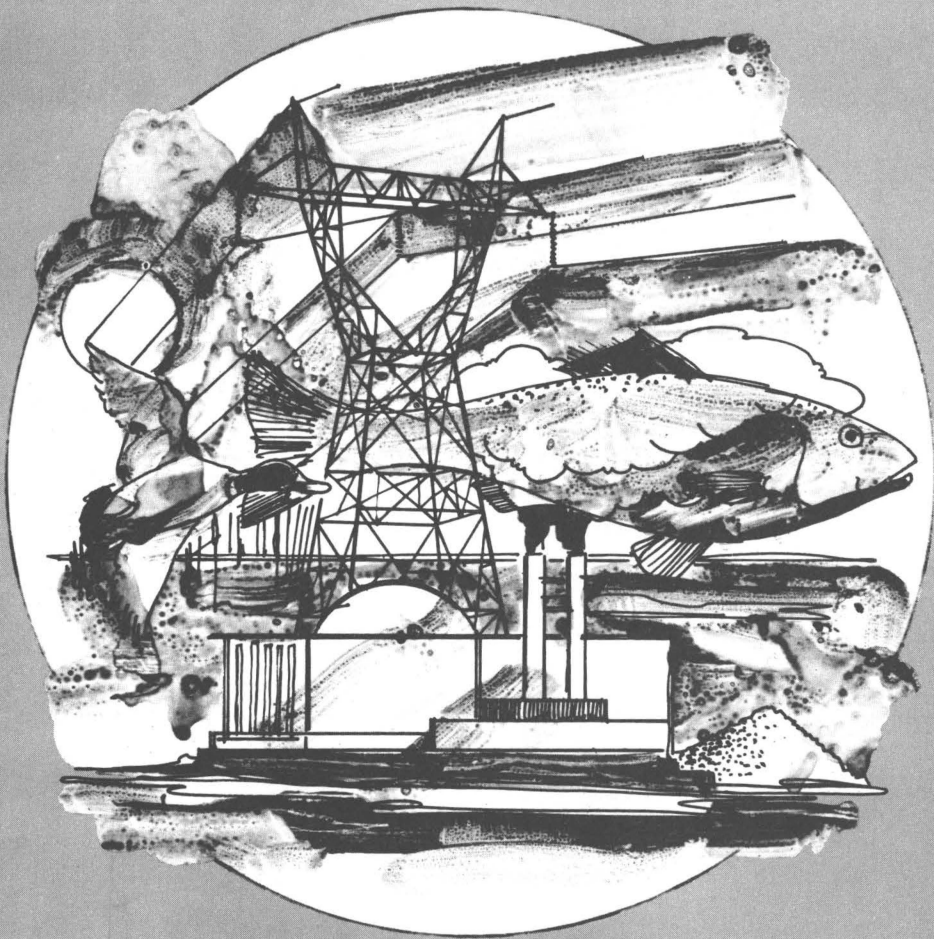
MANAGEMENT OF TRANSMISSION LINE RIGHTS-OF-WAY FOR FISH AND WILDLIFE



VOLUME 3
WESTERN UNITED STATES

Fish and Wildlife Service

U.S. Department of the Interior



**MANAGEMENT OF
TRANSMISSION LINE
RIGHTS-OF-WAY
FOR FISH AND WILDLIFE**

**VOLUME 3
Western United States**

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MANAGEMENT OF TRANSMISSION LINE RIGHTS-OF-WAY FOR FISH AND WILDLIFE

VOLUME **3** WESTERN UNITED STATES

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Power Plant Project
Office of Biological Services
Fish and Wildlife Service
U.S. Department of the Interior

Energy Research and Development Administration,
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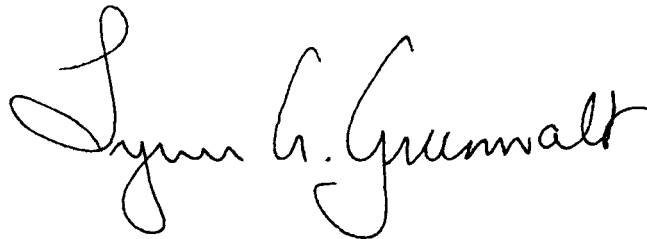
Foreword

The amount of land used for electric power generation and transmission in the United States is expected to increase substantially in the near future. Presently, over 300,000 miles of overhead transmission lines carry electric power for our homes, factories, and offices. The lands beneath those transmission lines, called rights-of-way (ROWs), can provide valuable habitat for fish and wildlife, if managed with that purpose in mind.

This manual is the result of a cooperative effort between Federal agencies and regional and local utilities to document the wildlife management and vegetation maintenance currently in use and to develop a step-by-step approach to ROW management that results in management strategies that not only enhance fish and wildlife habitat, but are cost-effective and also assure electric transmission reliability.

Management of Transmission Line Rights-of-Way for Fish and Wildlife is a three-volume reference manual that provides general background information on wildlife management and vegetation maintenance techniques and specific information on selected plants and wildlife species of the Eastern and Western United States. A step-by-step approach to ROW management planning identifies areas suitable for specific wildlife management planning and assures that all available habitat is evaluated and best utilized to benefit fish and wildlife.

With this kind of information and approach, biologists and ROW managers will be able to assess the management implications of transmission line ROW siting and other habitat modifications on fish and wildlife and provide information to decisionmakers. We believe this manual is a major step in providing the type of information necessary to incorporate environmental considerations into resource development decisions.

A handwritten signature in black ink, reading "Lynn G. Grunwald". The signature is fluid and cursive, with the first name "Lynn" and last name "Grunwald" clearly legible. The middle initial "G." is smaller and positioned between the first and last names.

Director, U.S. Fish and Wildlife Service

The Biological Services Program was established within the U.S. Fish and Wildlife Service to supply scientific information and methodologies on key environmental issues which impact fish and wildlife resources and their supporting ecosystems. The mission of the Program is as follows:

To strengthen the Fish and Wildlife Service in its role as a primary source of information on national fish and wildlife resources, particularly in respect to environmental impact assessment.

To gather, analyze, and present information that will aid decisionmakers in the identification and resolution of problems associated with major land and water use changes.

To provide better ecological information and evaluation for Department of the Interior development programs, such as those relating to energy development.

Information developed by the Biological Services Program is intended for use in the planning and decision-making process to prevent or minimize the impact of development on fish and wildlife. Biological Services research activities and technical assistance services are based on an analysis of the issues, the decisionmakers involved and their information needs, and an evaluation of the state-of-the-art to identify information gaps and determine priorities. This is a strategy to assure that the products produced and disseminated will be timely and useful.

Biological Services projects have been initiated in the following areas:

- Coal extraction and conversion
- Power plants
- Geothermal, mineral, and oil shale development
- Water resource analysis, including stream alterations and western water allocation
- Coastal ecosystems and Outer Continental Shelf development
- Systems and inventory, including National Wetlands Inventory, habitat classification and analysis, and information transfer.

The Program consists of the Office of Biological Services in Washington, D.C., which is responsible for overall planning and management; National Teams which provide the Program's central scientific and technical expertise and who arrange for contracting Biological Services studies with States, universities, consulting firms, and others; Regional staff who provide a link to problems at the operating level; and staff at certain Fish and Wildlife Service research facilities who conduct in-house research studies.

Preface

Electric transmission rights-of-ways (ROWs) occupy approximately five million acres of land throughout the United States (Asplundh Environmental Services 1978).¹ With few exceptions, however, utility companies have regarded wildlife habitat management as coincidental to their ROW maintenance procedures. This is because utilities, although strictly regulated by the State public service commissions, are licensed only to provide electricity at the most economical rate to customers.

In recent years, wildlife habitat has been decreasing rapidly due to developmental projects and very efficient agricultural methods. Transmission line ROWs, however, constitute one land use development which holds great potential for benefiting wildlife. By incorporating basic wildlife management strategies into existing clearing and maintenance practices, cost-effective programs may be developed that enhance wildlife habitat and continue to meet electric transmission reliability requirements.

SCOPE AND PURPOSES

This manual brings together for the first time ecological information on selected plants and wildlife on a nationwide basis and demonstrates how this information may be incorporated into ROW wildlife management plans based on existing techniques. The manual does not attempt to evaluate the various potential land use alternatives associated with ROWs. Wildlife management is the only option considered here. The management practices presented are offered as suggestions only and are not meant as rules or regulations that must be followed.

The objectives of this manual are:

- 1 to provide U.S. Fish and Wildlife Service (FWS) biologists and utility ROW managers with a reference source to aid them in developing and implementing fish and wildlife management plans on overhead electric transmission line ROWs and,

- 2 to encourage more cooperation between groups in developing and implementing these management plans.

Suggested wildlife management strategies and guidelines for vegetation maintenance are presented for all biological ecoregions in the United States in the introduction (see "Identifying Biological Ecoregions") with considerations for cost-effectiveness and electric transmission reliability.

Although the manual focuses on electric transmission line ROWs, it may be of help to anyone involved with land, vegetation, or wildlife management in unique areas. Such areas as pipeline ROWs, railroad ROWs, roadway ROWs, logging areas, or "leftover" bits of agricultural lands—such as gullies, odd corners, or fence rows—are all places where some of the information in this manual may be used to improve wildlife habitat. The manual may also prove useful during the process of transmission corridor selection by providing information on management potential for wildlife in different vegetation communities.

It is fully recognized that this publication does not represent the final word on wildlife management on ROWs. Future work in this field will no doubt result in innovations not contained in this manual. Novel approaches may be needed in the areas of setting management objectives and incorporating them into wildlife management plans, inventorying resources in special linear habitats such as ROWs, relating the effects of ROW habitat management to wildlife populations in adjacent habitats, and determining the value of ROW habitat to various wildlife species. These are among the topics that must receive more attention in the future. The National Power Plant Team solicits all comments and suggestions on these and other related subjects.

Any suggestions or questions regarding this manual should be directed to:

Information Transfer Specialist
National Power Plant Team
U.S. Fish and Wildlife Service
2929 Plymouth Road
Ann Arbor, Michigan 48105
(313) 668-2365

¹Asplundh Environmental Services. 1978. Benefit analysis—use of 2,4,5-T for vegetation management on rights-of-way. Asplundh Environmental Services, Willow Grove, PA. 44 pp.

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Asplundh Environmental Services (AES) was responsible for conducting this project and preparing the initial drafts of the manuscript. AES staff members Paul A. Johnston, plant ecologist, and Phil Simpson, wildlife biologist, coordinated the many parts of this extremely complex project. The following individuals are gratefully acknowledged for their contributions to the development and organization of the information contained in this publication.

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Fir—Douglas-fir Forest, the Sagebrush—Wheatgrass, and the Ponderosa Shrub Forest sections.

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Gila Mountains Forest, the Mexican Highlands Shrub Steppe, the Chihuahuan Desert, the American Desert, and the Colorado Plateau provinces.

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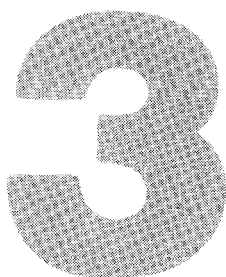
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Introduction

This manual was designed to allow the user maximum flexibility. The suggested management strategies may be used on a wide variety of sites. Because the knowledge and judgement of the individual biologist or ROW manager is essential to implement these strategies, this manual has attempted to bridge the gap between the expertise of these two professional groups. The manual cannot make ROW experts out of biologists, or vice versa, but essential information is presented to help practitioners of one discipline better understand the goals of the other.

ORGANIZATION OF THE MANUAL

The manual is divided into three volumes — a general volume providing background information on wildlife management and vegetation maintenance on ROWs, and two volumes containing ecological information on selected plant and wildlife species and responses of various plant species to vegetation maintenance practices. For your convenience, this information has been synthesized into parallel volumes — volume 2 contains information on plants and wildlife of the Eastern United States; volume 3 discusses plants and wildlife of the Western United States.

Identifying Biological Ecoregions

Robert G. Bailey's 1976 map, "Ecoregions of the United States," was used by the authors to identify biologically similar areas within the United States. Bailey divides the United States into 31 biological provinces; he further subdivides these provinces into 61 biological sections (see plate 1). For our purposes, a province is defined as "a broad vegetation region having a uniform regional climate and the same type or types of zonal soils." A section is defined as "a subdivision of a province based on local climatic variation." The existence of two domains, or "subcontinental areas of related climates," are reflected in the organization of this manual. For convenience, the flora and fauna of the Eastern and Western United States are treated separately, disregarding Bailey's domain classifications. Alaska and Hawaii are considered with the Western provinces.

Generalizing Life History/Habitat Requirement Information

Life history/habitat requirement information contained in this manual of necessity has been generalized. Emphasis is on those factors that will benefit ROW

managers. Due to the magnitude of a study of this type, all plant and animal species cannot be recognized. Species lists should not be interpreted as being the ideal species composition for any one site within a section; plants, local disturbances, climatic and edaphic factors, etc., will influence species composition of different sites. These variations, in turn, may affect local wildlife community composition.

Chapter Content

Volume 1, "General Background," contains information applicable to both volumes 2 and 3.

Chapter 1, "Using this Manual," contains a step-by-step discussion of the proposed use of this manual for: investigating the wildlife management potential on a right-of-way, assessing the resources on the right-of-way, identifying wildlife management priorities and objectives, and formulating and implementing the wildlife management plan. A discussion of four general vegetation management strategies—herbaceous, stable shrub, mixed woody, and passive—as well as a key to aid in the selection of the appropriate management strategy for a particular ROW, is followed by a detailed example that illustrates the step-by-step management technique.

Chapter 2, "Engineering Constraints in ROW Management," provides a basic review of the ROW siting and construction process. The basic parameters within which a transmission line must be designed and constructed are outlined.

Chapter 3, "Land Use Rights," discusses the various practices used to acquire a ROW and the feasibility and practicality of implementing wildlife management strategies under various landownership situations.

"ROW Maintenance Methods and Costs" are the subject of chapter 4. Selective and nonselective vegetation maintenance methods, methods for slash disposal and restoration, and techniques that alter other environmental components are discussed along with their current cost and extent of use. Relative costs are compared by technique and use in different areas of the United States.

Chapter 5, "Right-of-Way Resource Assessment," suggests guidelines that may aid the user in identifying and quantifying habitat factors that must be considered during the development of a specific management plan.

Chapter 6, "Wildlife Habitat Management Techniques," contains a thorough literature review of

presently used management techniques applicable to ROWs in the United States. Methods of mechanical manipulation, brush piling, herbicide application, planting and seeding, streambank management, and prescribed burning are discussed. An extensive bibliography is provided in the references section of the chapter.

Three general appendixes are located at the end of volume 1 and contain information pertinent to all three volumes: General appendix A lists plants of the Eastern and Western United States and Alaska and Hawaii, alphabetically by common name. General appendix B contains an alphabetical listing by common name of wildlife—mammals, birds, amphibians and reptiles, and fish. Both appendixes list the scientific names used within the text; occasionally, a common name appears more than once, usually with a different scientific name, indicating the regional variation in common name usage. Following the scientific names in general appendix A is a list of the provinces in chapter 2 of volumes 2 and 3 in whose descriptions they are included. Parentheses indicate that in those provinces the species is found but under a different common name. Following the scientific names in general appendix B is a key that associates the species with a table or tables in chapter 3 of volumes 2 and 3.

General appendix C provides approximate equivalents of decimals to fractions and English to metric measurements.

A glossary operationally defines the terms in the text and offers supplemental definitions to scientific or biological terms.

An index to plant communities, selected wildlife species, and biomes is included. The numbers following each entry are the unique chapter section numbers that indicate the place within the manual where the subject is discussed.

Volumes 2 and 3 contain specific material relating to the Eastern and Western United States, respectively. Each volume contains three chapters:

Chapter 1, "Plant Responses to ROW Maintenance Methods," provides information on sprouting, reaction to competition, and other factors that determine plant responses to disturbances. The techniques for vegetation manipulation presented in this chapter emphasize the maintenance of electric reliability while enhancing vegetation for wildlife habitat. Provinces are discussed individually or in groups of biologically similar areas.

Chapter 2, "Selected Plant Species," presents for each province and, when appropriate, for each section or subsection, plant species associated with general plant communities, differentiated by moisture conditions, successional trends, and height stratifications. Descriptive ecological characteristics, such as habitat, growth form, fruit, and general wildlife use are also given for each plant.

Chapter 3, "Selected Fish and Wildlife Species," discusses the characteristics of certain mammal, bird, and amphibian and reptile species that should be given special

consideration in ROW management planning. A brief province-by-province description of the fauna present is followed by a lengthy table that details the ecological characteristics of the selected species and several additional tables that provide information on bird nesting habitat and list U.S. endangered/threatened fish and State endangered/threatened fish and wildlife.

A list of references cited is provided for each chapter within all three volumes and follows the chapter text.

EDITORIAL CONVENTIONS

Cross-referencing between the three volumes has been accomplished by assigning each section within a chapter a unique section number. The section numbers run consecutively across all three volumes beginning with chapter 1 of volume 1.

These chapter section numbers are not to be confused with the section numbers referenced within provinces. Those section numbers are four digit numbers that relate directly to Bailey's map (plate 1). To further differentiate between chapter sections and province sections, chapter sections are always referred to with the generic "section," as in section 38. Province sections are referred to as proper nouns, as in Section 2212.

Figure and table numbers have been keyed to the chapter section (or, in some cases, the province, section, or subsection) to which they relate. For example, there are three sections in chapter 4—4, 5, and 6. Figures are found only in sections 4 and 6. The figure numbers are: 4.1, 4.2, 4.3, 4.4, 6.1, 6.2, and 6.3. The first number indicates the unique chapter section in which the figure is found. The second number indicates which figure is being referenced. Within chapter sections, figures are numbered sequentially; the numbering begins anew with each section. Note that in the example above, there are no figures in section 5.

Tables, in the forms of charts and graphs, found within the text are numbered in the same manner as figures; that is, sequentially within each chapter section. In volumes 2 and 3, however, an additional numbering scheme has been devised to facilitate the use of the detailed information on selected plant and wildlife species found exclusively in the tabular material.

In chapters 2 and 3 of these volumes, province descriptions are followed by the two sets of tables: Selected Plant Species tables and Ecological Characteristics tables. Each table carries an identification label that specifies:

Province number	chapter section number	1 or 2	<div><div>Section number</div><div>or</div><div>Subsection number</div></div>	caption
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where: *Province number* relates directly to Bailey's map (plate 1),

chapter section number is the unique number assigned to each section within a chapter. The numbers run sequentially across all three volumes of the manual beginning with chapter 1 of volume 1. / indicates that this is a Selected Plant

or Wildlife Species table; .2 identifies an Ecological Characteristics table.

Section number also directly relates to Bailey's map (plate 1). Whenever possible, individual descriptions of specific sections and subsections are presented. In these cases, the number enclosed in brackets will indicate which section or subsection is being considered.

caption is a narrative description of the table contents.

For example,

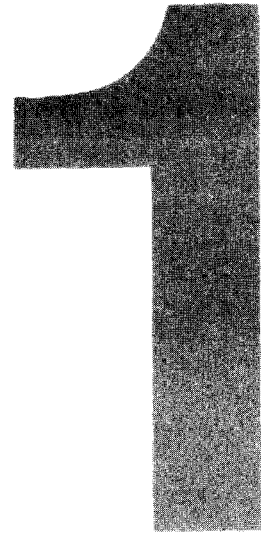
Table 2210-33.1 [2215] Selected Plant Species Common to the Oak—Hickory Forest

specifies that this is the Selected Plant Species Table for Province 2210, Section 2215, and that the province is discussed in chapter section 33.

Running heads are included to further facilitate manual use. The running heads indicate the unique section number and the content of the section (an abbreviated version of the title). Running feet indicate page number and chapter number and title.

REFERENCE CITED

Bailey, R.G. 1976. Ecoregions of the United States. U.S. For. Serv., Ogden, Utah. map.



Plant Responses to ROW Maintenance Methods

The purpose of this chapter is to present information that will help the user predict how an individual plant species will react to an alteration of its environment. Environmental alterations may be caused by any type of broadcast or selective vegetation maintenance method and will affect the plant community as a whole as well as the individual species found within it. Fully recognized in this discussion is the concept that plants in a community have some influence upon one another and that they have something in common with their environment (Mueller-Dombois and Ellenberg 1974).

Dominant or important plant species have been selected and are discussed for each province. The species selected include tall-growing trees that might interfere with conductors and shrubs that stabilize soil or form dense clumps. No attempt has been made to include all species; emphasis has been placed on those species that are most frequently the target of ROW maintenance operations.

The term *tolerance* is used frequently throughout this chapter. Tolerance is generally defined as the ability of an organism or biological process to subsist under a given set of environmental conditions (Society of American Foresters 1971; Schwarz et al. 1976). This definition recognizes that, in plant communities, competition occurs for light and growing space above the forest floor as well as for growing space, moisture, and soil nutrients in the root zone. A tree that can survive and prosper under a canopy is generally classified as *tolerant*; one that

can thrive only in the open is classified *intolerant* (Spurr and Barnes 1973). Using the term tolerance to refer to the relative capacity of a forest plant to survive and thrive in the understory is a restricted application of its meaning and tends to emphasize the influence of light. While a knowledge of shade tolerance is of great practical value when dealing with trees, the interrelationships of this factor with others should be clearly understood. Plants growing in conditions on either extreme of their tolerance range may be weak, short, deformed, or sterile (Billings 1968).

Site classifications “good,” “average,” or “poor” are also frequently used. A brief description of a good site for each species can be found in chapter 2 listed under the heading “Habitat” in the Selected Plant tables for each province. Average and poor sites are those appreciably different from the conditions described as a good site.

In the discussion of a species, the phrase “and its associates” is used occasionally. The list of specific associates, however, is not found at that place in the manual. Associated species for each province can be found in the Selected Plant tables in chapter 2 of this volume.

41 PROVINCE 2410 Willamette—Puget Forest PROVINCE M2410 Pacific Forest

Provinces 2410 and M2410 are combined to illustrate the similarities between vegetation in the two areas. Province 2410, the Willamette—Puget Forest is located in a depression between the Coastal and Cascade ranges. It is the driest and warmest area west of the Cascade Mountain Range. It is surrounded on three sides by Province M2410, the Pacific Forest. The Pacific Forest occupies the uplands and mountains of the Coastal and Cascade ranges and extends along the moist coastal mountains south to central California. Species association and plant communities vary greatly with changes in microclimate, forming a very complex mosaic of aggregates.

WILLAMETTE—PUGET FOREST AND PACIFIC FOREST TYPES

Bigleaf Maple

Bigleaf maple is rated tolerant to competition, but not as tolerant as vine maple (Baker 1949). The species sprouts vigorously from stumps after cutting or injury (U.S. Department of Agriculture 1965; Harlow and Harrar 1968). In some areas, particularly parts of southwestern Oregon, bigleaf maple invades disturbed sites after logging and burning (Harlow and Harrar 1968).

Black Cottonwood

Black cottonwood is intolerant of shade and remains on a site only as long as it retains a dominant crown position (Baker 1949). It sprouts readily from stumps and roots after cutting or disturbance (Barrett 1962). The species

does not reproduce well on cutover land unless special measures are taken to provide bare, moist, mineral soil, which is required for initial establishment (Harris and Farr 1974). Juvenile growth is very rapid on good, moist sites (U.S. Department of Agriculture 1965). In one study (Smith 1957) a 7 year old tree was 45 feet tall, but for average trees, typical growth may be 15 feet during the same period.

Black cottonwood is susceptible to a variety of injuries, and even light fire can do considerable damage to trees of all ages. The wood is brittle; young and fast-growing trees may frequently have their tops broken by high winds. Heavy snow or sleet storms may cause considerable bending and breakage to saplings. Late frosts frequently kill or injure many trees (U.S. Department of Agriculture 1965).

California-laurel

California-laurel sprouts prolifically from the root collar, stump, and trunk. Sprouts and root suckers develop whenever light is admitted from the side or overhead. At maturity it may be either a shrub or tall forest tree. Multiple stems are characteristic of both open-grown and forest-grown trees. Clumps of open-grown sprouts form a characteristic, very dense, and rounded shape. The species is easily top-killed by fire but sprouts quickly. Wind and snow may also injure trees, and blowdowns are common (U.S. Department of Agriculture 1965).

Douglas-fir

Douglas-fir, when ranked with its common associates, is rated very intolerant of shade (Baker 1949). Seedbed requirements are variable, but moisture and temperature are crucial factors. Seedlings usually require some shade for establishment, but then need full sunlight for best growth (U.S. Department of Agriculture 1965). They are very susceptible to light damage when suddenly exposed (Jones 1974). Seedling survival may also be linked to shrub competition, habitat type, and the amount of disturbance (Kittams and Ryker 1975).

In areas where Douglas-fir and red alder grow together, site quality may influence the composition of the future stand. On good sites, red alder initially outgrows Douglas-fir and may form a dense enough canopy to exclude Douglas-fir for many years. Medium sites give red alder less height advantage over Douglas-fir; stands will contain nearly equal portions of each species. On poor sites, alder is generally present as a shrub and competition with Douglas-fir occurs only among seedlings (Barrett 1962).

Douglas-fir is rated intermediate to resistant to 2,4-D and 2,4,5-T, but susceptible to cacodylic acid and Dicamba (Bovey 1977).

Grand Fir

Grand fir is rated as tolerant of shade in all associations in which it occurs. In full sunlight, grand fir usually is subordinate to faster growing, intolerant associates. While under partial shade it is aggressive enough to form a considerable part of the vegetation. Grand fir is not an abundant seed producer and does not reproduce

vegetatively. Early growth is determined more by the amount of competition than by site quality. The fire resistance of this species is influenced by habitat. In moist creek bottoms it succumbs rapidly to ground fires, but on clay hillsides it survives better because of its deeper root system, thicker bark, and more open stand conditions (U.S. Department of Agriculture 1965).

Lodgepole Pine

Lodgepole pine is represented by two varieties: a coastal form growing from sea level to 2000 feet elevation (often called shore pine), and an inland form growing from 1500 to 11,500 feet elevation. Both varieties are intolerant, especially when very young, and they do not produce sprouts (U.S. Department of Agriculture 1965). Seed production may begin by age 5; large quantities of seed are produced at 1 and 3 year intervals. Some of the seed is commonly held in serotinous cones that require high temperatures (45° C) to open for seed dispersal (Pfister and Daubenmire 1973).

Lotan and Perry (1977) studied the effects of various site preparation treatments on lodgepole pine seedlings. Table 41.1 presents a summary of one portion of their study. The study represents general responses of lodgepole pine. The results may vary in actual field situations, depending on local variations in the natural environment.

Table 41.1 Percent Survival of Lodgepole Pine Seedlings

Site preparation	Habitat type ^a		
	Lodgepole pine/ bitterbrush	Subalpine fir/ grouseberry	Douglas-fir/ pinegrass
Check	0	143	2
Burned	20	118	6
Disked	0	60	31
Scalped	20	95	34
Trenched	6	45	5
Brushblade	7	52	35
Sprayed	25	67	60
Furrowed	8	61	18
Cultivated	34	64	54

^aHabitat types from Pfister et al. 1977. (Adapted from Lotan and Perry 1977.)

As shown in table 41.1, lodgepole pine seedling establishment is low the first few years after disturbance; peaks about the sixth year; and then declines rapidly. This pattern may be due to other vegetation gradually reoccupying the site, providing increasing cover up to a point after which competition becomes a dominant effect.

Slash disposal methods may be used to influence the amount and location of seedlings. Piling and burning slash may create temperatures high enough to destroy seed stored in serotinous cones (LeBarron 1952). If slash is not burned, seedlings may not come up through it, allowing the fire hazard to exist for many years.

Noble Fir

Noble fir is rated intolerant of shade and needs about the same amount of light as Douglas-fir (Baker 1949). Good seedcrops occur infrequently, but some seed is produced each year.

Seedling growth is slow, requiring 3 to 4 years to reach 1 foot in height. Competing vegetation may limit noble fir from developing on some sites. Dense growth of sedge, whortleberry, and bear grass may also reduce noble fir regeneration. It is resistant to damage from snow, ice, or cold and is more resistant to frost than grand or silver fir (U.S. Department of Agriculture 1965).

Red Alder

Red alder is rated shade-intolerant, but is considered to be more tolerant than black cottonwood, trembling aspen, and river birch. Sudden exposure to light causes many epicormic branches to form from dominant buds along the stem (U.S. Department of Agriculture 1965). Red alder is a vigorous and persistent sprouter when young. Sprouting varies with season of cutting; older trees may not sprout at all (U.S. Department of Agriculture 1965).

Red alder regeneration is related to the extent of scarification and the duration of summer drought. Dense stands develop on old logging roads, landings, and other areas where deep scarification has occurred (Trappe et al. 1968). McVean (1956) indicates that drought conditions develop in surface litter and reduce alder survival. On wet sites where summer drought is not a limiting factor, alder will develop on unscarified soils, excluding most tall-growing conifers. Red alder improves soils both physically and chemically. Soil structure is improved by formation of a mull humus layer from rapidly decomposing litter. Soil fertility is improved by the fixation of nitrogen by bacteria contained in root nodules (Trappe et al. 1968).

Redwood

Redwood is classified tolerant or very tolerant of competition (Baker 1949). Exposed mineral soil provides the best seedbed conditions for redwood, but germination will also occur in duff, on logs, in debris, or under other vegetation in either sun or shade if soil moisture and temperature are adequate (U.S. Department of Agriculture 1965). The best seedling growth occurs in full sunlight, but it is usually slower than sprout growth. Sprouts develop from the root crown of redwood within 2 or 3 weeks of cutting. In one study (Frity 1945), an average of 72 sprouts grew very fast, commonly reaching 6 feet in height the first year. Also, sprouts will quickly develop their own root system (U.S. Department of Agriculture 1965).

Large trees are generally windfirm, while smaller trees may be subject to windthrow after partial cutting or exposure on the edge of openings (U.S. Department of Agriculture 1965). Fire is very destructive to young redwood. Light ground fires may destroy all trees under 20 years of age in a stand. In old growth stands, fires may only reduce the thickness of the bark.

Pacific Silver Fir

Pacific silver fir is a shade-tolerant species (Baker 1949). Reproduction is entirely by seed. Moist duff, moss-covered humus, and mineral soil are equally favorable seedbeds. Seedlings may become established under dense canopies, but growth is slow. The silver fir's shallow root system and thin bark provide little protection from fire or windthrow (U.S. Department of Agriculture 1965).

Sitka Spruce

Sitka spruce is rated very shade-tolerant (Baker 1949), but is usually considered slightly less tolerant than its common associate, western hemlock. It does not sprout from roots or stumps. Some seed is usually produced every year; good seed crops occur every third or fourth year (U.S. Department of Agriculture 1965). Seedlings become established best on mineral soil, but also on organic matter and under light shade on moss and rotten wood. Open soils containing large amounts of organic matter may dry out rapidly and destroy seedlings (Harris and Farr 1974).

Competition from salmonberry, thimbleberry, and red alder reduces seedling growth (U.S. Department of Agriculture 1965). Sitka spruce seldom survives in the understory of western hemlock, but hemlock does well under spruce (Taylor 1929). Spruce is shallow rooted and blowdowns are common; however, it is more windfirm than western hemlock.

Sitka spruce is more resistant to herbicides and more commonly used to control alder and other species of brush than either Douglas-fir or western hemlock (Krygier and Roth 1961).

Subalpine Fir

Subalpine fir is rated very shade-tolerant throughout its life (Baker 1949) and is a good seed producer. Shade favors establishment and early survival of seedlings, although early growth is slow. The crowns of both old and young stands reach to the ground, making the species very susceptible to both ground and crown fires (U.S. Department of Agriculture 1965).

Tanbark-oak

Tanbark-oak is rated shade-tolerant (Baker 1949); vigorous and prolific sprouts may be produced at any time under a wide variety of conditions, including after minor injuries or fire. Fairly extensive pure stands may develop (U.S. Department of Agriculture 1965; Harlow and Harrar 1968). Sprouts grow rapidly and may reach over 5 feet in height the first year. Under certain conditions, especially at higher elevations, tanbark-oak may have a shrubby habit rarely reaching 10 feet in height (Dayton 1931; Harlow and Harrar 1968). Both ground and crown fires may kill individual tanbark-oak trees (U.S. Department of Agriculture 1965).

Vine Maple

Vine maple is one of the most tolerant plants in the West (Baker 1949). When growing in openings, it develops into

an erect, compact, symmetrical shrub, while plants growing in shade are vinelike and frequently prostrate (U.S. Department of Agriculture 1937). Vine maple produces vigorous sprouts and suckers even after repeated cutting or heavy browsing (U.S. Department of Agriculture 1937). Individual stems frequently take root when they touch the ground.

Western Hemlock

Western hemlock is rated very shade-tolerant (Baker 1949) and is usually considered more tolerant than all of its associates, including Sitka spruce. In shade, height growth is very slow (Barrett 1962). Although it is a slower growing tree than most of its associates (Douglas-fir, red alder, and Sitka spruce), the tree is a very prolific seeder. Exposed trees may produce cones over the entire area of the crown. When adequate moisture is present, germination may occur on moss, humus, decaying litter, and mineral soil. Western hemlock usually does not invade recently exposed areas or soils low or lacking in organic matter (Harris and Farr 1974). One study found planted hemlock survived and competed well with heavy fern and brush (Worthington 1955). Shallow root systems and thin bark make this species susceptible to fire damage and windthrow (U.S. Department of Agriculture 1965).

Western Larch

Western larch is very intolerant and cannot live long in the shade of its associates (Baker 1949; Shearer 1971). Larch bears cones throughout its crown, and seed production is proportional to the size of the crown. Seeds germinate on a variety of seedbeds, but survival depends on temperature and moisture (U.S. Department of Agriculture 1965; Schmidt et al. 1976). Seedlings are adaptable to disturbed conditions, including bare mineral soils and those following severe burns. Poorer survival occurs on undisturbed litter, humus, or sod. Favorable seedbeds may become overstocked with seedlings following repeated good seed years (Schmidt et al. 1976).

Boyd and Deitschman (1969) found that prescribed burning: 1) reduced the number of seedlings but still allowed adequate regeneration, 2) eliminated unwanted vegetation, and 3) was usually less costly than other methods. Mechanical scarification: 1) exposed mineral soil for seedbeds while allowing desirable vegetation to be preserved and 2) decreased damage to adjacent trees. On mineral soil where competing vegetation has been destroyed, larch grows twice as fast as it does on a heavily vegetated forest floor for at least the first 15 years (Schmidt et al. 1976).

Mature larch are very fire-resistant because of their thick bark; however, fire readily kills seedlings, saplings, and pole-sized trees (Schmidt et al. 1976). The species is not generally susceptible to damage from snow and ice, but occasionally wet snow may bend trees over, especially in a young stand.

**42 PROVINCE 2610
 California Grassland
 PROVINCE M2610
 Sierran Forest
 PROVINCE M2620
 California Chaparral**

Due to their close geographic association and their inclusion within the State of California, Provinces 2610, M2610, and M2620 will be discussed together. Generally, coniferous associations are concentrated at middle to higher elevations in the Sierra Nevadas. Mixed hardwood and softwood associations occur in an elevational band below the conifers and above the grasslands of the valley floor. Hardwoods become more frequent at lower elevations until they form open park-like stands interspersed with grass near the valley floor. Grasslands dominate the floor of California's large Central Valley. They extend north and east into the drier conifer sites, and south and west where they mix with chaparral types. Shrub associations occur throughout the area, but are most common in the southern and southwestern sections of the region (Kuchler 1975).

TREES

California-laurel

See section 41.

Ponderosa Pine

Ponderosa pine is rated intolerant of competition (Baker 1949) and, as with most other pines, it does not reproduce vegetatively. In Montana, it is a poor seeder west of and a fair seeder east of the Continental Divide. Ponderosa pine reproduction occurs infrequently and apparently requires the combination of a good seed year and above-average rainfall. Studies indicate that soil moisture is the critical factor for survival. Thus, survival of young seedlings may be influenced by soil texture, competing vegetation, and seedbed conditions (U.S. Department of Agriculture 1965). The best seedbed is loose enough to cover the seed with a light layer of mineral soil and contains enough dead needle litter to prevent excessive drying (Alexander 1974).

Wind is the primary cause of damage to mature and overmature ponderosa pine, especially when high winds occur during or after heavy rains. Fire mainly damages young trees, but crown fires will kill all trees (Alexander 1974).

Shasta Red Fir

Shasta red fir is rated intermediate in tolerance when compared with other associates (U.S. Department of Agriculture 1965). It does not produce sprouts or root suckers. Seedling and sapling growth is slow and may average less than 1 inch per year. Growth is slowed still further by partial shade. Snow and windthrow may severely damage young trees along openings.

Sugar Pine

Sugar pine is shade-intolerant (Baker 1949) and responds

with increased growth when competition is removed. Seedling development is rapid, but height growth is relatively slow the first 5 years (U.S. Department of Agriculture 1965). Brush significantly reduces establishment and survival. In one study, only 18 percent of the seedlings survived the first year under brush (Dunning and Schubert 1951). Saplings and pole-sized stands are easily killed by fire, but larger trees are somewhat resistant.

Tanbark-oak

See section 41.

Rocky Mountain White Pine

Rocky Mountain white pine is rated intermediate in tolerance of shade (Baker 1949) and fire (U.S. Department of Agriculture 1965). Not a sprout producer, white pine grows best in full sunlight, but early shoot growth is relatively slow, requiring 8 to 10 years to reach 5 feet in height.

White Fir

White fir is a strong competitor in most stands (U.S. Department of Agriculture 1965). It does not sprout and attains its best and fastest growth in the Sierra Nevadas. Conditions favoring its establishment include small openings, heavy litter, brush, and ground cover.

SHRUBS

Shrub Live Oak

Shrub live oak usually attains a height of 3 to 8 feet, and forms large clumps composed of thousands of individual stems in a single root crown. The plant is very drought-resistant and root crowns sprout prolifically after fire, while chemical or mechanical treatments destroy the aboveground parts of the plant.

At least 50 shrub species have been associated with the chaparral type, although fewer than 15 make up the majority of the vegetation (Cable 1975). Shrub live oak is the most abundant species in the chaparral type, but differences in soil, slope, elevation, exposure and precipitation create a wide diversity in stand composition.

GRASSES

Perennial Grasses

Perennial grasses quickly invade areas where mesquite has been controlled in response to the additional moisture available (Cable 1975).

**43 PROVINCE 3120
 Palouse Grassland
 PROVINCE 3130
 Intermountain Sagebrush**

Provinces 3120 and 3130 are collectively called the steppe and shrub steppe by Franklin and Dyrness (1973) and comprise a region of steppe and shrub steppe vegetation in central and southeastern Washington and

Oregon, northeastern California, most of Nevada, western Utah, and southwestern Idaho. Sagebrush and bunchgrass communities dominate most of the region; forests are generally restricted to mountain slopes and higher elevations (Küchler 1975).

MIXED CONIFERS AND ASPEN FOREST COMMUNITIES

Common species in the overstory of mixed conifer stands include Douglas-fir, ponderosa pine, white fir, Engelmann spruce, aspen, Rocky Mountain white pine, blue spruce, and corkbark fir, often in that order of relative abundance (Jones 1974). Aspen communities tend to be replaced by mixed conifer or spruce—fir communities, and these species are often present in the understory of aspen.

Early growth of trees in the mixed coniferous forest is closely related to available light. Five year old Engelmann spruce and corkbark fir growing in a small forest opening averaged only 3 inches tall. Seedlings surviving direct sunlight for 2 or 3 years usually grow much faster than those growing in moist but shady conditions (Jones 1974).

Competition for moisture may delay the regeneration of mixed conifer openings. Arizona fescue, a bunchgrass, may not appear to occupy the site completely because its aboveground parts form clumps surrounded by open ground. However, its roots usually fully occupy the surrounding soil. Trees and shrubs also deplete soil moisture, but not as severely as grasses. Seedlings may be killed by matting down or burial from herbaceous material or aspen leaves (Jones 1974).

Aspen

In the Rocky Mountains, aspen belongs to a single variable species, trembling aspen. It occurs as scattered individuals or in small stands throughout the area (U.S. Forest Service 1973). Aspen is intolerant of shade (Baker 1949) and is generally considered a pioneer species on disturbed sites. However, under some conditions it is considered to be a climax cover (U.S. Forest Service 1973). Although a consistent and heavy seed producer, aspen seldom reproduces from seed.

In stands of mature conifers and aspen, cutting will stimulate sprout and sucker production and usually cause aspen to increase its presence. Aspen stands with coniferous understories may react in different ways depending on site quality. On sites where conifers can outgrow the aspen, cutting the aspen overstory may release the young vigorous conifers and reduce the presence of aspen. But, generally, if the overstory is cut and brush cleared, aspen sprouts will develop quickly enough to remain dominant. Aspen stands without a coniferous understory may grow on marginal or on poor quality sites. Cutting or disturbing such sites will only stimulate denser stand suckers (Patton and Jones 1977). High soil temperatures on exposed grassy areas next to aspen stands may be responsible for aspen suckers invading the grass community (Barley and Wroe 1974).

Jones (1974) indicates that unless site preparation methods are used to create proper seedbeds for trees,

disturbed areas may revegetate with grasses and shrubs that are resistant to invasion by trees for many years. Jones also indicates that scalping with mattocks to prepare small areas for tree seeds or seedlings may not produce satisfactory results unless scalps are made large enough, all root crowns are removed, and open areas occupied by the roots of adjacent grass clumps are avoided.

Fire is recognized as a useful tool in managing aspen stands in the East (U.S. Forest Service 1972; Brinkman and Roe 1975; Perala 1977). Fire may also be used in the West to manage aspen stands, but proper burning conditions are too infrequent in many areas for burning to be considered as a reliable management tool (DeByle 1976). Soil type should be considered before fire is used, because some soils in the Rocky Mountains, especially the southwest portion of the area, may develop a thin water-repellent layer on the soil surface after a burn. Such a layer may also form just under undisturbed forest litter. Although the formation of such layers is not clearly understood, they can reduce seedling establishment and delay revegetation unless broken up (DeBano and Rice 1973).

The use of herbicides is one alternative where conditions are unfavorable to burning. Aspen is susceptible to 2,4-D, 2,4,5-T, AMS, Bromacil, Dicamba and other herbicides when applied as basal sprays, foliage sprays, or to cut surfaces (Bovey 1977).

Ponderosa Pine

See section 42.

PINYON—JUNIPER WOODLANDS

Pinyon—juniper woodlands occur in the foothills, above desert or grassland vegetation but below the ponderosa pine forests, at elevations from about 5000 feet to over 7500 feet. Major woody trees include Utah juniper, Rocky Mountain juniper, one-seeded juniper, alligator juniper, pinyon pine, and singleleaf pinyon. Mexican pinyon may also be an associate in the southern portion of the area (Aldon and Loving 1977).

Short and McCulloch (1977) suggest that trees in the pinyon—juniper woodland should be removed by methods that will not deplete shrubs; therefore, bulldozing is recommended over cabling in such areas. In light to medium-dense stands, bulldozing allows a certain degree of selectivity, leaving some individuals or small groups and uprooting others, while still controlling trees under 10 feet in height. Chaining and cabling are not usually effective on trees less than 10 feet tall. Hand chopping, sawing, or grubbing are practical for scattered trees on small areas, but are very expensive.

Burning can provide effective control, but does not allow a high degree of selectivity. Four types of burning may be useful in pinyon—juniper: broadcast burning, burning individual trees, burning grassland areas, and burning slash (Arnold et al. 1964). Broadcast burning of a mature pinyon—juniper stand requires special conditions. Stands must be dense and burning must be done during hot, dry, windy weather. It is a hazardous operation with a high risk of fire escaping. Burning

individual trees is suitable for open stands of small trees (Jameson 1966). However, this method is not appropriate for trees over 10 feet tall or for sprouting species. Burning of grassland communities has been tried on a limited scale, but provided erratic control on trees over 5 feet tall.

Herbicides may also be used to control pinyon—juniper. According to Johnsen (1967), more is known about herbicide control of juniper than pinyon. Effective herbicides that can be applied to the foliage and stems of juniper include: arsenite, amonium sulfamate, esters of 2,4-D and 2,4,5-T, and PBA (polychlorobenzoic acid).

The response of understory vegetation after trees have been removed varies according to soil and climatic characteristics, species composition, and density of the understory. Arnold et al. (1964) found that snakeweed increased steadily for two or three growing seasons then abruptly declined. Three-awn and side-oats grama grass increased each season after treatment, while western wheatgrass responded best on heavy soil. Annuals increased the first two growing seasons, but by the fifth season they had largely been replaced by perennials.

Table 43.1 provides a summary of maintenance methods useful in pinyon—juniper control.

Table 43.1 Methods of Pinyon—Juniper Control

Method and type of equipment	Time	Limited to	Remarks
BURNING Propane torches; fire control equipment.	Spring or summer.	Light infestations of small trees for individual tree burning. Optimum benefit-cost ratio with light stands.	Gives good results, and warrants wider use. May be used following chaining.
CHOPPING Brush chopper.	When seeding is needed, coincide with seeding time.	Little trees in small, odd-shaped areas.	Limited application; gives fair results. Poor results on alligator juniper.
ROTOCUTTER Highway-type mower. Heavy duty rotary mower.	Treat when least damaging to associated species.	Areas with small trees and no stones.	Gives good results. Will not kill alligator juniper. Desirable treatment for new invasion.
PUSHING (DOZING) Wheel or track-type tractor with blade or "stinger."	All year. Do not push alligator juniper when ground is frozen.	Light and medium stands.	Burning, windrowing, or stacking debris where necessary should be a planned part of the treatment.
HAND GRUBBING Grubbing hoe.	All year except when frozen.	Light and medium infestations of small trees.	Gives good results. Use as followup treatment or on new invasion.
HAND CUTTING Ax or saw.	All year.	Light infestations.	Gives good results except on alligator juniper, where it is ineffective. Wood products may return part of cost.
CHEMICAL STUMP TREATMENT Ammate crystals; or 2,4-D and 2,4,5-T with diesel; or Benaze 94.	At time of cutting.	Light stands only.	Alligator juniper only.

Rocky Mountain Juniper

Rocky Mountain juniper on cool moist sites can endure rather dense shade, but overall is rated intolerant (Baker 1949; U.S. Department of Agriculture 1965). Seedlings are common in the moist soil of rocky crevices and near a perennial water supply. Early growth is slow, with 8 year old seedlings reaching only 1 foot in height (U.S. Department of Agriculture 1965). Junipers are generally more drought-resistant and frost-tolerant than pinyons.

Pinyon Pine

Pinyon pine is shade-intolerant after the seedling stage (Baker 1949). Shade and moisture are essential to seedling survival (U.S. Department of Agriculture 1965). Seedlings usually develop in the shade of low shrubs, such as rabbit brush and sagebrush, or in the litter at the edge of the parent's crown (U.S. Department of Agriculture 1965; Aldon and Loving 1977). Because of its need for shade in early development, pinyon pine may slowly invade low shrub communities. It does not germinate in open grassland and will not invade grassland areas as juniper does (Aldon and Loving 1977).

**44 PROVINCE 3210
Chihuahuan Desert
PROVINCE 3220
American Desert
PROVINCE 3140
Mexican Highlands Shrub Steppe**

For this discussion, Provinces 3210, 3220, and 3140 are collectively called the Lower Basin Range. Forested areas are limited, narrow elevational bands where moisture is adequate to maintain forest growth. Pinyon—juniper woodlands occur below the forested areas and gradually turn to shrub and grassland with decreasing moisture (Kuchler 1975).

PINYON—JUNIPER WOODLANDS

Rocky Mountain juniper and pinyon pine are the predominant pinyon—juniper woodlands species found in the Lower Basin Range. They are described in section 43.

TREES AND SHRUBS

Big Sagebrush

Big sagebrush does not readily form root sprouts (U.S. Department of Agriculture 1937). Chaining may be used to control this species; however, not all of the sagebrush is destroyed by this operation, and desirable understory species are released. Disks and harrows may be used in the same way, but more of the site is disturbed. Scalping is effective on sandy or loose soils, but is limited to level areas or slopes of less than 10 percent. Seeding should follow scalping operations.

Controlled burning is effective and inexpensive, but can only be used in areas where brush densities are high enough to carry the fire. Burning is especially effective in

areas where brushy understories can aid in getting a clear burn.

Herbicides, such as ester formulations of 2,4-D and 2,4,5-T, may also reduce big sagebrush, but mechanical methods are preferred because they reduce competition while preserving forbs already present (Plummer 1968). Big sagebrush is easily killed by flooding (U.S. Department of Agriculture 1937).

Greasewood

Greasewood is not highly competitive and may be controlled by disking, brushland plows, or similar heavy equipment.

Willows

Most willow species are intolerant of shade and occur only in full sunlight. Willows attain their best development on moist or moderately moist sites along mountain streams, meadows, and north and west slopes. However, some willows have a broad tolerance of moisture and soil conditions and may be found on coarse, dry, southerly slopes. On areas denuded by fire, dense thickets of sprouts and seedlings may form (Dayton 1931). Because of their ability to grow along gullies and streams, many species are used for erosion control and soil stabilization programs (U.S. Department of Agriculture 1937).

Winter-fat

On disturbed areas, winter-fat quickly becomes established and stabilizes soil. It responds well to cultivation and produces abundant seed. The species does not grow on acid soil, but is found in alkaline to near-neutral calcareous soils that range from clays to sandy and rocky loams and rocky outcrops (Stevens et al. 1977).

Winter-fat is extremely drought-resistant. It has an extensive fibrous root system as well as a deeply penetrating taproot. During prolonged droughts, growth is negligible, but the woody crown survives.

GRASSES

Competitive grasses can be established on favorable sites in such mountain brush types as Gambel oak, bigtooth maple, and western choke-cherry. Heavy disks and brushland plows can be used to break down heavy brush growth. This treatment prepares a good seedbed, but is only suitable for level areas or moderate slopes. In areas where brush density is high enough to carry a fire, burning may be feasible. Mechanical treatments or burning break down or reduce brush concentration and allow grasses and forbs to spread and dominate the site (Plummer 1968).

RIPARIAN VEGETATION

Riparian habitats are important to wildlife in all areas of the country. In mainly treeless areas, such as plains and deserts, however, the value of riparian habitats is

especially great. Carothers et al. (1974) were possibly the first researchers to provide evidence supporting the two following hypotheses: 1) that vegetation manipulation in native riparian habitats was extremely detrimental to breeding birds, and 2) that riparian habitats support higher breeding-bird densities than any other forest type for a given area. Johnson et al. (1977) reported that riparian habitats are considered the most reproductive and sensitive habitats in North America and should be managed accordingly.

Conflicts with remaining riparian habitats include development, grazing, and water uses. Fencing is the only effective way to protect these habitats from grazing (Ames 1977). Davis (1977) mentions that complete exclusion of livestock from riparian areas would be the best management for wildlife with one possible exception. He theorizes that grazing would be beneficial in marsh areas for nesting waterfowl.

Most utilities have fairly stringent policies regarding crossings of streams and other wet areas; "minimum disturbance" policy is usually followed. Riparian habitats should be included under the same policy. For further information, see the streambank and wetlands management discussions in sections 24 and 26.

45 PROVINCE M2110 Columbia Forest PROVINCE M3110 Rocky Mountain Forest PROVINCE M3120 Upper Gila Mountains Forest PROVINCE P3130 Colorado Plateau

For this discussion, Provinces M2110, M3110, M3120, and P3130 are collectively called the Rocky Mountains. Species composition and plant communities vary with aspect and changes in elevation.

SPRUCE—FIR TYPES

The spruce—fir type is composed primarily of Engelmann spruce and subalpine fir. Windthrow is a common problem on the edges of new openings in spruce—fir stands, and susceptibility to it generally increases with elevation and exposure, orientation into the prevailing wind, and poor drainage.

Engelmann Spruce

Engelmann spruce is shade-tolerant, but throughout most of its range it is less tolerant than subalpine fir (Baker 1949). It reproduces entirely from seed. Light is essential to seedling survival, but few seedlings become established in openings at high elevations. Spruce seedlings will become established on duff, litter, humus, decaying and moss-covered wood, and mineral soil (Oosting and Reed 1952; LeBarron and Jemison 1953). They become established more readily on sites protected by understories of willows, shrubby cinquefoil, fireweed, and whortleberry. These species shade seedlings without depleting moisture. Seedlings do not survive well near

grasses or herbaceous plants, such as bluebells. These plants compete with seedlings for moisture and may smother seedlings under vegetation matted down by dense snow (Alexander 1974).

MIXED CONIFERS AND ASPEN FOREST COMMUNITIES

Aspen is the predominant species in the Rocky Mountains provinces (see section 43).

OTHER CONIFERS

Douglas-fir

In the northern part of the Rocky Mountains, Douglas-fir is frequently found associated with ponderosa pine, western larch, grand fir, and lodgepole pine. Larch and lodgepole pine are the most light-demanding species in this association, followed by ponderosa pine, with Douglas-fir and grand fir being able to withstand considerable shade (U.S. Forest Service 1973). For further information, see section 42.

Grand Fir

See section 42.

Lodgepole Pine

See section 42.

Ponderosa Pine

Ponderosa pine is rated shade-intolerant (Baker 1949). Seedlings are most intolerant when young trees can be completely overtopped by older trees, shrubs, or grasses. Conversely, shade may be beneficial during early establishment because of the improved moisture conditions (Schubert 1974). Under field conditions, however, factors other than light may prevent their establishment and growth.

The presence of other plants in the ponderosa pine community may be beneficial sometimes and detrimental at other times, depending on the development of the stand. Competition for moisture is more severe between some species than others (Larson and Schubert 1969). Arizona fescue and black dropseed grow during critical periods of spring drought, while mountain muhly, blue grama, and most weeds do not begin rapid growth until moisture becomes more abundant during the summer rains.

Ponderosa pine seedlings in denuded areas grow better than seedlings growing in competition with Arizona fescue and mountain muhly. Arizona fescue and mountain muhly are more drought-tolerant than are pine seedlings, and grass roots reduce soil moisture to lower levels than do pine roots. Only established pines are able to tolerate moisture competition from grasses (Larson and Schubert 1969).

Ponderosa pine is vulnerable to damage from several natural agents. Windthrow is common in areas with shallow soils, when openings are cut into dense stands and strong winds come from the opposite direction of the prevailing winds. Fire may be very damaging; young, dense stands especially may develop crown fires. Fuel breaks 120 to 180 feet wide are suggested (Schubert 1974).

Western Larch

See section 41.

SHRUBS**Blueberries and Huckleberries**

Huckleberries, unless specified otherwise, refers to any of 12 species of *Vaccinium* growing in the province. Huckleberries frequently grow on sites too poor for trees to develop properly. But, without fire or other disturbance, invading trees and brush gradually crowd out the huckleberries. Competition is most intense when lodgepole pine, sitka mountain-ash, or bear grass invade disturbed areas. Huckleberry bushes often produce large vigorous plants when growing in partial shade, but these bushes seldom produce fruit (Minore 1972).

Several western shrubs, including blue huckleberry (*Vaccinium deliciosum*), snowberry, and meadowsweet sprout after fire from dormant buds on the rhizomes. The amount of resprouting after fires varies with location, season, and within the area of a single burn. The specific conditions needed to achieve maximum or minimum sprouting are not known (Miller 1977).

Miller (1977) studied the effect of burning on resprouting of blue huckleberries. The foliage of blue huckleberry is not flammable; plants are consumed only as adequate fuel is available to dry and preheat the plants. In Maine and Eastern Canada, straw is often used to carry the fire when burning blueberries (Minore 1972). Miller (1977) found fire treatments across an area were never uniform because of the discontinuity of fuels. As some areas burn more intensely than others, fire creates a mosaic pattern, greatly increasing the variability across the area. Most resprouting occurred in the first and second years after treatment. Spring burning consistently increased the total number of plants (Miller 1977). Fall burning produced variable results; 6 of 11 areas studied had fewer plants after the burn than before. Differences in fuel loading and distribution, duff and soil moisture conditions, and burning conditions in the fall caused the variation.

GRASSES

Most grasslands are composed of numerous kinds of perennial grasses and forbs. Annual plants are only abundant on recently disturbed areas. Turner and Paulsen (1976) indicate that mechanical methods can be used to control most species, but mechanical control of larkspur and big sagebrush has been generally ineffective or uneconomical.

Chemical methods can also be used to control plant community composition in grasslands. Frequently, herbicides are used to control or remove woody shrubs and maintain the grass. Two common grassland species, Parry rabbit brush and cranesbill, are resistant to many herbicides, but can usually be controlled with Tordon (Paulsen and Miller 1968).

Fire may be used to control sagebrush and other plants that form overstories and compete with grass. However, controlling some woody species may allow fire-resistant species to spread and become more abundant (Turner

and Paulsen 1976). The complete role of fire in controlling species composition is not known and requires more study.

46 PROVINCE 3110 Great Plains Short-grass Prairie PROVINCE A3140 Wyoming Basin

Provinces 3110 and A3140 are combined here due to their similarities. Much of the area is dominated by grassland with occasional shrubs. Tree growth is limited to narrow bands along watercourses and to higher elevations, predominately the Black Hills and portions of the Wyoming Basin. The area is characterized by periodic droughts. Plant associations and communities vary with available moisture, elevation, and length of growing season. Large areas of the most productive sites have been converted to cropland; the remainder is heavily used rangeland. This discussion will deal with forested areas and species that must be managed in ROW situations.

PINES**Lodgepole Pine**

The lodgepole pine type grows in areas that are warmer and drier than the spruce—fir type. Lodgepole pine is an aggressive pioneer after fires and is intolerant of shade (Baker 1949). Throughout much of the area lodgepole pine produces serotinous cones, but in some locations nonserotinous cones are produced. In stands producing largely serotinous cones, slash disposal has a major influence on the location of new reproduction. In stands producing nonserotinous cones, reproduction is affected by distance to the seed source, since slash contains few unopened cones (U.S. Department of Agriculture 1965; Alexander 1974).

Although lodgepole pine is noted for its ability to become established after severe burns, germination and early survival are best on exposed mineral soils. Established understory vegetation greatly reduces seedling survival through intense competition for moisture. Lodgepole pine has a shallow root system, which makes it susceptible to windthrow, especially after cutting, but the severity of this type of damage is influenced by topography, soil type, drainage, and other factors (U.S. Department of Agriculture 1965).

Ponderosa Pine

Ponderosa pine is rated intolerant of competition (Baker 1949). Damage from various agents to ponderosa pine depends somewhat on the density of the stand. Fires occurring in dense stands are more likely to "crown" than ground fires occurring in widely spaced stands. Trees growing in dense stands tend to develop slender stems, poorly developed root systems, and asymmetrical crowns. Trees remaining on the edge of openings cut through such dense stands frequently are uprooted, broken, or bent.

When areas occupied by ponderosa pine and a moderate to large component of hardwoods are disturbed, the hardwood component may be stimulated to the point of greatly reducing pine reestablishment. In areas where brush is well-established, bulldozing or plowing may not provide adequate control, and herbicides may be needed. Bulldozing and plowing may remove the entire "A" soil horizon, which may cause excessive moisture loss especially on shallow soils (Boldt and VanDeusen 1974). Windthrow occurs mainly in large pole- and small saw timber-sized trees (Boldt and VanDeusen 1974), while snowbend and breakage are more common in saplings and small pole-sized trees.

SPRUCE—FIR TYPES

Engelmann spruce is the dominant spruce—fir type (see section 45).

REFERENCES

- Aldon, E.F., and T.J. Loving, tech. coords. 1977. Ecology, uses and management of pinyon—juniper woodlands: proceedings of the workshop. U.S. For. Serv. Gen. Tech. Rep. RM-39. 49 pp.
- Alexander, R.R. 1974. Silviculture of subalpine forests in the central and southern Rocky Mountains: the status of our knowledge. U.S. For. Serv. Res. Note RM-121. 8 pp.
- Ames, C.R. 1977. Wildlife conflicts in riparian management: grazing. Pages 49-51 in R.R. Johnson and D.A. Jones, tech. coords. Importance, preservation and management of riparian habitat: a symposium. U.S. For. Serv. Gen. Tech. Rep. RM-43. 217 pp.
- Arnold J.F., D.A. Jameson, and E.H. Reid. 1964. The pinyon—juniper type of Arizona: effects of grazing, fire, and tree control. U.S. Dep. Agric. Prod. Res. Rep. 84. 28 pp.
- Baker, F.S. 1949. A revised tolerance table. *J. For.* 47:175-181.
- Barley, A.W., and R.A. Wroe. 1974. Aspen invasion in a portion of the Alberta parklands. *J. Range Manage.* 27:263-266.
- Barrett, J.W., ed. 1962. Regional silviculture of the United States. Ronald Press Co., New York, N.Y. 610 pp.
- Billings, D.W. 1968. Plants and the ecosystem. Wadsworth Publ. Co., Inc. Belmont, Calif. 154 pp.
- Boldt, C.E., and J.L. VanDeusen. 1974. Silviculture of ponderosa pine in the Black Hills: the status of our knowledge. U.S. For. Serv. Res. Pap. RM-124.45 pp.
- Bovey, R.W. 1977. Response of selected woody plants of the United States to herbicides. U.S. Government Printing Office, Washington, D.C. 101 pp.
- Boyd, R.J., and G.H. Deitschman. 1969. Site preparation aids natural regeneration in western larch—Engelmann spruce strip clearcutting. U.S. For. Serv. Res. Pap. INT-64. 10 pp.
- Brinkman, K.A., and E. Roe. 1975. Quaking aspen: silvics and management in the Lake States. U.S. Dep. Agric. Agric. Handb. 486. 52 pp.
- Cable, D.R. 1975. Range management in the chaparral type and its ecological basis: the status of our knowledge. U.S. For. Serv. Res. Pap. RM-155. 30 pp.
- Carothers, E.W., R.R. Johnson, and S.W. Aitchison. 1974. Population structure and social organization of southwestern riparian birds. *Am. Zool.* 14:97-108.
- Critchfield, W.B. 1971. Profiles of California vegetation. U.S. For. Serv. Res. Pap. PSW-76. 54 pp.
- Davis, G.A. 1977. Management alternatives for the riparian habitat in the Southwest. Pages 59-67 in R.R. Johnson and D.A. Jones tech. coords. Importance, preservation, and management of riparian habitat: a symposium. U.S. For. Serv. Gen. Tech. Rep. RM-43.
- Dayton, W.A. 1931. Important western browse plants. U.S. Dep. Agric. Misc. Publ. 101. 214 pp.
- DeBano, L.F., and R.M. Rice. 1973. Water repellent soils: their implications in forestry. *J. For.* 71:220-223.
- DeByle, N.V. 1976. The aspen forest after harvest. Pages 35-40 in Utilization and marketing as tools for aspen management in the Rocky Mountains, proceedings of the symposium. U.S. For. Serv. Gen. Tech. Rep. RM-29.
- Dunning, D., and G.H. Shubert. 1951. Natural reproduction in certain cutover pine—fir stands of California. *J. For.* 49:192-196.
- Franklin, J.F., and C.T. Dyrness. 1973. Natural vegetation of Oregon and Washington. U.S. For. Serv. Gen. Tech. Rep. PNW-8. 417 pp.
- Frity, E. 1945. Twenty years' growth on a redwood sample plot. *J. For.* 43:30-36.
- Harlow, W.M., and E.S. Harrar. 1968. Textbook of dendrology. McGraw-Hill Book Co., New York, N.Y. 512 pp.
- Harris, A.S., and W.A. Farr. 1974. The forest ecosystem of southwest Alaska. No. 7, forest ecology and timber management. U.S. For. Serv. Gen. Tech. Rep. PNW-25. 109 pp.
- Johnsen, T.N., Jr. 1967. Herbicidal control of non-commercial conifers on rangeland. Pages 220-226 in Symposium proceedings: herbicides and vegetation management in forests, ranges, and noncropland. Oreg. State Univ. School For., Corvallis, Oreg.
- Johnson, R.R., L.T. Haight, and J.M. Simpson. 1977. Endangered species vs.d endangered habitats: a concept. Pages 68-79 in R.R. Johnson and D.A. Jones, tech coords. Importance, preservation and management of riparian habitat: a symposium. U.S. For. Serv. Gen. Tech. Rep. RM-43.
- Jones, J.R. 1974. Silviculture of southwestern mixed conifers and aspen: the status of out knowledge. U.S. For. Serv. Res. Pap. RM-122. 44 pp.

References

- Kittams, J.A., and R.A. Ryker. 1975. Habitat type and site preparation affect survival of planted Douglas-fir in central Idaho brushfields. U.S. For. Serv. Res. Note INT-198. 6 pp.
- Krygier, J.T., and R.H. Roth. 1961. Effect of herbicides on salmonberry and on sitka spruce and western hemlock seedlings. Weeds 9(3):416-422.
- Kuchler, A.W. 1975. Potential natural vegetation of the conterminous United States, 2nd ed. Am. Geog. Soc. Spec. Publ. 36.
- Larson, M.M., and G.H. Schubert. 1969. Root competition between ponderosa pine seedlings and grass. U.S. For. Serv. Res. Pap. RM-54. 12 pp.
- LeBarron, R.K. 1952. Silvicultural practices for lodgepole pine in Montana. U.S. For. Serv., North Rocky Mt. For. Range Exp. Stn., Pap. 33. 10 pp.
- , and G.M. Jemison. 1953. Ecology and silviculture of the Englemann spruce—subalpine fir type. J. For. 51:349-355.
- Lotan, J.E., and D.A. Perry. 1977. Fifth-year seed: seedling ratios of lodgepole pine by habitat type and seedbed preparation technique. U.S. For. Serv. Res. Note INT-239. 6 pp.
- McVean, D.N. 1956. Ecology of *Pinus glutienosa*; III, seeding establishment. J. Ecol. 44:195-196.
- Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley & Sons, New York, N.Y. 547 pp.
- Oosting, H.J., and J.F. Reed. 1952. Virgin spruce—fir of the Medicine Bow Mountains, Wyoming. Ecol. Monogr. 22:69-90.
- Patton, D.R., and J.R. Jones. 1977. Managing aspen for wildlife in the Southwest. U.S. For. Serv. Gen. Tech. Rep. RM-37. 7 pp.
- Paulsen, H.A., Jr., and J.C. Miller. 1968. Control of Parry rabbit brush on mountain grasslands of western Colorado. J. Range Manage. 21:175-177.
- Perala, D.A. 1977. Manager's handbook for aspen in the northcentral States. For. Serv. Gen. Tech. Rep. NC-36. 30 pp.
- Schubert, G.H. 1974. Silviculture of southwestern ponderosa pine: the status of our knowledge. U.S. For. Serv. Res. Pap. RM-123. 71 pp.
- Schwartz, C.F., E.C. Thor, and G.H. Elsner. 1976. Wildland planning glossary. U.S. For. Serv. Gen. Tech. Rep. PSW-13. 252 pp.
- Shearer, R.C. 1971. Silvicultural systems in western larch forests. J. For. 69(10):732-735.
- Short, H.L., and C.Y. McCulloch. 1977. Management of pinyon—juniper ranges for wildlife. U.S. For. Serv. Gen. Tech. Rep. RM-47. 10 pp.
- Smith, J.H.G. 1957. Some factors indicative of site quality for black cottonwood (*Populus trichocarpa*). J. For. 55:578-580.
- Society of American Foresters. 1954. Forest cover types of North America. Washington, D.C. 67 pp.
- Springfield, H.W. 1976. Characteristics and management of southwestern pinyon—juniper ranges: the status of our knowledge. U.S. For. Serv. Res. Note RM-160. 32 pp.
- Spurr, S.H., and B.V. Barnes. 1973. Forest ecology, 2nd ed. Ronald Press Co., New York, N.Y. 571 pp.
- Stevens, R., B.C. Giunta, K.R. Jorgensen, and A.P. Plummer. 1977. Winter-fat. Utah Div. Wildl. Resour. Publ. 77-2.
- Taylor, R.F. 1929. The role of sitka spruce in the development of second-growth in southeastern Alaska. J. For. 27:532-534.
- Thilenius, J.F. 1968. The *Quercus garryana* forest of the Willamette Valley, Oregon. Ecology 49(6):1124-1133.
- . 1975. Alpine range management in Western United States—principles, practices, problems: the status of our knowledge. U.S. For. Serv. Res. Note RM-157. 32 pp.
- Trappe, J.M., J.F. Franklin, R.F. Tarrant, and G.M. Hansen. 1968. Biology of alder. U.S. For. Serv. Pacific Northwest For. Range Exp. Stn., Portland, Oregon. 292 pp.
- Turner, G.T., and H.A. Paulsen, Jr. 1976. Management of mountain grasslands in the central Rockies: the status of our knowledge. U.S. For. Serv. Res. Pap. RM-161. 24 pp.
- U.S. Dept. of Agriculture. 1937. Range plant handbook. U.S. Government Printing Office, Washington, D.C.
- . 1965. Silvics of forest trees of the United States. U.S. Dept. Agric. Agric. Handb. 271. 762 pp.
- . 1973. Silvicultural systems for the major forest types of the United States. U.S. Dep. Agric. Agric. Handb. 445. 114 pp.
- Worthington, N.P. 1955. A comparison of conifers planted on the hemlock experimental forest. U.S. For. Serv. Pac. Northwest For. Range Exp. Stn. Res. Note 111. 5 pp.

2

Selected Plant Species

In this chapter, plant species determined to be useful for specific ROW needs (i.e., site stability or erosion control) and/or of importance to specific wildlife species are identified for each western province.

PROVINCE MAPS AND DESCRIPTIONS

Each of the 24 provinces is introduced via a map indicating state boundaries, individual sections within the province, and its relationship to other provinces. A smaller reference map in the lower left-hand corner of the illustration locates the province within the United States. In some instances, province sections have been further divided into subsections. These subsections are also identified on the maps.

A brief description of each province, containing information about physiography, climate, soil, and land use, is provided. Plant communities or associations common in the area are identified and described. Whenever possible, descriptions of specific sections and major subsections are presented.

TABLES

Province descriptions are followed by two sets of tables: Selected Plant Species tables and Ecological Characteristics tables. Any time the province description is broken down into sections or subsections, multiple Plant Species tables are presented, one for each section or subsection, unless otherwise noted. The Ecological Characteristics tables are provided for the province as a whole, except when several provinces are considered together or a riparian habitat is present within the province. In the former case, one table covers all of the provinces; in the latter, a separate table is provided for the riparian habitat. In prairie areas, all of the species

included in the Selected Plant Species tables are not presented in the Ecological Characteristics Table. Rather, indicator species only are included.

Selection of woody and herbaceous plant species was based on information obtained from a nationwide team of ecologists. Each ecologist compiled plant lists for sections and provinces identified on the map "Ecoregions of the United States" (Bailey 1976), the western half of which is shown in plate 3. General criteria used to establish characteristic and common plant species followed Oosting's (1957) fidelity ratings, 3 through 5:

Fidelity 3—Preferants, present in several communities, but predominant in one of them.

Fidelity 4—Selective, found especially in one community, but occasionally in others.

Fidelity 5—Exclusive, found completely or almost completely in only one community.

Selected Plant Species Tables

Each table carries an identification label that specifies:

Province number - *Chapter section reference number* .1 *Section number or Subsection number*

For example:

Table 2210-33.1 [2215] Selected Plant Species Common to the Oak—Hickory Forest

specifies that this is the Selected Plant Species Table for Province 2210, Section 2215, and that the province is discussed in section 33.

The identification label:

Table 2510-36.1 [1b] Selected Plant Species Common to the Oak—Hickory (Southern) Subsection

specifies that this is the Selected Plant Species Table for Subsection 1b of Province 2510, and that the province is discussed in section 36.

Province names and numbers and section names and numbers are taken directly from Bailey's (1976) map. Subsections within sections are clearly named and may be located by referring to the map included with each province description.

Habitat and moisture conditions — The Selected Plant Species Table is broken down by either habitat association (e.g., semidesert grassland) or habitat moisture condition. The following relative moisture/drainage classification scheme is used within each biological section: "dry to moist/excessive to well-drained" and "moist to wet/well-drained to impeded." Application of these designations depends to some extent on the experience of the reader and the province which is being considered. For example, dry soil in the Great Plains or the American Desert is much drier than dry soil in New England or the Pacific Northwest. For this reason, only general designations are used. In some cases, coastal, coastal marshes, or riparian designations are

added to this system to identify specific associations unique to particular areas.

Growth form — Within a plant community, vegetation normally occurs in layers or strata. Individual entries within the tables are according to the four stratification categories (height growth forms) most frequently found and of benefit to ROW management:

Tall-growing trees—over 40 feet tall; must be controlled on ROW.

Low-growing trees and tall shrubs—20 to 40 feet tall; control only when necessary; may be acceptable at ROW edge.

Low to medium shrubs—2 to 30 feet tall; normally not controlled.

Lesser vegetation—grasses, herbs, ferns, mosses—should not be disturbed.

A single species may sometimes be found in several stratification categories within a single section. For example, some woody plants grow to tree height on moist sites, but consistently grow only to shrub height on dry sites. These species may appear on the Selected Plant Species Table twice. One biological community, the Great Plains area of the United States, is unique in its extensive domination by grasses and forbs. In this instance, further modification to the stratification system is used to define more clearly the vegetation in this area.

Some species included in the Selected Plant Species tables are following by an identification code, a symbol, *, +, #, @, designating them as indicator species for wildlife habitats. An explanation of the identification codes is presented at the end of each table containing such species. In these instances, the Ecological Characteristics Table contains only those species identified by a code.

Secondary successional pattern — Each plant species is categorized as either early or late successional in the Selected Plant Species tables. Utility ROW maintenance procedures consist largely of controlling tall-growing plants and maintaining or arresting stages of plant succession (generally short-growing plants) to enhance transmission reliability. Species for some biological communities are listed only as early successional or late successional or carry no indication of successional status (e.g., desert or dry mountain areas). In these instances, for reason of local climate or other factors, succession as normally defined does not occur. When no successional pattern is present, the table is labeled "Plant Associations."

Plant names — The scientific names for the plant species included in the Selected Plant Species tables have been selected from standard regional and local floras listed in the references at the end of this chapter. Since plant taxonomists do not always agree on the correct technical name, and an accepted nationwide checklist of plant names is not available, a decision had to be made regarding which name to use. In the western provinces, names were taken from *Illustrated Flora of the Pacific States* (Abrams 1944, 1951, 1960), *Vascular Plants of the Pacific Northwest* (Hitchcock et. al., 1955, 1959, 1964,

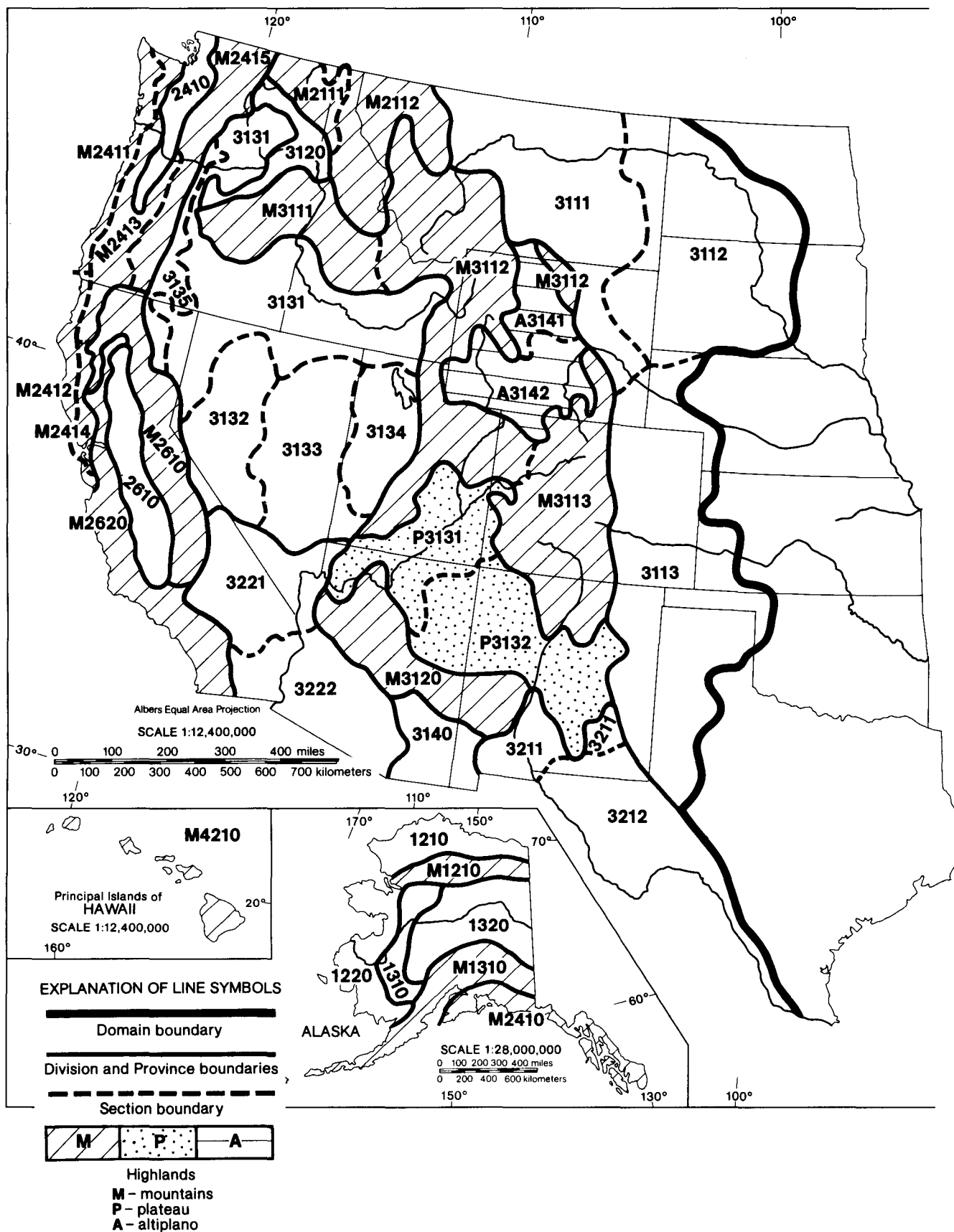


Plate 3 Ecoregions of the Western United States (from Bailey 1976)

1969) and other sources. Scientific names selected were used consistently throughout the manual.

Choosing common names for plant species is also difficult. The consistent use of a common name across the literature to refer to a single species of plant is rare. Common names change with region; a widely used name in one area may not be used at all in a nearby area, or may be applied to a totally different plant or group of plants. In addition, many plants do not have distinctive common names. The common names included are those that are widely accepted, based on the literature, and are used consistently throughout the text of the manual. The scientific names of the plant species and the common names associated with them are listed in general appendix A. In some instances, more than one common name is listed. If plants are listed in another province with a different common name, that province number is enclosed in parentheses.

Ecological Characteristics Tables

As described earlier, an Ecological Characteristics Table is included for each province. When a riparian community is present within a province, a separate table is provided. In some instances, such as with the Great Plains, only indicator species (marked by an identification code on the Selected Plant Species tables) are included.

The Ecological Characteristics tables carry an identification label such as:

Table 2410-48.2 Ecological Characteristics of Selected Plant Species Common to the Willamette—Puget Forest

This label indicates that this is the Ecological Characteristics Table for Province 2410 and that Province 2410 is described in chapter section 48. The .2, following the chapter section number, designates this as an Ecological Characteristics Table. Tables for riparian communities are designated by an “R” enclosed in brackets:

Table 2410-48.2 [R] Ecological Characteristics of Selected Plant Species Common to the Willamette—Puget Forest (Riparian Communities)

Species — Within the Ecological Characteristics Table, each species is listed in alphabetical order according to its scientific name. Common names, and in some instances, section numbers for each province, are included.

Habitat — The habitat preferences for each species, including moisture, shade tolerance, and special growth requirements, are listed. Descriptions of many of the woody plants include designations such as “moist, sun,” “dry, well-drained, sun,” or “well-drained, moist, sun and shade.” Such descriptions indicate relative soil moisture and exposure preferences of a plant within the province. “Sun and shade” indicates that a plant does well and fruits in the open, in the shade, or both. When combined with a working knowledge of specific area conditions, this information may be valuable to the ROW specialist.

Form — The information on form was taken from

published manuals for each region. Maximum height, average height, and spatial, aggressive, and release characteristics are included. In addition, growth habits, such as “much-branched and spreading,” “low-spreading mat,” or “forming dense clumps,” may be included.

Fruit — Fruits are described as pome, drupe, berry, achene, capsule, legume, nut, etc. These terms are defined in the glossary. Following the fruit type is the time of availability, usually expressed by a two-month specification, for example, “Sept.-Oct.” The first month indicates the time of ripening; the second indicates the persistence of the fruit on the plant.

General Wildlife Use — This column lists very general types of wildlife utilization—primarily food and cover. The presence of an entry indicates that the plant comprises some portion of the overall food or cover requirement of the animal species listed. This information was compiled from standard texts listed in the references for this chapter and from direct observations made by consultants.

The term “birds” in this column indicates songbirds found in that province. Individual species were listed only in instances the authors considered significant. The terms “bobwhite” and “quail,” and “cottontail” and “rabbit,” were used interchangeably unless otherwise noted.

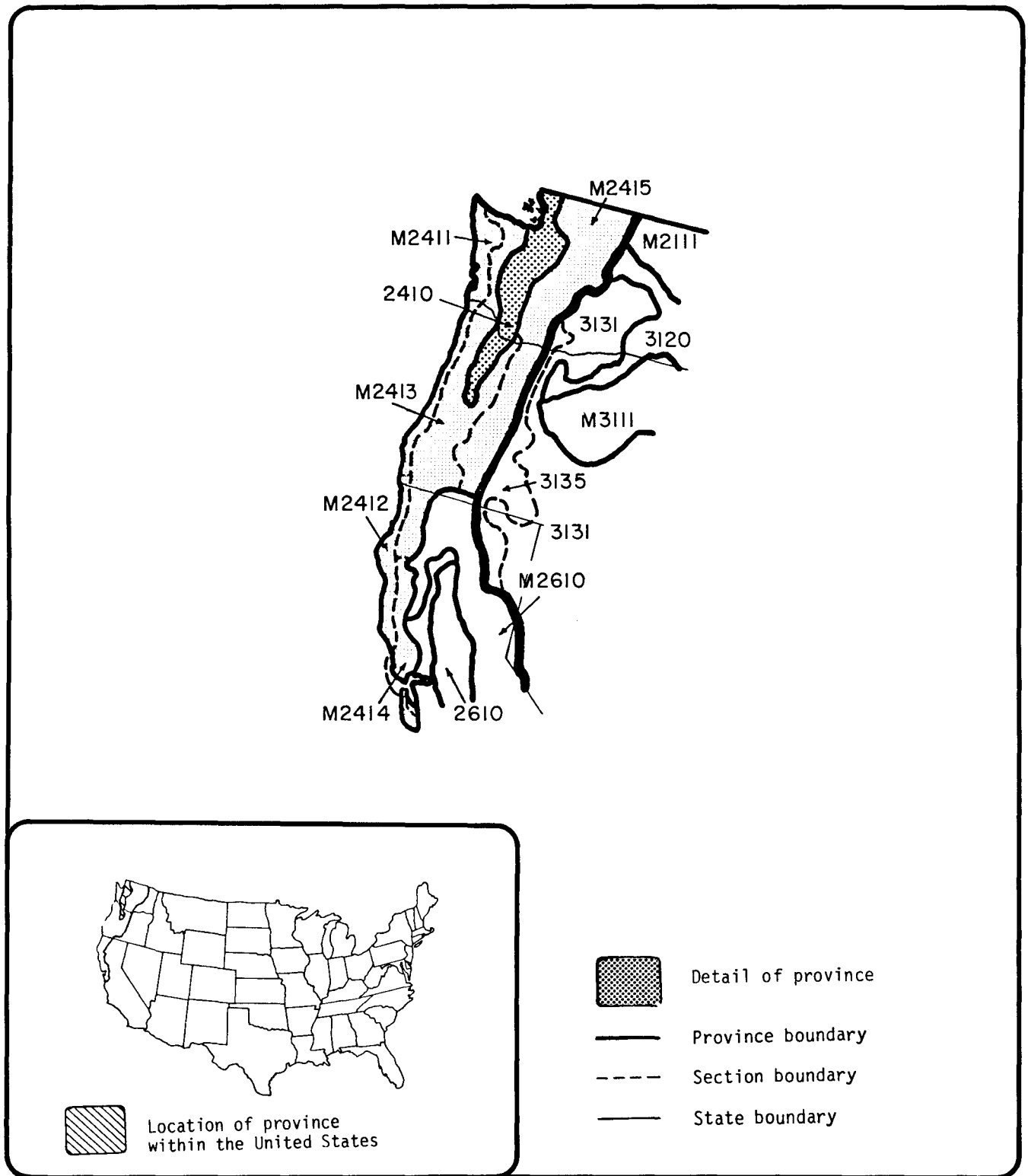
Notes — Important characteristics not appropriate for inclusion in the other table categories are listed as notes. Factors, such as “thicket-forming” or “mat-forming,” which will benefit wildlife in ways not easily documented, are included. Other factors, such as sprouting or reproduction characteristics, age to maturity or decline, erosion control, and nuisance characteristics, are noted.

47 PROVINCE 2410 Willamette—Puget Forest

The Willamette—Puget Forest is the driest and warmest area west of the Cascade Mountain Range. It occupies a north-south depression between the Coast Range and the Cascade Mountains. Elevations within the province range from sea level to 1500 feet. The province separates into a northern (Puget Sound) and a southern (Willamette Valley) region, characterized by different soil types. Alfisols, Inceptisols, and Ultisols are the principal soil orders; Inceptisols dominate in the Puget Sound Valley.

The Puget Sound Valley is a moderately dissected tableland covered by glacial till, glacial outwash, and lacustrine deposits. The Willamette Valley has nearly level to gently sloping floodplains bordered by dissected high terraces and hills. The province also includes isolated hills and low mountains (Bailey 1978).

Because the province is close to the Pacific Ocean, its climate is mild throughout the year. Annual temperatures average 48° to 55° F. The moderate rainfall reaches its maximum in winter; summer is characterized by a slight moisture deficit. Fog partially compensates for the summer drought. Average annual rainfall ranges from 15 to 60 inches; but in much of the area, the range is



from 30 to 45 inches. Coastal mountains are responsible for the drier and less muted climate (Bailey 1978).

The successional sequence is similar in both regions: grassland to oak woodlands to conifer forest. In the north, however, fire is probably the major force in maintaining grasslands and oak woodlands. Before cultivation, dense coniferous forest dominated the vegetation.

The principal trees are western redcedar, western hemlock, and Douglas-fir. In interior valleys, the coniferous forest is less dense than along the coast and often contains deciduous trees including bigleaf maple, Oregon ash, and black cottonwood. Some prairies support open stands of oaks or are broken by groves of Douglas-fir and other trees. Poorly drained sites with swamp or bog communities are abundant (Bailey 1978).

Table 2410-47.1 [N] Selected Plant Species Common to the Willamette—Puget Forest (Northern Region: Puget Sound)

Growth form	Early successional plants		Late successional plants	
<u>Habitat conditions: Dry to moist/excessive to well-drained</u>				
	(Grasslands)		(Oregon white oak communities)	
Tall-growing trees, over 40 ft	<u>Tsuga heterophylla</u>	Western hemlock	<u>Quercus garryana</u>	Oregon white oak
Low-growing trees and tall shrubs, 20-40 ft			<u>Cystis scoparius</u>	Scotch broom
Low to medium shrubs, 2-20 ft			<u>Symphoricarpos albus</u>	Common snowberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Armeria maritima</u> <u>Balsamorhiza deltoidea</u> <u>Camassia quamash</u> <u>Carex pensylvanica</u> <u>Dodecatheon hendersonii</u> <u>Festuca idahoensis</u> <u>Saxifraga integrifolia</u> <u>Sisyrinchium angustifolium</u> <u>Viola adunca</u> <u>Viola nuttallii</u> <u>Zigadenus venenosus</u>	Thrift Deltoid balsamroot Common camas Long-stoloned sedge Broad-leaved shooting star Idaho fescue Northwestern saxifraga Idaho blue-eyed grass Western long-spurred violet Upland yellow violet Meadow deathcamas	<u>Arctostaphylos uva-ursi</u> <u>Carex pensylvanica</u> <u>Festuca idahoensis</u> <u>Fragaria vesca</u>	Kinnikinnik Long-stoloned sedge Idaho fescue Strawberry
(Douglas-fir communities)				
Tall-growing trees, over 40 ft			<u>Pseudotsuga menziesii</u>	Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft			<u>Osmaronia cerasiformis</u>	Oso berry
Low to medium shrubs, 2-20 ft			<u>Symphoricarpos albus</u>	Common snowberry
Lesser vegetation - grasses, herbs, ferns, mosses			<u>Corallorhiza maculata</u> <u>Goodyera oblongifolia</u> <u>Sanicula crassicaulis</u>	Spotted coralroot Rattlesnake plantain Western snakeroot
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>				
	(Bog)		(Surrounding conifer forest)	
Tall-growing trees, over 40 ft			<u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft			<u>Acer circinatum</u> <u>Rhamnus purshiana</u> <u>Salix</u> spp.	Vine maple Cascara Willow
Low to medium shrubs, 2-20 ft	<u>Gaultheria shallon</u> <u>Kalmia polifolia</u> <u>Ledum groenlandicum</u> <u>Menziesia ferruginea</u> <u>Spiraea douglasii</u> <u>Vaccinium membranaceum</u> <u>Vaccinium parvifolium</u>	Salal Pale laurel Bog Labrador-tea Rusty leaf Douglas spiraea Big huckleberry Red huckleberry	<u>Gaultheria shallon</u> <u>Vaccinium membranaceum</u> <u>Vaccinium ovalifolium</u>	Salal Big huckleberry Ovalleaf huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Carex</u> spp. <u>Cornus canadensis</u> <u>Lysichitum americanum</u> <u>Pteridium aquilinum</u> <u>Rhynchospora albus</u> <u>Vaccinium oxycoccos</u>	Sedge Bunchberry dogwood Skunk cabbage Bracken fern Beakrush Wild cranberry	<u>Athyrium filix-femina</u> <u>Blechnum spicant</u> <u>Cornus canadensis</u> <u>Galium aparine</u> <u>Lycopodium annotinum</u> <u>Polystichum munitum</u>	Lady-fern Deer fern Bunchberry dogwood Clever's bedstraw Stiff club-moss Sword fern

Table 2410-47.1 [S] Selected Plant Species Common to the Willamette—Puget Forest (Southern Region: Willamette Valley)

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
	(Mesic grasslands)		(Dry grasslands)	
Tall-growing trees, over 40 ft	<u>Fraxinus latifolia</u>	Oregon ash		
Low-growing trees and tall shrubs, 20-40 ft	<u>Crataegus douglasii</u> <u>Rhamnus purshiana</u>	Douglas hawthorn Cascara		
Low to medium shrubs, 2-20 ft	<u>Rhus diversiloba</u> <u>Symphoricarpos albus</u>	Poison oak Common snowberry		
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Alopecurus geniculatus</u> <u>Aster chilensis</u> <u>Beckmannia syzigachne</u> <u>Bromus japonicus</u> <u>Camassia quamash</u> <u>Carex</u> spp. <u>Danthonia californica</u> <u>Deschampsia caespitosa</u> <u>Eleocharis acicularis</u> <u>Festuca pratensis</u> <u>Festuca rubra</u> <u>Geranium dissectum</u> <u>Holcus lanatus</u> <u>Hordeum brachyantherum</u> <u>Juncus</u> spp. <u>Montia linearis</u> <u>Poa pratensis</u> <u>Rosa eglanteria</u> <u>Sidalcea campestris</u>	Marsh foxtail Chilian aster Slough grass Japanese brome Common camas Sedge California danthonia Tufted hairgrass Needle spikerush Meadow fescue Red fescue Cut-leaved geranium Velvet grass Meadow barley Rush Narrow-leaved montia Kentucky bluegrass Sweetbriar rose Meadow checkermallow	<u>Achillea millefolium</u> <u>Agropyron caninum</u> <u>Agrostis hallii</u> <u>Agrostis idahoensis</u> <u>Bromus vulgaris</u> <u>Carex</u> spp. <u>Dactylis glomerata</u> <u>Danthonia californica</u> <u>Danthonia intermedia</u> <u>Elymus glaucus</u> <u>Eriophyllum lanatum</u> <u>Festuca californica</u> <u>Festuca occidentalis</u> <u>Festuca octoflora</u> <u>Festuca rubra</u> <u>Fragaria chiloensis</u> <u>Melica subulata</u> <u>Poa scabrella</u> <u>Ranunculus occidentalis</u> <u>Sanicula bipinnatifida</u> <u>Sitanion hystrix</u> <u>Sitanion jubatum</u> <u>Stipa lemmonii</u> <u>Stipa occidentalis</u> <u>Veronica peregrina</u> <u>Vicia americana</u>	Western yarrow Bearded wheatgrass Hall's bentgrass Idaho bentgrass Columbia brome Sedge Orchardgrass California danthonia Timber danthonia Blue wild rye Common woolly sunflower California fescue Western fescue Eight-flowered fescue Red fescue Sand strawberry Alaska oniongrass Pine bluegrass Western buttercup Purple sanicle Bottlebrush squirreltail Big squirreltail Lemmon needlegrass Western needlegrass Purslane speedwell American vetch
	(Oak woodlands)		(Douglas-fir communities)	
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Arbutus menziesii</u> <u>Pseudotsuga menziesii</u> <u>Quercus garryana</u>	Bigleaf maple Madrone Douglas-fir Oregon white oak	<u>Abies grandis</u> <u>Acer macrophyllum</u> <u>Cornus nuttallii</u> <u>Libocedrus decurrens</u> <u>Pseudotsuga menziesii</u> <u>Quercus garryana</u>	Grand fir Bigleaf maple Pacific dogwood Incense-cedar Douglas-fir Oregon white oak
Low-growing trees and tall shrubs, 20-40 ft	<u>Amelanchier alnifolia</u> <u>Osmaronia cerasiformis</u> <u>Prunus avium</u> <u>Rhamnus purshiana</u>	Serviceberry Oso berry Mazzard cherry Cascara	<u>Acer circinatum</u> <u>Taxus brevifolia</u>	Vine maple Western yew
Low to medium shrubs, 2-20 ft	<u>Corylus cornuta</u> <u>Dryopteris arguta</u> <u>Holodiscus discolor</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Rosa eglanteria</u> <u>Rosa gymnocarpa</u> <u>Rosa nutkana</u> <u>Rhus diversiloba</u> <u>Rubus parviflorus</u> <u>Rubus ursinus</u> <u>Symphoricarpos albus</u>	California hazelnut Coastal shield-fern Ocean spray Sword fern Bracken fern Sweetbriar rose Baldhip rose Nootka rose Poison oak Thimbleberry Trailing blackberry Common snowberry	<u>Berberis nervosa</u> <u>Corylus cornuta</u> <u>Gaultheria shallon</u> <u>Holodiscus discolor</u> <u>Philadelphus lewisii</u> <u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u> <u>Symphoricarpos albus</u>	Oregon-grape California hazelnut Salal Ocean spray Lewis mock orange Poison oak Baldhip rose Common snowberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Agrostis</u> spp. <u>Bromus vulgaris</u> <u>Circaea alpina</u> <u>Cynosurus echinatus</u> <u>Dactylis glomerata</u> <u>Danthonia californica</u> <u>Elymus glaucus</u>	Bentgrass Columbia brome Alpine circaea Hedgehog dogtail Orchardgrass California danthonia Blue wild rye	<u>Adenocaulon bicolor</u> <u>Anemone deltoidea</u> <u>Aster radulinus</u> <u>Bromus vulgaris</u> <u>Calypso bulbosa</u> <u>Cardamine pulcherrima</u> <u>Festuca occidentalis</u>	Trail plant Threelaf anemone Roughleaf aster Columbia brome Calypso Slender toothwort Western fescue

continued

Table 2410-47.1 [S] (Concluded)

Growth form	Early successional plants		Late successional plants	
	<u>Dry/excessive (Continued)</u>			
	(Oak woodlands) (Continued)		(Douglas-fir communities) (Continued)	
Lesser vegetation - (Continued)	<u>Festuca californica</u>	California fescue	<u>Fragaria vesca</u>	Strawberry
	<u>Festuca rubra</u>	Red fescue	<u>Galium triflorum</u>	Sweet-scented bedstraw
	<u>Galium</u> spp.	Bedstraw	<u>Hieracium albiflorum</u>	White hawkweed
	<u>Holcus lanatus</u>	Velvet grass	<u>Madia madioides</u>	Woodland tarweed
	<u>Hypericum perforatum</u>	Common St. John's-wort	<u>Osmorhiza chilensis</u>	Mountain sweetroot
	<u>Ligusticum apiifolium</u>	Parsleyleaf licoriceroot	<u>Polystichum munitum</u>	Sword fern
	<u>Osmorhiza chilensis</u>	Mountain sweetroot	<u>Satureja douglasii</u>	Yerba buena
	<u>Poa pratensis</u>	Kentucky bluegrass	<u>Synthyris reniformis</u>	Snowqueen
	<u>Satureja douglasii</u>	Yerba buena	<u>Vicia americana</u>	American vetch
	<u>Tellima grandiflora</u>	Alaska fringe-cup		
	<u>Torilis arvensis</u>	Field hedge-parsley		
	<u>Vicia americana</u>	American vetch		
	<u>Habitat conditions: Moist to wet/well-drained to impeded</u>			
	(Riparian)			
Tall-growing trees, over 40 ft			<u>Acer macrophyllum</u>	Bigleaf maple
			<u>Alnus rubra</u>	Red alder
			<u>Fraxinus latifolia</u>	Oregon ash
			<u>Populus trichocarpa</u>	Black cottonwood
			<u>Quercus garryana</u>	Oregon white oak
Low-growing trees and tall shrubs, 20-40 ft			<u>Salix fluviatilis</u>	Columbia river willow
			<u>Salix lasiandra</u>	Pacific willow
			<u>Salix rigida</u>	Rigid willow
			<u>Salix scouleriana</u>	Scouler's willow
			<u>Salix sessilifolia</u>	Soft-leaved willow
Lesser vegetation - grasses, herbs, ferns, mosses			<u>Carex</u> spp.	Sedge

Table 2410-47.2 Ecological Characteristics of Selected Plant Species Common to the Willamette—Puget Forest

Species	Habitat	Form	Fruit	General wildlife use	Notes
Grand fir <i>Abies grandis</i> Lindl.	Stream bottoms, valleys, mountain slopes, best on deep, rich alluvial soils	Evergreen tree, up to 300 ft high	Cone, 40-190 seeds per cone, seed production poor-fair each year, seeds dispersed Sept.-Oct.	Seeds eaten by squirrels, chipmunks, several birds; browsers resort to foliage in winter and grouse use foliage year round	Fairly shade tolerant but young trees easily killed or injured by fire; older trees with thicker bark are more fire resistant; provide nesting and roosting cover for birds
Vine maple <i>Acer circinatum</i> Pursh	Widespread, particularly on drier slopes	Deciduous shrub to small tree, up to 30 ft tall	Double samara	Seeds eaten by mice; seeds, buds, flowers eaten by songbirds; deer and elk browse foliage and twigs	Favored ornamental
Bigleaf maple <i>Acer macrophyllum</i> Pursh	Generally on moist fertile soils mostly west of Cascade Mts.	Deciduous tree, up to 90 ft high with diameters to 6.5 ft	Double samara, wings 1.5-2 in long, Aug.-Sept.	Same as <i>A. circinatum</i>	
Western yarrow <i>Achillea millefolium</i> L.	Common, variable, not fully understood	Aromatic perennial herb, 1-3 ft high, leaves slender	Achenes without pappus	Sage-scented leaves eaten by a few species	
Trail plant <i>Adenocaulon bicolor</i> Hook.	Moist, shady woods, generally distributed	Perennial herb, fibrous-rooted, slender, to 3 ft high, leaves mostly near the base	Achene, about .25 in long, dark brown or black		
Bearded wheatgrass <i>Agropyron caninum</i> (L.) Beauv.	Common from lowlands to high mountains, dry sites	Perennial grass, culms slender, tufted without rootstocks, 1-3.5 ft high	Caryopsis, lemmas glabrous to soft, hairy, awnless or with straight awn, up to 1 in long	Forage	
Bentgrass <i>Agrostis</i> spp. L.	Dry woods to meadowlands, damp to swampy areas, mostly at medium elevations in mountains	Perennial grass, 4-40 in high, rhizomatous, tufted	Caryopsis, lemma awnless		Important range grass; forage value good-very good
Hall's bentgrass <i>Agrostis hallii</i> Vasey	Dry woods to meadowlands, west of Cascade Mts.	Perennial grass, rhizomatous, 16-40 in high	Caryopsis, lemma acute, awnless		Same as <i>Agrostis</i> spp.
Idaho bentgrass <i>Agrostis idahoensis</i> Nash	Damp to swampy areas, mostly at medium elevations in the mountains	Perennial grass, slender, tufted, 4-12 in high	Caryopsis, lemma about .05 in long, awnless		Same as <i>Agrostis</i> spp.
Red alder <i>Alnus rubra</i> Bong.	Moist, lowlands, streambanks, west of Cascade Mts.	Deciduous tree, up to 80 ft high, diameters of 3.5 ft	Catkin, .75-1 in long, contains 50-100 small seeds, seed a winged nutlet, good seed crop every 4 yrs, Sept. through winter	Seeds important to songbirds; foliage and buds eaten by gamebirds and browsers; value low in proportion to abundance	
Marsh foxtail <i>Alopecurus geniculatus</i> L.	Wet places, often standing in water	Perennial grass, 1-1.5 ft high, culms weak, decumbent, often creeping	Caryopsis, bent, colored awn twice the length of the glumes		

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western serviceberry <u>Amelanchier alnifolia</u> Nutt.	Widespread in open woods	Spreading to erect shrub or small tree, 1.5-35 ft high, up to 6 in diameter, deciduous	Berrylike pome, June-July	Juicy, sweet fruit eaten by songbirds, squirrels, chipmunks, bears; browsers feed on foliage and twigs	
Threeleaf anemone <u>Anemone deltoidea</u> Hook.	Woods, often with shrubs, dry to moist areas west of Cascade Mts.	Perennial herb, stems from a long slender rootstock, 3-6 in high	Achenes, about .2 in long		
Madrone <u>Arbutus menziesii</u> Pursh	Dry open woods west of Cascade Mts.	Evergreen tree, 20-100 ft high, leaves thick, 3-6 in long	Berry, rough surface about .17 in thick, orange-red, Sept., persistent through winter	Berries are an important food of several songbirds	Fire damage common; burned trees regenerate from root sprouts
Kinnikinnik <u>Arctostaphylos uva-ursi</u> (L.) Spr ng.	Widespread, especially in the mountains, generally on sandy or gravelly sites	Evergreen shrub, stems long and creeping, small ascending branch, 4-16 in high	Berrylike, bright red, smooth, about .38 in in diameter	Fruit eaten by bears and gamebirds; leathery foliage is browsed extensively by deer	Excellent ground cover, especially for dry banks
Thrift <u>Armeria maritima</u> (Mill.) Willd.	Beaches and coastal bluffs usually but occasionally inland on prairies	Perennial herb, scapose with persistent basal leaves, 4-20 in high	Achene-like		
Chilian aster <u>Aster chilensis</u> Nees	Widespread, meadows	Perennial herb, stems clustered, erect, 8-32 in high	Achenes	Same as <u>A. chilensis</u>	
Roughleaf aster <u>Aster radulinus</u> Gray	Woodlands, dry open areas, mostly west of Cascade Mts.	Perennial herb, stems from elongated rootstock, 8-24 in high	Achene	Important summer forage for ungulates	
Lady-fern <u>Athyrium filix-femina</u> (L.) Roth	Moist woods, meadows and swamps, common, lowland to montane	Fern, up to 5 ft high	Sori	Browsed by ungulates usually in the winter	
Deltoid balsamroot <u>Balsamorhiza deltoidea</u> Nutt.	Dry, open ground mainly west of Cascade Mts.	Herbaceous perennial, leaves and scapous stems from a stout woody base, 4-10 in high	Disk achenes	Blue grouse eat leaves; deer eat plants during fall, winter, spring	
Slough grass <u>Beckmannia syzigachne</u> (Steud.) Fern.	Marshes, wet meadows, ponds, ditches, from lowlands to mid-montane	Annual grass, coarse, stout, 2-4 ft high	Caryopsis, lemmas as long as glumes		
Oregon-grape <u>Berberis nervosa</u> Pursh	Generally in light woods, mainly west of Cascade Mts.	Evergreen sub-shrub, stems 1-2 ft high, from long rootstocks	Berry, deep blue, broadly elliptical, about .33-.38 in long	Plants eaten by hoofed browsers; fleshy fruits eaten by birds only to a limited degree	
Deer fern <u>Blechnum spicant</u> (L.) With.	Moist to wet places, generally in heavy shade, from sea level to mid-montane	Fern, up to 3 ft high	Sori		

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Japanese brome <i>Bromus japonicus</i> Thunb.	Roadside or wasteland generally east of the Cascade Mts.	Annual grass, introduced, culms slender, 1.5-2.5 ft high	Caryopsis, lemmas broad, awns spreading	Good-sized seeds eaten by a number of birds and rodents, leaves eaten by ungulates	
Columbia brome <i>Bromus vulgaris</i> (Hook.) Shear	Shaded or open woods, moist or dry banks from sea level to dry rocky slopes, up to 6,000 ft	Perennial grass, culm 2.5-4 ft high	Caryopsis	Young plants eaten by Canada goose; plants eaten by gray partridge, ring-necked pheasant, quail, chipmunks, pocket gophers	
Calypso <i>Calypso bulbosa</i> (L.) Oakes	Deep shade of cool, moist forest, sea level to mid-mountain	Perennial herb with subglobose corm, 1 green leaf, short scape, 2-8 in high	Capsule		
Common camas <i>Camassia quamash</i> (Pursh) Greene	Moist areas, often where dry by late spring, prairies and grassy clearings	Perennial herb, scape stem, 6-14 in high, narrow linear leaves from coated bulb	Capsule, about .62-.67 in long, chambers 4-6 seeded		Bulb used by Indians
Slender toothwort <i>Cardamine pulcherrima</i> (Robins.) Greene	Generally west of Cascade Mts.	Perennial herb, rhizomes short and tuberlike	Silique, 1-1.5 in long		
Sedge <i>Carex</i> spp. L.	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grasslike erect herb, 2-4 ft	Achenes, in spikes	Seeds eaten by gamebirds, bear, squirrel, fox; plant eaten by rabbit, deer, elk	
Long-stoloned sedge <i>Carex pensylvanica</i> Lam.	Open, rather dry woods and prairies, common in and west of Cascade Mts.	Perennial sedge, tufted with creeping rhizome, 8-20 in high	Achene, perigynia with prominent beak, about .05 in long	Seeds eaten by ducks; seeds and plants are eaten by pika and northwest chipmunk; browsed by deer	
Alpine circaea <i>Circaea alpina</i> L.	Cool, damp woods at higher elevations	Perennial herb, slender stems arising from tuberous rhizomes 4-20 in high	Pear shaped capsule, about .09 in long, covered with short, hooked hairs		
Spotted coralroot <i>Corallorhiza maculata</i> Raf.	Moist to fairly dry woods throughout province	Perennial herb without chlorophyll, stem 8-20 in high	Dry capsule		
Bunchberry dogwood <i>Cornus canadensis</i> L.	Moist woods, mountains at mid-elevations	Low trailing subshrub, 2-8 in high	Berrylike drupe, coral red, .25-.3 in, 2-seeded pit	Fruit and buds eaten by gamebirds; fruit eaten by songbirds	May be useful ground cover in moist, cool areas
Pacific dogwood <i>Cornus nuttalli</i> Aud. ex T. & G.	Open to rather dense forest, especially along streams, at moderate elevations	Deciduous tree, 10-50 ft high	Drupe, oval, scarlet, about .38 in, 2-seeded, late summer but may persist on some plants into winter	Fleshy fruit very valuable to several species of birds	Attractive ornamental which attracts birds
California hazelnut <i>Corylus cornuta</i> Marsh.	Widespread at low elevations on well-drained soils	Tall clustered, deciduous shrub up to 16 ft high	Nut, 1-seeded	Nuts eaten by squirrels, chipmunks, other rodents; foliage, bark, twigs browsed by rabbits and deer; catkins eaten by grouse	Useful cover and nesting sites
Douglas hawthorn <i>Crataegus douglasii</i> Lindl.	Woods and thickets	Small tree up to 25 ft high, stout spines .33-.8 in long	Small pome with 1-seeded nutlet, about .25-.38 in long, nearly black	Small, applelike fruits not used by wildlife nearly so great as might be anticipated; fruit eaten by few species of songbirds	Favorite nesting site for many birds

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Hedgehog dogtail <u>Cynosurus echinatus</u> L.	Introduced and well established west of Cascade Mts.	Annual grass, 8-20 in high	Caryopsis, awn .13-.42 in		
Scotch broom <u>Cystisus scoparius</u> (L.) Link	Common escape west of Cascade Mts., in open areas	Deciduous shrub, up to 10 ft high	Pod, several-seeded	Young growth browsed by ungulates	
Orchardgrass <u>Dactylis glomerata</u> L.	Waste places, roadsides, meadows, introduced, common at lower elevations	Perennial grass, densely tufted, coarses, 2-4 ft high	Caryopsis, glumes .17-.25 in, lemmas .2-.3 in, awn tip about .05 in	Seeds eaten sparingly by birds	
California danthonia <u>Danthonia californica</u> Boland.	Open grassy meadows to rocky ridges, moist sites	Perennial grass, tufted, 2-3 ft high, erect or ascending	Caryopsis	Preferred forage for ungulates	
Timber danthonia <u>Danthonia intermedia</u> Vasey	Prairies and grasslands to timbered areas, mountain meadows	Perennial grass, densely tufted, 6-12 in high	Caryopsis, awns flat and twisted	Important forage for ungulates	
Tufted hairgrass <u>Deschampsia caespitosa</u> (L.) Beauv.	Marshes, prairies from low to alpine elevations, also on talus slopes	Perennial grass, densely tufted, forming large tussocks, 1.5-4 ft high	Caryopsis, awned from about mid-length or below, awns twisted to bent	Minor browse for ungulates	
Broad-leaved shooting star <u>Dodecatheon hendersonii</u> Gray	Prairies and open slopes at lower elevations on west side of Cascade Mts.	Scapose, perennial herb, less than one foot tall	Capsule, 1-celled	Leaves may be eaten by some gamebirds	
Coastal shield-fern <u>Dryopteris arguta</u> (Kaulf.) Watt	Wooded places often in drier and more open sites	Fern short, horizontal to erect rhizome, leaves clustered at end of rhizome leaves evergreen	Sori		
Needle spikerush <u>Eleocharis acicularis</u> (L.) R. & S.	Marshes and other wet places, lowland to rather high montane, muddy ground, widespread	Perennial sedge, densely tufted, rhizomatous, up to 6 in high, capped by a single compact spike	Achene, sharply 3-angled, chestnut	Seeds, culms, tubers eaten by ducks	Forms plush-like mats along water margins
Blue wild rye <u>Elymus glaucus</u> Buckl.	Prairies, open woods, dry to moist hillsides, lowlands to mid-mountain	Perennial grass, culms 2-5 ft high	Caryopsis	May be used as winter forage	May be good sand stabilizer
Common woolly sunflower <u>Eriophyllum lanatum</u> (Pursh) Forbes	Dry, open places, lowlands to mid-elevations, widely distributed	Perennial herb, loosely clustered from slender rootstock, erect or decumbent 8-40 in high	Achenes, slender, 4-angled, pappus of nerveless chaffy scales	Leaves and flowers eaten by grouse	
California fescue <u>Festuca californica</u> Vasey	Dry, open slopes to moist streambanks, open woods	Perennial grass, densely tufted, 3-4.5 ft high	Caryopsis, lemmas narrow, about .3-.42 in long	Seeds eaten by small rodents and songbirds; plant eaten by mule deer	
Idaho fescue <u>Festuca idahoensis</u> Elmer	Grassland and sagebrush deserts to dry and rocky mountain slopes and meadows up to 12,000 ft	Perennial grass, truly caespitose, non-rhizomatous, basal leaves .5-3.5 ft high	Caryopsis, awns .1-.2 in, lemmas strongly inrolled and rigid	Same as <u>F. californica</u>	

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western fescue <i>Festuca occidentalis</i> Hook.	Streambanks, lake	Perennial grass, closely tufted, slender, 16-32 in high	Caryopsis, lemmas	Seeds eaten by small rodents and songbirds; plant eaten by mule deer	
Eight-flowered fescue <i>Festuca octoflora</i> Walt.	Dry, open ground	Annual grass, somewhat tufted, slender, 6-12 in, high	Caryopsis	Same as <i>F. occidentalis</i>	More common east of Cascade Mts.
Meadow fescue <i>Festuca pratensis</i> Huds.	Widely distributed, introduced, abundant in moist areas and along roads	Perennial grass, culms tufted, 2-8 ft high	Caryopsis, glumes .13-.17 in, lemmas .2-.28 in	Same as <i>F. occidentalis</i>	Valuable forage grass
Red fescue <i>Festuca rubra</i> L.	Marshes and sand dunes to mountain forest and meadow, generally distributed	Perennial grass, more or less clustered, culms somewhat decumbent at base, 1.5-8 ft high, short rhizomatous	Caryopsis	Same as <i>F. occidentalis</i>	Excellent ground cover where excessive trampling occurs
Sand strawberry <i>Fragaria chiloensis</i> (L.) Duchesne	Mostly on old dunes along coast, rare inland	Perennial, stoloniferous herb with trifoliate leaves	Achenes, borne on enlarged, fleshy and juicy receptacle	Tender leaves and fruit eaten by upland gamebirds; berries eaten by songbirds	
Strawberry <i>Fragaria vesca</i> L.	Meadows and streambanks to light woods, mostly in and east of Cascade Mts.	Low, perennial herb	Small achenes borne on enlarged fleshy and juicy receptacle	Same as <i>F. chiloensis</i>	
Oregon ash <i>Fraxinus latifolia</i> Benth.	Deep fertile, generally moist soil, west of Cascade Mts.	Deciduous tree, 30-60 ft high, 20-32 in in diameter	Samara, 1-seeded, elongated, 1.25-1.75 in long	Samaras eaten by a number of birds and mammals	
Bedstraw <i>Galium</i> spp. L.	Woods and thickets	Slender low herbs	Dry or fleshy, twin, separating into 2 carpels, May-Sept.		
Cleaver's bedstraw <i>Galium aparine</i> L.	Common, rather weedy species, thickets and open woods	Herbaceous annual, stem weak, ascending, 1-5 ft long	Dry capsule, clothed with hooked bristles		
Sweet-scented bedstraw <i>Galium triflorum</i> Michx.	Common, wide-spread, woods	Perennial herb, stem slender and lax, 16-40 in long	Dry capsule, bristles about .05 in		
Salal <i>Gaultheria shallon</i> Pursh	Moist to dry woods, lowlands to lower mountains	Evergreen shrub, up to 8 ft high, sometimes forming impenetrable thickets	Berrylike drupe, nearly black, .28-.42 in in diameter		Excellent ground cover; foliage sold by florists
Cut-leaved geranium <i>Geranium dissectum</i> L.	Scattered, introduced weed, common in fields and waste ground	Annual herb, stem 10-20 in high, often branched above	Capsule, hairy without, seeds finely reticulate	Seeds eaten by birds and rodents	
Rattlesnake plantain <i>Goodyera oblongifolia</i> Raf.	Dry to moist woods or forest throughout province	Perennial herb, leaves all basal, scapes 4-12 in high	Dry capsule	Slight spring use by ungulates	
White hawkweed <i>Hieracium albiflorum</i> Hook.	Moist to dry open slopes and woods	Perennial herb, stem 1.5-4 ft high	Achene		
Velvet grass <i>Holcus lanatus</i> L.	Introduced weed, common west of Cascade Mts., roadsides, railroad embankments, waste ground	Perennial grass, tufted, 1-2 ft tall	Caryopsis		Now a bad lawn weed; not particularly palatable

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Ocean spray <u>Holodiscus discolor</u> (Pursh) Maxim.	Moist woods to dry open areas	Deciduous shrub, erect, 1.5-10 ft high	Follicles, 5 carpels, densely hairy, 1-seeded	Browsed by ungulates with heavy use on winter range	
Meadow barley <u>Hordeum brachyantherum</u> Nevski	Open ground, generally where moist	Perennial grass, clustered, mostly 2-28 in high	Caryopsis, awn equaling or surpassing the glumes	Seeds, and to some extent leaves, eaten by waterfowl and rodents	Of some importance as a range forage grass
Common St. John's-wort <u>Hypericum perforatum</u> L.	Introduced, waste-land and drier areas, common	Perennial herb, stems erect, stout 1.5-8 ft high	Many seeded capsule, ovate, .24-.32 in long		Serious pest
Rush <u>Juncus</u> spp. L.	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grasslike herb, 2-4 ft	Capsule, spring	Forage	
Pale laurel <u>Kalmia polifolia</u> Wang.	Generally in sphagnum bogs at lower elevations	Low evergreen shrub, ascending or erect, 9-24 in high	Capsule, 5-chambered		
Bog Labrador-tea <u>Ledum groenlandicum</u> Oeder	Mostly in swamps and bogs	Evergreen shrub with leathery leaves, 2-4 ft high	Capsule, splitting by 5 valves		
Incense-cedar <u>Libocedrus decurrens</u> Torr.	Low elevations in Cascade Mts. and westward, mixed conifer forest	Evergreen tree, 150 ft high, trunk up to 8 ft in diameter, leaves scale-like	Cone, about 1 in long, seeds about .32 in, late summer and fall, medium to heavy crops 3-6 yrs	Seeds eaten by rodents during years of poor seed crops of other associates species; browsed by deer	
Parsleyleaf licoriceroot <u>Ligusticum aplifolium</u> (Nutt.) Gray	Fence rows and sparsely wooded slopes and prairies in the lowlands west of Cascade Mts.	Perennial herb, with large aromatic roots, stems 1.5-4 ft high	Dry shizocarp	Good deer and elk browse	
Stiff club-moss <u>Lycopodium annotinum</u> L.	Generally in moist conifer forests but occasionally on more open, rocky slopes below timber line	Evergreen, trailing herb	Spore		
Skunk cabbage <u>Lysichiton americanum</u> Hult. & St. John	Swampy areas, bogs	Large leaved perennial herb, up to 2 ft high, thick rootstock	Berrylike, green	Eaten in early spring by ungulates	Often the foliage pushes through the snow in the early spring
Woodland tarweed <u>Madia madioides</u> (Nutt.) Greene	Dry open woods	Perennial herb, stems single or clustered, from short rootstocks, 1-2.5 ft high	Achenes, chaffy pappus, July	Dark seeds eaten by many birds and rodents	Have sticky, pungent leaves and stems
Alaska oniongrass <u>Melica subulata</u> (Griseb.) Scribn.	Open slopes to thick, dry or moist woods at moderate elevations	Perennial grass, culms strongly bulbous at base, solitary or few, 2-4 ft high, rhizomatous	Caryopsis, lemmas .32-.48 in long	Seeds eaten by songbirds; deer and elk may use as browse	
Rusty leaf <u>Menziesia ferruginea</u> Sm.	Moist woods and streambanks throughout the province	Deciduous shrub, erect, 3-6 ft high	Capsule, fleshy, oblong, .24-.28 in long	May provide food for grouse	
Narrow-leaved montia <u>Montia linearis</u> (Dougl.) Greene	Lowlands to foothills where dry or moist	Annual herb, 2-8 in high, stems erect or decumbent	Capsule, with 1-3 black and shining seeds, .06-.08 in		Little wildlife value

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Oso berry <i>Osmaronia</i> <i>cerasiformis</i> (T. & G.) Greene	Streambanks and moist to rather dry woods	Shrub to small tree, 5-10 ft high	Drupe, .32-.4 in		Fruits bluish-black and bitter
Mountain sweetroot <i>Osmorhiza chilensis</i> H. & A.	Common in woodlands from near sea level to mid-mountain, wide-spread	Cauliscent, thick-rooted perennial with petiolate leaves	Fruit attenuate at base into bristly appendages, terminal-beaklike apex		
Lewis mock orange <i>Philadelphus lewisii</i> Pursh	Along watercourses and cliffs, talus slopes and rocky hillsides, Douglas-fir forests	Erect to spreading shrub, 4-10 ft high	Capsule, woody	Forage eaten by ungulates	
Kentucky bluegrass <i>Poa pratensis</i> L.	Roadsides and waste areas to dry or moist prairies and woodlands	Perennial rhizomatous grass, culms terete, 8-18 in high	Indehiscent seeds in panicles	Seeds eaten by several kinds of songbirds and rodents, leaves grazed by rabbits and big game	Great value as range forage
Pine bluegrass <i>Poa scabrella</i> (Thurb.) Vasey	Sagebrush desert to montane forests and ridges	Caespitose, perennial grass, over 1.5 ft high, non-rhizomatous, basal leaf blades over 2x.5 in	Caryopsis, seeds in panicles	Same as <i>P. pratensis</i>	
Sword fern <i>Polystichum munitum</i> (Kaulf.) Presl	Generally in coniferous forests from near sea level to mid-montane	Evergreen fern, fronds tufted on short, stout, erect to creeping rhizome, 8 in to 5 ft high	Sori	Little food value; some browse by ungulates during winter	
Black cottonwood <i>Populus trichocarpa</i> T. & G.	Along streambanks and lake shores, or in moist regions, occasionally in better drained soils away from water	Deciduous tree to 60 ft high	2-carpellate capsule, May-June	Buds and catkins are valuable winter-spring foods for various kinds of grouse; bark, twigs, foliage eaten freely by rabbits and ungulates; wood or bark relished by beavers and porcupines	
Mazzard cherry <i>Prunus avium</i> L.	Cultivated, occasionally escaped or persistent	Deciduous tree	Drupe, 1-seeded	Fruit and buds eaten by upland gamebirds; fruit eaten extensively by songbirds	
Douglas-fir <i>Pseudotsuga menziesii</i> (Mirb.) Franco	Moist to dry areas, sea level to near timberline	Evergreen tree, up to 280 ft high	Cones, with winged seeds, heavy crop at 5-7 yr intervals, Sept.	Seeds eaten by western squirrels and other rodents; foliage and twigs important to several kinds of browsers; needles and cones are a major winter food of blue grouse	Major commercial tree and early tree invader in disturbed areas
Bracken fern <i>Pteridium aquilinum</i> (L.) Kuhn	Moist to dry woods or open slopes	Fern with deep-seated branching rhizome, leaves deciduous, 2-5 ft high	Sori		
Oregon white oak <i>Quercus garryana</i> Dougl.	Prairies and foothills, drier sites	Deciduous tree, 11-22 ft high	Nuts (acorns), periodicity of seed crops not known	Major importance to wildlife; acorns eaten by songbirds, ducks, shorebirds, upland gamebirds; acorns, bark wood eaten by fur and game animals; twigs and foliage browsed by deer and elk	

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western buttercup <i>Ranunculus occidentalis</i> Nutt.	Mostly coastal	Perennial herb, with erect stems	Achene, .1-.14 in with .04-.08 in beak	Seeds eaten by birds and rodents; plants browsed by deer	
Cascara <i>Rhamnus purshiana</i> DC.	Widely in west Cascade Mts.	Deciduous shrub or small tree, up to 32 ft high	Berrylike	Berries eaten by songbirds; fruits, stems, foliage eaten by small mammals and ungulates	
Poison oak <i>Rhus diversiloba</i> T. & G.	Mainly west of Cascade Mts., dry sites generally	Shrub, 3-7 ft high, sometimes vining and up to 50 ft	Drupe, .2 in	Considerable wildlife value; fruits eaten by many kinds of birds, primarily in winter when other foods are scarce	Causes serious skin irritations in humans
Beakrush <i>Rhynchospora albus</i> (L.) Vahl	Sphagnum bogs and other wet places, lowland to mid-montane	Annual or perennial grasslike herb with narrow leaves, culms densely tufted, .5-1.5 ft high	Bicarpellate achene	Plant eaten to limited extent by waterfowl	
Sweetbriar rose <i>Rosa eglanteria</i> L.	European species naturalized along roadsides and in pastures	Prickly shrub, prickles generally stout and strongly curved	Stony achenes enclosed in red, fleshy hypanthium, .04-.06	Achenes and hips eaten by upland gamebirds in winter; fruits, twigs, foliage eaten by mammals and especially by hoofed browsers	Thickets excellent nesting and protective covering for gamebirds and songbirds
Baldhip rose <i>Rosa gymnocarpa</i> Nutt.	Moist to dry woods, from near sea level to mid-montane	Prickly (bristly) to nearly unarmed shrub, 1-4 ft high, prickles slender	Stony achenes, 12 or fewer, enclosed in fleshy glabrous, bright red hypanthium	Same as <i>R. eglanteria</i>	
Nootka rose <i>Rosa nutkana</i> Presl	Wooded or moist areas, often montane	Woody vine	Berrylike, achenes enclosed in fleshy hypanthium	Same as <i>R. eglanteria</i>	Widespread cordilleran species
Thimbleberry <i>Rubus parviflorus</i> Nutt.	Moist to dry, wooded to open areas from near sea level to subalpine	Plants unarmed, stems erect, woody, rarely less than 1.5 ft tall	An aggregation of weakly coherent drupelets	Very important summer food; fruit eaten by grouse, ring-necked pheasant, quail, raccoons, chipmunks, squirrels; leaves and stems eaten extensively by deer and rabbits	Valued as effective cover
Trailing blackberry <i>Rubus ursinus</i> Cham. & Schlecht.	Abundant on prairies, burns, clearings but also in open to rather dense woodlands from near coast to mid-montane	Deciduous perennial vine, stems slender, trailing, armed with prickles	An aggregation of weakly coherent drupelets, black	Same as <i>R. parviflorus</i>	Valued as effective cover
Willow <i>Salix</i> spp. L.	Moist soil along streams, 3,500-9,500 ft, sun	Tree, 15-50 ft	Seed capsules in catkins, Mar.	Browsed by beaver; seeds eaten by squirrel	Prevents erosion and invades burned forest areas
Columbia River willow <i>Salix fluviatilis</i> Nutt.	Banks of Columbia River	Deciduous tree, 7-26 ft high	Capsules	Buds and twigs eaten by several species of grouse; twigs, foliage, bark eaten by rabbits, hoofed browsers, others	Often colonial by running roots
Pacific willow <i>Salix lasiandra</i> Benth.	Near sea level to mid-mountain	Arborescent shrub, or small tree, 7-40 ft high	Capsule, .12-.2 in	Same as <i>S. fluviatilis</i>	Widespread

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Rigid willow <i>Salix rigida</i> Muhl.	Foothills and lowlands to mid-montane	Deciduous shrub, over 4 ft high, without running roots	Capsule, .12-.2 in	Same as <i>S. lasiandra</i>	
Scouler's willow <i>Salix scouleriana</i> Barr.	Throughout east and west Cascade Mts.	Robust, deciduous shrub or small tree, 6-40 ft high	Capsule, .12-.2 in	Same as <i>S. lasiandra</i>	
Soft-leaved willow <i>Salix sessilifolia</i> Nutt.	Streambanks in west Cascade Mts.	Shrubs or small trees, 6-25 ft high, often clonal with running roots	Capsule, .12-.2 in long	Same as <i>S. lasiandra</i>	
Purple sanicle <i>Sanicula bipinnatifida</i> Dougl. ex Hook.	Open slopes and drier meadows	Erect, glabrous biennial herb, taprooted	Carpophore with uncinat prickles		
Western snakeroot <i>Sanicula crassicaulis</i> Poepp.	Woods of western Cascade Mts	Perennial herb with taproot	Subterete carpophore with uncinat prickles		
Yerba buena <i>Satureja douglasii</i> (Benth.) Briq.	Coniferous woods	Perennial herb from a woody rhizome, stems prostrate and often rooting, to 3.5 ft high	Hard nutlets		
Northwestern saxifraga <i>Saxifraga integrifolia</i> Hook.	Prairies and wet banks to sub-alpine meadows	Perennial herb, stems 4-12 in high, scapose	Capsule	Eaten by pocket gopher	
Meadow checkermallow <i>Sidalcea campestris</i> Greene	Dry fields	Perennial herb with woody roots, short rhizomatous plant 4.5-7 ft high	Capsule, 1-seeded		Often cultivated and occasionally escaped
Idaho blue-eyed grass <i>Sisyrinchium angustifolium</i> Mill.	Marshes and ditches, always where moist in spring, low elevations to montane	Perennial herb, leaf blades flattened and grass-like	Capsule, with several subglobose seeds per cell	Flowers eaten by mountain quail	
Bottlebrush squirreltail <i>Sitanion hystrix</i> (Nutt.) J. G. Smith	Along coast and inland, especially on prairies	Caespitose perennial grass	Caryopsis		Seldom abundant; fairly palatable early in the season, but long spikelets are a nuisance to humans and a minor hazard to grazing animals
Big squirreltail <i>Sitanion jubatum</i> J. G. Smith	Dry prairies to rocky hillsides and open woods, often where soil is disturbed	Perennial grass	Caryopsis		Same as <i>S. hystrix</i>
Douglas spiraea <i>Spiraea douglasii</i> Hook.	Swamps and damp meadows from sea level to subalpine	Deciduous shrub	Leathery folicle, 2-several seeded	Possibly browsed by large mammals	
Lemmon needlegrass <i>Stipa lemmonii</i> (Vasey) Scribn.	Foothills into mountains	Caespitose perennial grass, glumes less than .6 in, awn rarely greater than .24 in	Caryopsis	Important food for songbirds and rodents; eaten by hoofed browsers	Injurious to livestock

continued

Table 2410-47.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western needlegrass <u>Stipa occidentalis</u> Thurb. ex Wats.	Widespread from grassland to subalpine forest and ridges	Caespitose, perennial grass	Caryopsis	Important food for songbirds and rodents; eaten by hoofed browsers	Fairly abundant; palatable much of the year; readily grazed; sharp callosities sometimes injurious to livestock
Common snowberry <u>Symphoricarpos albus</u> (L.) Blake	Widespread species of thickets, woods, open slopes, from lowland to mid-elevation in mountains	Erect, deciduous shrub, 3-6.5 ft high	Nutlets, .16-.2 in	Important wildlife food; fruit eaten by grouse and songbirds; foliage and twigs eaten extensively by deer	Useful as nesting and protective cover for gamebirds, rabbits and other animals
Snowqueen <u>Synthyris reniformis</u> (Dougl.) Benth.	Generally at low elevations in coniferous woods	Fibrous-rooted, perennial herb, basal leaves and weak peduncles	Compressed capsule, twice as wide as high, 2-many seeds per locule		
Western yew <u>Taxus brevifolia</u> Nutt.	Moist forest, especially along streams	Tree, 15-35 ft high, erect and straight to commonly contorted trunk, evergreen	Hardened seed surrounded by fleshy reddish aril, .2-.24 in	Highly preferred ungulate forage	Hard, durable attractive woods; Indians used wood for their bows
Alaska fringe-cup <u>Tellima grandiflora</u> (Pursh) Dougl.	Moist woods, streambanks and lower mountain slopes	Perennial herb, up to 2.5 ft high, rhizomatous, basal leaves 1-4 in long	Beaklike capsule		
Western redcedar <u>Thuja plicata</u> Donn	Mainly where moist or swampy	Evergreen trees, up to 225 ft, scale-like leaves	Cones, .32-.48 in, seeds with narrow lateral wings .24-.28 in, Aug.-Sept. good crops every 4 yrs	Seeds eaten extensively by pine siskin; foliage and twigs browsed by ungulates	Dead spike tops may provide important perching sites and nesting sites
Field hedge-parsley <u>Torilis arvensis</u> (Huds.) Link	Moist places	Slender, annual herb, 4 in-1.5 ft high	Dry schizocarp, oblong with uncinate prickles		
Western hemlock <u>Tsuga heterophylla</u> (Raf.) Sarg.	Moist to well-drained sites, sea level to 5,000 ft elevation	Tree, to 150 ft tall, narrow crown	Cone, seeds shed Sept.-Oct.	Eaten by blue grouse, white and black-tailed deer; survival food for Olympic wapiti	Easily injured
Big huckleberry <u>Vaccinium membranaceum</u> Dougl. ex Hook.	Montane slopes	Deciduous shrub, 1-5 ft high	Berry, reddish purple, .28-.36 in	Berries eaten by grouse, songbirds, black bear, chipmunks, deer, rabbits	
Ovalleaf huckleberry <u>Vaccinium ovalifolium</u> Sm.	Woods and open slopes	Deciduous shrub, 1-1.5 ft high	Berry, dark blue to blackish, .24-.4 in	Same as <u>V. membranaceum</u>	
Wild cranberry <u>Vaccinium oxycoccos</u> L.	Sphagnum bogs	Evergreen, creeping shrub, stems slender and prostrate	Berry, red, .2-.4 in long	Same as <u>V. membranaceum</u>	
Red huckleberry <u>Vaccinium parvifolium</u> Sm.	Dry to moist woods, especially on logs and stumps where bird planted, lowlands and lower mountains	Deciduous, erect shrub, 3-13 ft high	Berry, bright red, .24-.36 in	Same as <u>V. membranaceum</u>	
Purslane speedwell <u>Veronica peregrina</u> L.	Plants of moist or wet places, widespread	Fibrous-rooted annual herb, linear	Capsule		

continued

Table 2410-47.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
American vetch <u>Vicia americana</u> Muhl. ex Willd.	Native, wide-spread	Perennial herb, mostly less than 3 ft tall with trailing to climbing stems	Flat pods, 2-several seeded	Seeds and foliage eaten to limited extent by birds and rodents	
Western long-spurred violet <u>Viola adunca</u> Sm.	Dry to moist meadows, woods, open ground	Perennial herb	Capsule, 3-valved, explosively dehiscent	Seeds eaten by several upland gamebirds	Ornamental
Upland yellow violet <u>Viola nuttallii</u> Pursh	Dry sites	Perennial herb	Capsule, 3-valved, explosively dehiscent	Same as <u>V. adunca</u>	
Meadow deathcamas <u>Zigadenus venenosus</u> Wats.	Coastal prairies and rocky bluffs to grassy hill-sides, sagebrush slopes, montane forests in exposed places	Perennial herb with tunicated bulbs	Membranous to leathery capsule		One of the most virulent stock-poisoning plants

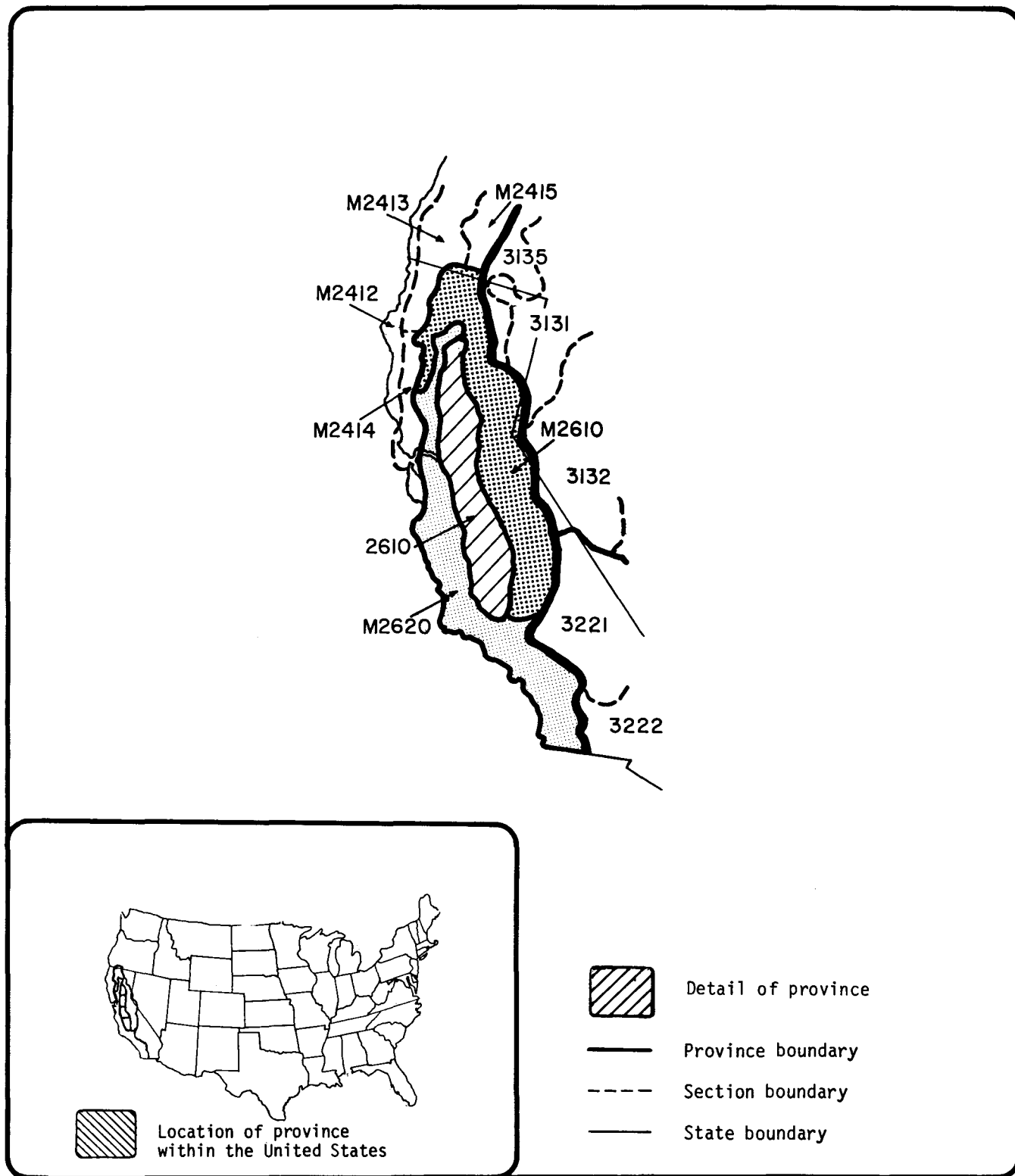


Figure 48.1 Province 2610, California Grassland

48 PROVINCE 2610 California Grassland

The California Grassland Province extends through the Central Valley of California. On the north and east at higher elevations it merges into the Sierran Forest (Province M2610); on the south and west it merges into the California Chaparral (Province M2620). It forms a flat alluvial plain between the Sierra Nevadas and the Coast Range. Elevations range from sea level to 500 feet (Bailey 1978).

Except near the coast, summers are hot and winters are mild—often foggy with little or no snow. Annual rainfall ranges from 6 inches in the upper San Joaquin Valley to nearly 30 inches along the coast. Maximum rainfall is in the winter months—December, January, and February. Potential evaporation during the warmest months is often much greater than the precipitation. Low rainfall and small streamflow result in water scarcity in many parts of the area (Bailey 1978).

The soils are mostly Entisols and Alfisols. The Entisols are usually at the lower elevations; the Alfisols are at slightly higher elevations, away from the valley floor. A small area of Aridisols occurs in the more arid southern portion of the San Joaquin Valley.

Evidence indicates that the Central Valley of California was once dominated by natural grasses; plowing, fires, and grazing have eliminated these grasses except as relief stands. These stands suggest that the dominants were bunchgrasses, which produced grasslands similar in appearance to mixed prairie (Bailey 1978).

The rivers in the province flow through alkaline flats where greasewood, picklewood, saltgrass, and shadscale are the chief cover. Tule marshes border the lower reaches of the San Joaquin and Sacramento rivers.

Dominant plants in the area are wild oats, several

species of brome, wild barley, and fescue. Perennial bunchgrasses include needlegrass, creeping wild rye, and pine bluegrass. Perennials increase with increasing elevation. Forbs are numerous but of secondary importance.

Table 2610-48.1 Selected Plant Species Common to the California Grassland

Growth form	Plant associations	
<u>Habitat conditions: Dry to moist/excessive to well-drained</u>		
Tall trees, over 40 ft	<u>Quercus douglasii</u>	Blue oak
Medium trees, 20-40 ft	<u>Aesculus californica</u>	Horse chestnut
Low to medium shrubs, under 10 ft	<u>Allenrolfea occidentalis</u>	Iodinebush
	<u>Artemisia californica</u>	Coastal sage
	<u>Baccharis consanguinea</u>	Chaparral broom
	<u>Eriodictyon californicum</u>	Yerba santa
Lesser vegetation	<u>Eremocarpus setigerus</u>	Turkey mullein
	<u>Hollisteria lanata</u>	Hollisteria
	<u>Loeflingia squarrosa</u>	California loeflingia
	<u>Pterostegia drymaroides</u>	Pterostegia
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>		
Tall trees, over 40 ft	<u>Populus fremontii</u> <u>Quercus lobata</u>	Fremont cottonwood Valley oak
Lesser vegetation	<u>Achyrachaena mollis</u>	Blow-wives
	<u>Anemopsis californica</u>	Yerba mansa
	<u>Anthochloa colusana</u>	Colusa grass
	<u>Blennosperma nanum</u>	Common blennosperma
	<u>Legenere limosa</u>	Legenere
	<u>Machaerocarpus californicus</u>	Fringed water-plantain
	<u>Stylomecon heterophylla</u>	Wind poppy

Table 2610-48.2 Ecological Characteristics of Selected Plant Species Common to the California Grassland

Species	Habitat	Form	Fruit	General wildlife use	Notes
Blow-wives <u>Achyrachaena mollis</u> Schauer	Moist, grassy fields with heavy soils	Stem, 4-16 in tall	Achene, Apr.-May		
Horse chestnut <u>Aesculus californica</u> (Spach) Nutt.	Dry Mills, alluvium	Small tree, to 39 ft	Large capsule	Fair-poor browse; seeds eaten by squirrels and chipmunks	Sprouts after fire; poisonous to livestock
Iodinebush <u>Allenrolfea occidentalis</u> (Wats.) Ktze.	Alkaline soils	Erect shrub, 1.6-6.6 ft tall	Seeds minute		
Yerba mansa <u>Anemopsis californica</u> Hook.	Low, usually alkaline ground	Stem, 6-20 in long	Capsule, Mar.-Aug.		
Colusa grass <u>Anthochloa colusana</u> (Davy) Scribn.	Bordering rain-pools on alkali lands	Annual, culms to 12 in tall	Caryopsis		

continued

Table 2610-48.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Coastal sage <u>Artemisia californica</u> Less.	Hills	Soft shrub, 5 ft	Small achene	Negligible browse	Non-sprouting
Chaparral broom <u>Baccharis consanguinea</u> DC.	Heavy soils, dry hills	Shrub, 13 ft	Winged achenes	Fair-poor browse for mule deer; seeds eaten by quail	Sprouts after fire or clearing
Common blennosperma <u>Blennosperma nanum</u> (Hook.) Blake	Wet places on hill slopes and cultivated fields and vernal pools	Herb, 3-8 in tall	Achene, Feb.-Apr.		
Turkey mullein <u>Eremocarpus setigerus</u> (Hook.) Benth.	Dry hills and plains, often in cultivated areas	Annual, stems 2-8 in tall	Capsule, June-Sept.	Seeds highly preferred by mourning dove, various species of quail, several song-birds, small mammals	
Yerba santa <u>Eriodictyon californicum</u> (H. & A.) Greene	Dry, stony soils	Shrub, to 6.5 ft	Small black seeds	Fair-poor browse for mule deer	Sprouts after fire
Hollisteria <u>Hollisteria lanata</u> Wats.	Open hills and plains	Prostrate annual, branches 2-8 in long	Achenes, Apr.-June		
Legenere <u>Legenere limosa</u> (Greene) McVaugh	Low, moist or wet ground, especially vernal pools	Stems weakly erect or somewhat decumbent	Capsule, May		
California loeflingia <u>Loeflingia squarrosa</u> Nutt.	Dry soils and sandy plains	Low annual, stems 2-4 in long	Capsule, Apr.-May		
Fringed water-plantain <u>Machaerocarpus californicus</u> (Torr.) Small	Small water or in mud	Stems erect to 1.3 ft tall	Achenes, .2 in long		
Fremont cottonwood <u>Populus fremontii</u> Wats.	Riparian	Tree, to 165 ft	Plumed achene	Good-fair browse for mule deer	Sprouts
Pterostegia <u>Pterostegia drymaroides</u> Fisch. & Mey.	Open or shaded slopes	Decumbent or prostrate stems, 4-20 in tall	Minute, Mar.-July		
Blue oak <u>Quercus douglasii</u> H. & A.	Dry hills	Tree, 65 ft	Acorn	Major mast producer; browsed by mule deer	Sprouts from stump
Valley oak <u>Quercus lobata</u> Nee	Valley bottom, alluvial soils	Tall, wide-spreading tree, 114 ft	Acorn	Acorns eaten by birds and mammals; fair-poor browse for mule deer	Largest California oak; individual trees
Wind poppy <u>Stylomecon heterophylla</u> (Benth.) G. Taylor	Shaded slopes	Annual, stems 1-5 in tall	Capsule, Apr.-May		

49 PROVINCE 3110 Great Plains Short-grass Prairie

SECTIONS

Section 3111

Grama—Needlegrass—Wheatgrass

This section has been divided into the following subsections: 1, Subalpine—Lodgepole—Douglas-fir Forest; 2, Foothill Grassland; 3, Missouri Breaks Scrub-pine; 4, Eastern Ponderosa Pine Forest; 5, Grama—Needlegrass—Wheatgrass; 6, Badlands; 7, Sagebrush—Saltbush; 8, Montana Sandy Land; and 9, Sagebrush—Wheatgrass.

Section 3112, Wheatgrass—Needlegrass

This section has been divided into the following subsections: 4, Eastern Ponderosa Pine Forest; 6, Badlands; 9, Sagebrush—Wheatgrass; and 10, Wheatgrass—Needlegrass.

Section 3113, Grama—Buffalo Grass

This section has been divided into the following subsections: 4, Eastern Ponderosa Pine Forest; 10, Wheatgrass—Needlegrass; 20, High Plains Short-grass; 21, Northeastern Colorado Sandhills; 22, Southeastern Colorado Great Sand Dunes; 23, Pinyon Pine—Juniper; 24, Shinnery Oak; 25, Mixed Prairie, Grama—Bluestem; 28, Sand Sagebrush—Bluestem; and 30, Mesquite—Buffalo Grass.

SUBSECTIONS

Plant information for the following subsections is included in this province description and elsewhere as indicated.

Subsection 1

Subalpine—Lodgepole—Douglas-fir Forest

Information concerning plants found in the Subalpine—Lodgepole—Douglas-fir Forest Subsection can be derived from nearby sections and provinces. Plants were not identified here due to the relatively small size of the subsection in this province.

Subsection 2, Foothill Grassland

Largely rolling to steep mid- and short-grass prairie with wide valleys and benches from edges of mountain timber to plains characterize the Foothill Grassland. Shrubs and trees descend into ravines, canyons, and valleys. About 20 percent is owned by the Federal Government; the remainder is in farms and ranches. One-half or more is in native range; about 20 percent (along northeastern side) is dry-farmed to wheat. One to 2 percent of total area (concentrated in valleys) is irrigated. Grain and forage for livestock are the main crops, along with potatoes, sugar beets, peas, and other crops. Some of the highest hills are in ponderosa pine forest.

Subsection 3, Missouri Breaks Scrub-pine

The Missouri Breaks Scrub-pine Subsection consists of wild, rugged topography on the Missouri River with medium-tall grasses and a mixture of shrubs and

evergreen trees. Cliffs, deep-cut canyons, and large rock outcrops are common. Usually very lightly grazed, much of the choice bottomland once used for native hay is under the highwater line of the Fort Peck Reservoir in Montana; livestock operations had to be abandoned in that zone. The subsection has some additional potentialities as a game range. The area already supports a deer and antelope population as well as predators. Since much of the subsection falls within the boundary of the Fort Peck Game Range in Montana, the Federal Government is taking appropriate steps to develop the area to its full capacity for wildlife.

Subsection 4, Eastern Ponderosa Pine Forest

The Eastern Ponderosa Pine Forest contains dense to open to scattered stands of pine and extensive "patches" of grass on rolling to rough broken hills rising from the plains. Slopes of the dissected hills are mostly hilly and steep, but are gentle on the narrow ridgetops and in the narrow valleys. Elevations vary from 2700 to over 7000 feet (in the Black Hills). Only 5 to 10 percent of the lower elevations are dry-farmed; 66 percent or more is privately owned.

Subsection 5, Grama—Needlegrass—Wheatgrass

The Grama—Needlegrass—Wheatgrass Subsection is open to medium-dense rolling and hummocked short- and mid-grass grassland. Sagebrush is found in the central grasslands of Montana. Elevation ranges from 2000 to 4000 feet in Montana, north of the Missouri River, and increases from east to west and with distance from the Missouri River. A glaciated plain is nearly level to gently rolling, but belts of steep slopes border some of the larger rivers. Extensive floodplains border the Missouri River, but are narrow and discontinuous along other streams. Elevation is 3000 to 6000 feet south of the Missouri River, rising gradually from east to west and from north to south. On a dissected plain, these slopes are mostly rolling to steep; wide belts of steeply sloping badlands border a few of the larger river valleys. Local relief is mainly in several to a few hundred feet. In some places, flat-topped, steep-sided buttes rise sharply above the general level of the plain. About 17 percent is owned by the Federal Government; the remainder is in farms and ranches. From 50 to 75 percent is in native grasses and shrubs grazed by cattle and sheep. North of the Missouri River, most of the western half is dryland farmed to spring wheat; less than 10 percent of the rougher part south of the river is farmed.

Subsection 6, Badlands

The Badlands are short to medium-tall open grassland with sparse overstory of shrubs and trees. Highly variable relief, ranging from sharply dissected shale plain and undulating to gently rolling narrow divides to steep valley wells, characterizes this subsection. Herbaceous vegetation is concentrated on most stable sites; slopes are maintained bare and sparsely vegetated by natural erosion. Most of the area is in native vegetation; about 20 percent is Federally owned.



Figure 49.1 Province 3110, Great Plains Short-grass Prairie; Sections 3111, Grama—Needlegrass—Wheatgrass; 3112, Wheatgrass—Needlegrass; and 3113, Grama—Buffalo Grass

Subsection 7, Sagebrush—Saltbush

Information concerning plants found in the Sagebrush—Saltbush Subsection may be derived from nearby sections and provinces. Plant communities are not identified here due to the relatively small size of the subsection.

Subsection 8, Montana Sandy Land

Information concerning plants found in the Montana Sandy Land Subsection may be derived from nearby sections and provinces. Plants are not identified here due to the relatively small size of the subsection.

Subsection 9, Sagebrush—Wheatgrass

Information concerning plants found in the Sagebrush—Wheatgrass Subsection may be derived from nearby sections and provinces. Plants are not identified here due to the relatively small size of the subsection.

Subsection 10, Wheatgrass—Needlegrass

The Wheatgrass—Needlegrass Subsection consists of a moderately dense to medium-tall grassland on rolling to rough topography. Elevation is 1500 to 3500 feet (up to 5000 feet near the Black Hills). Gently rolling plain north to strongly dissected areas of sharp local relief, steep slopes, or badland topography bordering major stream valleys in some places characterize the area. Maximum local relief seldom exceeds 300 feet. From 1 to 3 percent of the area is owned by the Federal Government. The rest is privately owned. From 33 percent to 50 percent is dryland farmed to wheat; 50 to 75 percent is in native range grazed by cattle and sheep.

Throughout the extent of the mixed-grass type are various woody vegetation types. Shrubs and trees commonly occur on steep slopes, in ravines and valleys, in folds in the upland prairie, and on floodplains along streams and rivers. The complex of trees and shrubs associated with upland drainageways is so characteristic and so common that it has come to be referred to as the “hardwood draw ecosystem” (Crowston et al. 1974).

Woodlands in North Dakota are considered to occupy less than a total of 507,000 acres with much of this area concentrated along streams and on some of the higher eminences (Warner and Chase 1956). No accurate estimate is available for the combined extent of natural woodlands and shrubby vegetation types in the mixed-grass prairie region; the total area probably does not exceed 710,000 acres. This woody vegetation is important, however, far beyond its actual extent because it provides travel routes, cover, and winter food for much of the big game population of the prairie region. Without this woody vegetation so widely interspersed through the grassland, the area could not support any sizeable big game population.

Subsection 20, High Plains Short-grass

The High Plains Short-grass Subsection is level to rolling short-grass prairie varying from pure grass sod in northern sections to grass sod with forbs and an overstory of prickly pear and yucca centrally, yucca and mesquite in the southern parts, and pinyon pine—juniper

centrally and in the west. Nearly all is privately owned and in farms and large ranches. From 33 to 75 percent is still in native range; 33 to 60 percent is dryland farmed; 7 to 20 percent is irrigated.

Subsection 21, Northeastern Colorado Sandhills

The Northeastern Colorado Sandhills contain medium-tall, open to medium-dense grassland with a variable overstory of dwarf shrubs. The topography of these hills ranges from level to sinks; to unstable hills of loose sands; to blowouts; and to stabilized hills. Some depressions contain willows and cottonwoods.

Most of the land is in farms and ranches. Until the recent popularity of pivot-type overhead sprinkler irrigation systems, most of the subsection was in native vegetation and grazed by livestock. The trend now is toward irrigation farming on a large scale.

Subsection 22

Southeastern Colorado Great Sand Dunes

The Southeastern Colorado Sand Dunes are enormous, rising more than 700 feet; higher parts are almost totally devoid of vegetation. Grasses and forbs grow in protected depressions; the lower parts of the dune area tend to have shrubby vegetation.

Subsection 23, Pinyon Pine—Juniper

The Pinyon Pine—Juniper Subsection consists of a distinctive aspect of pinyon pine and juniper trees with a grass understory mostly in the eastern Rocky Mountain foothills of New Mexico. It also occurs along the Canadian River system of northeastern New Mexico, southeastern Colorado, and the western tip of the Oklahoma Panhandle and is mostly in native range.

Subsection 24, Shinnery Oak

The Shinnery Oak Subsection is a mid-grass prairie with open to dense broadleaf deciduous shrubs and occasional needleleaf evergreen low trees or shrubs. Topography is rolling to steeply sloping breaks along the major rivers. Nearly all of the subsection is in native vegetation.

Subsection 25, Mixed Prairie; Grama—Bluestem

In a Mixed Prairie, dense communities of short, medium, and tall grasses and forbs, generally in two distinct layers, and shorter grasses are overtopped by open stands of taller grasses and forbs. Elevation within the subsection ranges between 1500 to 3000 feet and increases from east to west. Landscape takes form as dissected plains with broad undulating ridgetops and hilly to steeply sloping valleys. Short grasses generally occur on the drier hilltops and heavier soils of lower slopes, while mid- and tall-grasses occupy the calcareous outcropping and limy uplands. The greatest variety of forbs is associated with the shallow-soiled limy uplands.

Nearly all of the land is privately owned; 33 percent or more is still in native range. Winter wheat and grain sorghum are the most common crops in cultivated areas.

Subsection 28, Sand Sagebrush—Bluestem

The Sand Sagebrush—Bluestem Subsection consists of

medium-dense stands of mid- and tall- grasses with an overstory of forbs, and open to dense shrub stands, especially sand sagebrush. Approximately 2000 feet elevation, topography is gently rolling to undulating. Most of this subsection lies parallel to rivers and their tributaries. Most of the land is privately owned and was largely uncultivated until the advent of center-pivot-type sprinkler irrigation systems.

Subsection 30, Mesquite—Buffalo Grass

The Mesquite—Buffalo Grass Subsection contains short grasses with scattered low broadleaf deciduous trees and shrubs and low needlebay evergreen shrubs. Elevation within the subsection ranges from 2000 to 5000 feet, rising from east to west. General relief is rough to broken, with steeply sloping breaks along the river. For plant information see section 37.

Table 3110-49.1 [2] Selected Plant Species Common to the Foothill Grassland Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
Habitat conditions: Dry to moist uplands and lowlands				
Tall-growing trees, over 40 ft			<u>Pinus ponderosa</u> <u>Populus tremuloides</u>	#Ponderosa pine #Quaking aspen
Low-growing trees and shrubs, under 20 ft	<u>Artemisia frigida</u> <u>Rosa</u> spp.	*Pasture sage Wild rose	<u>Amelanchier alnifolia</u> <u>Artemisia frigida</u> <u>Crataegus douglasii</u> <u>Prunus virginiana</u> <u>Rosa</u> spp. <u>Shepherdia canadensis</u> <u>Symphoricarpos occidentalis</u>	#Serviceberry +Pasture sage #Douglas hawthorn #Western choke-cherry #Wild rose Buffaloberry Western snowberry
Grasses, under 3 ft	<u>Agropyron smithii</u> <u>Calamovilfa longifolia</u> <u>Muhlenbergia cuspidata</u>	Western wheatgrass Prairie sandreed Plains muhly	<u>Agropyron spicatum</u> <u>Bouteloua gracilis</u> <u>Festuca idahoensis</u> <u>Festuca scabrella</u> <u>Koeleria cristata</u> <u>Stipa comata</u>	+Bluebunch wheatgrass Blue grama +Idaho fescue Rough fescue +Prairie junegrass Needle-and-thread
Forbs, under 6 ft	<u>Grindelia squarrosa</u> <u>Gutierrezia sarothrae</u> <u>Helianthus</u> spp. <u>Liatris</u> spp. <u>Lygodesmia juncea</u> <u>Potentilla</u> spp. <u>Salsola iberica</u> <u>Sisymbrium altissimum</u> <u>Sphaeralcea coccinea</u>	Curlycup gumweed Broom snakeweed *Sunflower Gay-feather Rush skeletonplant Cinquefoil Russian thistle Tumblemustard Scarlet globe mallow	<u>Achillea millefolium</u> <u>Carex eleocharis</u> <u>Carex filifolia</u> <u>Eriogonum umbellatum</u> <u>Lupinus</u> spp. <u>Penstemon</u> spp. <u>Phlox hoodii</u> <u>Selaginella</u> spp. <u>Sphaeralcea coccinea</u>	Western yarrow Needleleaf sedge Threadleaf sedge +Sulfur buckwheat Lupine Penstemon Hood's phlox Club-moss +Scarlet globe mallow

^aPlants designated in the following manner are listed on Table 3110-46.2:

*Collectively, indicators of desirable early successional plant species composition for wildlife on abandoned cultivated sites and other sites where the native vegetation has been destroyed.

+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [3] Selected Plant Species Common to the Missouri Breaks Scrub-pine Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
<u>Habitat conditions: Dry to moist uplands and lowlands</u>				
Tall-growing trees, over 40 ft			<u>Pinus ponderosa</u>	Ponderosa pine
Medium trees, over 20 ft			<u>Juniperus</u> spp.	+Juniper
Shrubs, under 6 ft			<u>Artemisia</u> spp. <u>Chrysothamnus</u> spp. <u>Opuntia polycantha</u> <u>Yucca</u> spp.	Sagebrush Rabbit brush Plains prickly pear +Yucca
Grasses, under 3 ft	<u>Bouteloua gracilis</u>	Blue grama	<u>Agropyron smithii</u> <u>Agropyron spicatum</u> <u>Andropogon scoparius</u> <u>Bouteloua gracilis</u> <u>Muhlenbergia cuspidata</u> <u>Poa secunda</u>	Western wheatgrass Bluebunch wheatgrass +Little bluestem +Blue grama Plains muhly Sandberg bluegrass
Forbs, under 3 ft	<u>Gutierrezia sarothrae</u>	*Broom snakeweed	<u>Carex filifolia</u> <u>Eriogonum</u> spp. <u>Gutierrezia sarothrae</u> <u>Phlox</u> spp.	Threadleaf sedge +Wild buckwheat Broom snakeweed Phlox

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [4] Selected Plant Species Common to the Eastern Ponderosa Pine Forest Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
<u>Habitat conditions: Dry to moist uplands and lowlands</u>				
Tall-growing trees, over 40 ft			<u>Pinus ponderosa</u>	Ponderosa pine
Medium trees, under 40 ft			<u>Acer negundo</u> <u>Celtis occidentalis</u> <u>Juniperus communis</u> <u>Ostrya virginiana</u> <u>Quercus macrocarpa</u> <u>Ulmus americana</u>	Box-elder *Common hackberry Common juniper American hop-hornbeam #Bur oak American elm
Shrubs, under 6 ft	<u>Artemisia frigida</u> <u>Opuntia polycantha</u> <u>Rhus aromatica</u> <u>Symphoricarpos occidentalis</u>	Pasture sage Plains prickly pear Fragrant sumac *Western snowberry	<u>Arctostaphylos uva-ursi</u> <u>Chrysothamnus graveolens</u> <u>Opuntia polycantha</u> <u>Prunus virginiana</u> <u>Rhus aromatica</u> <u>Symphoricarpos albus</u> <u>Symphoricarpos occidentalis</u>	Bearberry Rabbit brush Plains prickly pear +Western choke-cherry +Fragrant sumac +Common snowberry +Western snowberry
Grasses, under 3 ft	<u>Agropyron smithii</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Bromus tectorum</u> <u>Buchloe dactyloides</u> <u>Muhlenbergia cuspidata</u> <u>Setaria viridis</u>	Western wheatgrass *Side-oats grama Blue grama Downy brome Buffalo grass Plains muhly *Green bristlegrass	<u>Agropyron smithii</u> <u>Agropyron spicatum</u> <u>Andropogon scoparius</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Bromus tectorum</u> <u>Buchloe dactyloides</u> <u>Festuca idahoensis</u> <u>Koeleria secunda</u> <u>Muhlenbergia cuspidata</u> <u>Oryzopsis hymenoides</u> <u>Poa</u> spp. <u>Setaria viridis</u> <u>Stipa comata</u>	Western wheatgrass Bluebunch wheatgrass +Little bluestem +Side-oats grama +Blue grama Downy brome Buffalo grass Idaho fescue Prairie junegrass Plains muhly Indian rice-grass Bluegrass Green bristlegrass Needle-and-thread

continued

Table 3110-49.1 [4] (Concluded)

Growth form	Early successional plants ^a		Late successional plants ^a	
Forbs, under 6 ft	<u>Eriogonum</u> spp. <u>Grindelia squarrosa</u> <u>Gutierrezia sarothrae</u> <u>Helianthus</u> spp. <u>Lupinus</u> spp. <u>Potentilla</u> spp. <u>Salsola iberica</u> <u>Sisymbrium altissimum</u>	*Wild buckwheat Curlycup gumweed Broom snakeweed *Sunflower Lupine Cinquefoil Russian thistle Tumblemustard	<u>Carex eleocharis</u> <u>Carex filifolia</u> <u>Eriogonum</u> spp. <u>Grindelia squarrosa</u> <u>Gutierrezia sarothrae</u> <u>Helianthus</u> spp. <u>Lupinus</u> spp. <u>Phlox</u> spp. <u>Potentilla</u> spp. <u>Salsola iberica</u> <u>Sisymbrium altissimum</u>	Needleleaf sedge Threadleaf sedge +Wild buckwheat Curlycup gumweed Broom snakeweed Sunflower Lupine Phlox Cinquefoil Russian thistle Tumblemustard

^aPlants designated in the following manner are listed on Table 3110-46.2:

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [5] Selected Plant Species Common to the Grama—Needlegrass—Wheatgrass Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
Habitat conditions: Dry to moist uplands and lowlands				
Shrubs, under 6 ft	<u>Artemisia frigida</u> <u>Rosa</u> spp.	Pasture sage *Wild rose	<u>Artemisia cana</u> <u>Artemisia tridentata</u> <u>Rosa fendleri</u> <u>Symphoricarpos occidentalis</u>	Silver sagebrush Big sagebrush Fendler rose +Western snowberry
Grasses, under 3 ft	<u>Agropyron smithii</u> <u>Muhlenbergia cuspidata</u> <u>Setaria viridis</u>	Western wheatgrass Plains muhly *Green bristlegrass	<u>Agropyron smithii</u> <u>Agropyron spicatum</u> <u>Bouteloua gracilis</u> <u>Stipa comata</u>	Western wheatgrass Bluebunch wheatgrass +Blue grama +Needle-and-thread
Forbs, under 6 ft	<u>Grindelia squarrosa</u> <u>Gutierrezia sarothrae</u> <u>Helianthus</u> spp. <u>Liatris</u> spp. <u>Potentilla</u> spp. <u>Salsola iberica</u> <u>Sisymbrium altissimum</u> <u>Sphaeralcea coccinea</u>	Curlycup gumweed Broom snakeweed *Sunflower *Gay-feather Cinquefoil Russian thistle Tumblemustard Scarlet globe mallow	<u>Achillea millefolium</u> <u>Agoseris</u> spp. <u>Allium textile</u> <u>Anemone patens</u> <u>Artemisia frigida</u> <u>Artemisia ludoviciana</u> <u>Aster ericoides</u> <u>Carex filifolia</u> <u>Chrysopsis villosa</u> <u>Gutierrezia sarothrae</u> <u>Helianthus petiolaris</u> <u>Liatris punctata</u> <u>Opuntia polycantha</u> <u>Phlox hoodii</u> <u>Potentilla</u> spp. <u>Psoralea</u> spp. <u>Psoralea argophylla</u> <u>Psoralea tenuiflora</u> <u>Selaginella densa</u> <u>Solidago dumetorum</u> <u>Solidago missouriensis</u> <u>Sphaeralcea coccinea</u>	Western yarrow Mountain dandelion Textile onion Wind flower Pasture sage Sagewort Heath aster Threadleaf sedge Hairy goldaster Broom snakeweed +Prairie sunflower +Dotted gay-feather Plains prickly pear Hood's phlox Cinquefoil Lanceleaf scurf pea +Silverleaf scurf pea +Slimflower scurf pea Club-moss Goldenrod Missouri goldenrod Scarlet globe mallow

^aPlants designated in the following manner are listed on Table 3110-46.2:

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [6] Selected Plant Species Common to the Badlands Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
<u>Habitat conditions: Dry to moist uplands and lowlands</u>				
Tall-growing trees, over 40 ft			<u>Juniperus scopulorum</u> <u>Juniperus virginiana</u> <u>Pinus ponderosa</u>	Western juniper Redcedar #Ponderosa pine
Shrubs, under 3 ft			<u>Artemisia frigida</u> <u>Atriplex</u> spp.	+Pasture sage Saltbush
Grasses, under 2 ft	<u>Aristida longiseta</u> <u>Bromus japonicus</u> <u>Festuca octoflora</u> <u>Koeleria cristata</u> <u>Muhlenbergia cuspidata</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u>	Red three-awn *Japanese brome Six-weeks fescue Prairie junegrass Plains muhly *Bottlebrush squirreltail *Sand dropseed	<u>Agropyron smithii</u> <u>Andropogon scoparius</u> <u>Aristida longiseta</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Buchloe dactyloides</u> <u>Calamovilfa gigantea</u> <u>Carex</u> spp. <u>Carex eleocharis</u> <u>Carex filifolia</u> <u>Stipa comata</u> <u>Stipa viridula</u>	+Western wheatgrass #Little bluestem +Red three-awn #Side-oats grama +Blue grama Buffalo grass #Big sandreed Sedge +Needleleaf sedge Threadleaf sedge +Needle-and-thread Green needlegrass
Forbs, under 3 ft	<u>Convolvulus arvensis</u> <u>Helianthus</u> spp. <u>Salsola iberica</u>	Field bindweed *Sunflower *Russian thistle	<u>Artemisia dracunculus</u> <u>Artemisia ludoviciana</u> <u>Aster ericoides</u> <u>Chrysanthemum leucanthemum</u> <u>Echinacea angustifolia</u> <u>Gutierrezia sarothrae</u> <u>Haplopappus spinulosus</u> <u>Helianthus rigidus</u> <u>Liatris punctata</u> <u>Linaria canadensis</u> <u>Opuntia polycantha</u> <u>Penstemon grandiflorus</u> <u>Petalostemum purpureum</u> <u>Solidago</u> spp. <u>Sphaeralcea coccinea</u> <u>Tragopogon dubius</u>	Falsetarragan Louisiana sagewort +Heath aster Ox-eye daisy Black Samson Broom snakeweed Ironplant Stiff sunflower +Dotted gay-feather Oldfield toadflax Plains prickly pear Shell-leaf penstemon +Purple prairie clover Goldenrod Scarlet globe mallow Yellow salsify

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [10] Selected Plant Species Common to the Wheatgrass—Needlegrass Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
<u>Habitat conditions: Dry to moist uplands and lowlands</u>				
Shrubs, under 6 ft	<u>Artemisia</u> spp. <u>Chrysothamnus nauseosus</u> <u>Gutierrezia sarothrae</u>	Sagebrush *Rabbit brush *Broom snakeweed	<u>Artemisia frigida</u> <u>Gutierrezia sarothrae</u> <u>Juniperus horizontalis</u> <u>Opuntia polyacantha</u> <u>Rhus aromatica</u> <u>Rosa</u> spp.	Pasture sage +Broom snakeweed Creeping juniper +Plains prickly pear +Fragrant sumac Wild rose
Grasses, under 3 ft	<u>Bromus tectorum</u> <u>Festuca octoflora</u>	*Downy brome *Six-weeks fescue	<u>Agropyron smithii</u> <u>Agropyron trachycaulum</u> <u>Bouteloua gracilis</u> <u>Bromus tectorum</u> <u>Koeleria cristata</u> <u>Oryzopsis hymenoides</u> <u>Poa pratensis</u> <u>Poa secunda</u> <u>Stipa comata</u> <u>Stipa viridula</u>	+Western wheatgrass Slender wheatgrass Blue grama +Downy brome Prairie junegrass Indian rice-grass Kentucky bluegrass Sandburg bluegrass +Needle-and-thread +Green needlegrass
Forbs, under 3 ft	<u>Achillea millefolium</u> <u>Amaranthus blitoides</u> <u>Conyza canadensis</u> <u>Helianthus</u> spp. <u>Lappula</u> spp. <u>Lupinus</u> spp. <u>Plantago purshii</u> <u>Polygonum aviculare</u> <u>Salsola iberica</u> <u>Sisymbrium altissimum</u> <u>Verbena bracteata</u>	Yarrow Prostrate pigweed Horsetweed *Sunflower Flatspine stickweed Lupine Prairie plantain *Knotweed Russian thistle Tumblemustard *Large-bracted verbena	<u>Artemisia dracunculoides</u> <u>Artemisia gnaphaloides</u> <u>Aster ericoides</u> <u>Carex filifolia</u> <u>Carex heliophila</u> <u>Chrysopsis villosa</u> <u>Echinacea angustifolia</u> <u>Liatris punctata</u> <u>Penstemon</u> spp. <u>Polygala alba</u> <u>Psoralea argophylla</u> <u>Ratibida columnifera</u> <u>Solidago</u> spp.	Falsetarragan +Prairie sage Heath aster +Threadleaf sedge +Upland sedge Hairy goldaster +Black Samson +Dotted gay-feather +Penstemon Milkwort Silverleaf scurf pea +Prairie coneflower Goldenrod

^aPlants designated in the following manner are listed on Table 3110-46.2:

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#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [20] Selected Plant Species Common to the High Plains Short-grass Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
	Habitat conditions: Dry uplands			
Herbaceous forbs and grasses, under 3 ft	<u>Amaranthus retroflexus</u>	Rough pigweed	<u>Agropyron smithii</u>	+Western wheatgrass
	<u>Aristida longiseta</u>	Red three-awn	<u>Ambrosia psilostachya</u>	+Ragweed
	<u>Aristida purpurea</u>	Purple three-awn	<u>Artemisia dracunculoides</u>	Falsetarragan
	<u>Bromus japonicus</u>	Japanese brome	<u>Aristida longiseta</u>	Red three-awn
	<u>Chenopodium album</u>	Lamb's-quarters	<u>Aristida purpurea</u>	Purple three-awn
	<u>Chloris verticillata</u>	Wind-mill grass	<u>Aster ericoides</u>	Heath aster
	<u>Coryza canadensis</u>	Horseweed	<u>Bouteloua gracilis</u>	+Blue grama
	<u>Echinochloa crusgalli</u>	Barnyard grass	<u>Bromus japonicus</u>	+Japanese brome
	<u>Grindelia squarrosa</u>	Curlycup gumweed	<u>Buchloe dactyloides</u>	Buffalo grass
	<u>Helianthus annuus</u>	Sunflower	<u>Cirsium undulatum</u>	Wavyleaf thistle
	<u>Kochia scoparia</u>	*Kochia	<u>Gutierrezia sarothrae</u>	Broom snakeweed
	<u>Panicum capillare</u>	Common witchgrass	<u>Liatis punctata</u>	Dotted gay-feather
	<u>Salsola collina</u>	*Collin's thistle	<u>Opuntia humifusa</u>	Common prickly pear
	<u>Schedonardus paniculatus</u>	Tumblegrass	<u>Opuntia polycantha</u>	Plains prickly pear
	<u>Setaria lutescens</u>	Yellow bristlegrass	<u>Psoralea tenuiflora</u>	Slimflower scurf pea
	<u>Sporobolus cryptandrus</u>	Sand dropseed	<u>Ratibida columnifera</u>	Prairie coneflower
			<u>Sphaeralcea coccinea</u>	Scarlet globe mallow
	Habitat conditions: Moist uplands and lowlands			
Herbaceous forbs and grasses, under 4 ft	<u>Amaranthus retroflexus</u>	Rough pigweed	<u>Agropyron smithii</u>	#Western wheatgrass
	<u>Aristida longiseta</u>	Red three-awn	<u>Ambrosia psilostachya</u>	@Ragweed
	<u>Aristida purpurea</u>	Purple three-awn	<u>Amorpha canescens</u>	Leadplant
	<u>Bromus japonicus</u>	Japanese brome	<u>Andropogon gerardi</u>	Big bluestem
	<u>Chenopodium album</u>	Lamb's-quarters	<u>Andropogon scoparius</u>	#Little bluestem
	<u>Chloris verticillata</u>	Wind-mill grass	<u>Aster ericoides</u>	Heath aster
	<u>Coryza canadensis</u>	Horseweed	<u>Bouteloua curtipendula</u>	#Side-oats grama
	<u>Echinochloa crusgalli</u>	Barnyard grass	<u>Bouteloua gracilis</u>	Blue grama
	<u>Grindelia squarrosa</u>	Curlycup gumweed	<u>Bouteloua hirsuta</u>	Hairy grama
	<u>Helianthus annuus</u>	Sunflower	<u>Bromus japonicus</u>	Japanese brome
	<u>Kochia scoparia</u>	*Kochia	<u>Buchloe dactyloides</u>	Buffalo grass
	<u>Panicum capillare</u>	Common witchgrass	<u>Echinacea angustifolia</u>	Black Samson
	<u>Salsola collina</u>	*Collin's thistle	<u>Gutierrezia sarothrae</u>	Broom snakeweed
	<u>Schedonardus paniculatus</u>	Tumblegrass	<u>Oenothera serrulata</u>	Serrateleaf evening-primrose
	<u>Setaria lutescens</u>	Yellow bristlegrass	<u>Panicum virgatum</u>	Switchgrass
	<u>Sporobolus cryptandrus</u>	Sand dropseed	<u>Psoralea tenuiflora</u>	Slimflower scurf pea
			<u>Verbena stricta</u>	Woolly verbena

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

@Collectively, indicators of desirable late successional plant species composition for wildlife on side hill sites.

Table 3110-49.1 [21] Selected Plant Species Common to the Northeastern Colorado Sandhills Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
Habitat conditions: Dry to moist uplands and lowlands				
Shrubs, under 4 ft			<u>Yucca glauca</u>	Small soapweed
Grasses, under 6 ft	<u>Muhlenbergia pungens</u> <u>Oryzopsis hymenoides</u> <u>Redfieldia flexuosa</u>	*Sandhill muhly *Indian rice-grass Blowout-grass	<u>Agropyron dasystachyum</u> <u>Agropyron repens</u> <u>Agropyron smithii</u> <u>Agrostis alba</u> <u>Agrostis hyemalis</u> <u>Andropogon hallii</u> <u>Andropogon scoparius</u> <u>Aristida longiseta</u> <u>Bouteloua gracilis</u> <u>Calamovilfa longifolia</u> <u>Elymus canadensis</u> <u>Koeleria cristata</u> <u>Panicum scribnerianum</u> <u>Panicum virgatum</u> <u>Poa interior</u> <u>Poa pratensis</u> <u>Sporobolus cryptandrus</u>	Thickspike wheatgrass Quackgrass Western wheatgrass Redtop Winter bentgrass #Sand bluestem +Little bluestem Red three-awn Blue grama #Prairie sandreed +Canada wild rye Prairie junegrass Scribner's panicum +, #Switchgrass Bluegrass Kentucky bluegrass Sand dropseed
Grasslike plants, under 2 ft			<u>Carex eleocharis</u> <u>Carex heliophila</u> <u>Cyperus schweinitzii</u>	Needleleaf sedge Upland sedge Schweinitz flatsedge
Forbs, under 4 ft	<u>Anogra cinerea</u> <u>Cristatella jamesii</u> <u>Euphorbia missurica</u> <u>Euphorbia plattense</u> <u>Heliotropium convolvulaceum</u> <u>Phaca longifolia</u> <u>Polanisia trachysperma</u>	Anogra Cristatella Missouri spurge Spurge Bindweed heliotrope Phaca Roughseed clammyweed	<u>Argemone intermedia</u> <u>Aster fluviatilis</u> <u>Aster multiflorus</u> <u>Aster ramosa</u> <u>Chenopodium oblongifolium</u> <u>Cirsium plattense</u> <u>Cleome serrulata</u> <u>Cryptantha jamesii</u> <u>Delphinium virescens</u> <u>Glycyrrhiza lepidota</u> <u>Helianthus petiolaris</u> <u>Mentzelia nuda</u> <u>Petalostemum villosum</u> <u>Solidago canadensis</u> <u>Tradescantia occidentalis</u>	Prickle poppy Many-flowered aster Many-flowered aster Aster Goosefoot Thistle Rocky Mountain beeplant James cryptantha #Plains larkspur American licorice +Prairie sunflower Bractless mentzelia +Silky prairie clover Canada goldenrod Prairie spiderwort

^aPlants designated in the following manner are listed on Table 3110-46.2:

*Collectively, indicators of desirable early successional plant species composition for wildlife on abandoned cultivated sites and other sites where the native vegetation has been destroyed.

+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [22] Selected Plant Species Common to the Southeastern Colorado Great Sand Dunes Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
<u>Habitat conditions: Dry to moist uplands and lowlands</u>				
Shrubs, under 4 ft			<u>Chrysothamnus filifolius</u> <u>Rhus trilobata</u> <u>Ribes inebrians</u> <u>Yucca glauca</u>	Rabbit brush +Squawbush +Gooseberry Small soapweed
Grasses, under 3 ft	<u>Euphorbia</u> spp. <u>Oryzopsis hymenoides</u> <u>Phaca longifolia</u> <u>Psoralea lanceolata</u> <u>Redfieldia flexuosa</u>	*Spurge *Indian rice-grass Phaca *Lemon scurf pea Blowout-grass	<u>Agropyron smithii</u> <u>Hilaria jamesii</u> <u>Koeleria cristata</u> <u>Muhlenbergia pungens</u> <u>Oryzopsis hymenoides</u> <u>Panicum virgatum</u> <u>Redfieldia flexuosa</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u> <u>Stipa comata</u>	Western wheatgrass Galleta hiliaria +Prairie junegrass Sandhill muhly +Indian rice-grass +Switchgrass Blowout-grass Bottlebrush squirreltail Sand dropseed Needle-and-thread
Grasslike plants, under 2 ft			<u>Carex eleocharis</u> <u>Juncus ater</u>	Needleleaf sedge Rush
Forbs, under 4 ft			<u>Abronia micrantha</u> <u>Allionia linearis</u> <u>Aster tanacetifolius</u> <u>Cleome serrulata</u> <u>Cryptantha jamesii</u> <u>Cyclocloma atriplicifolium</u> <u>Euphorbia</u> spp. <u>Franseria acanthicarpa</u> <u>Gilia longiflora</u> <u>Helianthus petiolaris</u> <u>Lepidium alyssoides</u> <u>Lesquerella</u> spp. <u>Lygodesmia</u> spp. <u>Penstemon</u> spp. <u>Phaca longifolia</u> <u>Psoralea lanceolata</u> <u>Senecio spartiodes</u>	Abronia Narrowleaf four-o'clock Tansyleaf aster Rocky Mountain beeplant James cryptantha Tumble ringwing Spurge Variable bur sage Longflower gilia +Prairie sunflower Pepperweed +Bladderpod Skeletonplant +Penstemon Phaca +Lemon scurf pea Groundsel

^aPlants designated in the following manner are listed on Table 3110-46.2:

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

Table 3110-49.1 [23] Selected Plant Species Common to the Pinyon Pine—Juniper Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
Habitat conditions: Dry to moist uplands and lowlands				
Tall-growing trees, over 40 ft			<u>Juniperus monosperma</u> <u>Juniperus utahensis</u> <u>Pinus cembroides</u> <u>Quercus gambelii</u>	One-seeded juniper Utah juniper Pinyon pine #Gambel oak
Shrubs, under 10 ft			<u>Amelanchier alnifolia</u> <u>Artemisia frigida</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Atriplex canescens</u> <u>Cercocarpus ledifolius</u> <u>Cercocarpus montanus</u> <u>Chrysothamnus</u> spp. <u>Eurotia lanata</u> <u>Holodiscus dumosus</u> <u>Prunus virginiana</u> <u>Purshia tridentata</u> <u>Rhus trilobata</u> <u>Ribes inebrians</u> <u>Symphoricarpos oreophilus</u> <u>Yucca glauca</u>	+Serviceberry Pasture sage Black sagebrush Big sagebrush Wingscale Curleaf mountain-mahogany mahogany Mountain-mahogany Rabbit brush Winter-fat Ocean spray +Western choke-cherry Bitterbrush Squawbush +Gooseberry Snowberry Small soapweed
Grasses, under 3 ft	<u>Buchloe dactyloides</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u>	*Buffalo grass *Bottlebrush squirreltail Sand dropseed	<u>Agropyron smithii</u> <u>Aristida fendleriana</u> <u>Aristida longiseta</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Buchloe dactyloides</u> <u>Festuca arizonica</u> <u>Hilaria jamesii</u> <u>Koeleria cristata</u> <u>Oryzopsis hymenoides</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u> <u>Stipa lettermani</u> <u>Stipa robusta</u>	Western wheatgrass Fendler three-awn Red three-awn +Side-oats grama +Blue grama Buffalo grass Arizona fescue Galleta hilaria +Prairie junegrass Indian rice-grass Bottlebrush squirreltail Sand dropseed Letterman needlegrass Needlegrass
Forbs, under 3 ft	<u>Chenopodium album</u> <u>Grindelia squarrosa</u> <u>Helianthus petiolaris</u> <u>Salsola iberica</u> <u>Sphaeralcea coccinea</u>	Lamb's-quarters Curlycup gumweed *Prairie sunflower Russian thistle *Scarlet globe mallow	<u>Astragalus</u> spp. <u>Carex filifolia</u> <u>Chrysopsis villosa</u> <u>Eriogonum</u> spp. <u>Gutierrezia sarothrae</u> <u>Haplopappus spinulosus</u> <u>Helianthus petiolaris</u> <u>Hymenoxys richardsoni</u> <u>Opuntia</u> spp. <u>Penstemon</u> spp. <u>Salsola iberica</u> <u>Sphaeralcea coccinea</u> <u>Sphaeralcea dissecta</u> <u>Viguiera multiflora</u>	+Milk-vetch Threadleaf sedge Rabbit brush Wild buckwheat +Broom snakeweed Ironplant Prairie sunflower Pinque hymenoxys Prickly pear +Penstemon Russian thistle Scarlet globe mallow Globe mallow Showy goldeneye

^aPlants designated in the following manner are listed on Table 3110-46.2:

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [24] Selected Plant Species Common to the Shinnery Oak Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
	<u>Habitat conditions: Dry to moist uplands and lowlands</u>			
Medium trees, under 30 ft			<u>Celtis reticulata</u> <u>Quercus stellata</u> var. <u>palmeri</u> <u>Quercus stellata</u> var. <u>rufescens</u> <u>Quercus vaseyana</u>	#Netleaf hackberry Palmer post oak Post oak variety Vasey oak
Low-growing trees and shrubs, under 15 ft			<u>Artemisia filifolia</u> <u>Prunus angustifolia</u> <u>Quercus havardii</u> <u>Quercus mohriana</u> <u>Rhus aromatica</u> <u>Yucca glauca</u>	Sand sagebrush +Chickasaw plum Havard oak Shinnery oak +Fragrant sumac Small soapweed
Grasses, under 4 ft	<u>Cenchrus pauciflorus</u> <u>Schedonnardus paniculatus</u> <u>Sporobolus cryptandrus</u>	*Sandbur Tumblegrass Sand dropseed	<u>Andropogon hallii</u> <u>Andropogon scoparius</u> <u>Bouteloua gracilis</u> <u>Cenchrus</u> spp. <u>Eriogonum annuum</u> <u>Sorghastrum nutans</u> <u>Sporobolus cryptandrus</u>	+Sand bluestem +Little bluestem Blue grama Sandbur Annual eriogonum #Indian-grass Sand dropseed
Forbs, under 6 ft	<u>Amaranthus retroflexus</u> <u>Ambrosia psilostachya</u> <u>Croton glandulosa</u> <u>Croton texensis</u> <u>Eriogonum annuum</u> <u>Euphorbia marginata</u> <u>Gutierrezia sarothrae</u> <u>Helianthus annuus</u> <u>Mentzelia stricta</u> <u>Strophostyles pauciflorus</u>	Rough pigweed *Ragweed Tropic croton Texas croton *Annual eriogonum Snow-on-the-mountain Broom snakeweed Sunflower Stevens sandlily Small wild bean	<u>Ambrosia psilostachya</u> <u>Commelina erecta</u> <u>Gutierrezia sarothrae</u>	+Ragweed +Erect dayflower +Broom snakeweed

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#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [25] Selected Plant Species Common to the Mixed Prairie; Grama—Bluestem Subsection

Growth form	Early successional plants ^a	Late successional plants ^a		
Habitat conditions: Dry uplands				
Grasses, under 3 ft	<u>Aristida longiseta</u> <u>Aristida purpurea</u> <u>Bromus japonicus</u> <u>Chloris verticillata</u> <u>Echinochloa crusgalli</u> <u>Panicum capillare</u> <u>Schedonnardus paniculatus</u> <u>Setaria lutescens</u> <u>Sporobolus cryptandrus</u>	Red three-awn Purple three-awn Japanese brome Wind-mill grass *Barnyard grass Common witchgrass Tumblegrass *Yellow bristlegrass Sand dropseed	<u>Agropyron smithii</u> <u>Andropogon gerardi</u> <u>Aristida longiseta</u> <u>Aristida purpurea</u> <u>Bouteloua gracilis</u> <u>Bromus japonicus</u> <u>Buchloe dactyloides</u>	+Western wheatgrass Big bluestem Red three-awn Purple three-awn +Blue grama +Japanese brome Buffalo grass
Forbs, under 4 ft	<u>Amaranthus retroflexus</u> <u>Chenopodium album</u> <u>Coryza canadensis</u> <u>Grindelia squarrosa</u> <u>Helianthus annuus</u> <u>Kochia scoparia</u> <u>Salsola collina</u>	Rough pigweed Lamb's-quarters *Horseweed Curlycup gumweed *Sunflower *Kochia Collin's thistle	<u>Ambrosia psilostachya</u> <u>Aster ericoides</u> <u>Cirsium undulatum</u> <u>Gutierrezia sarothrae</u> <u>Liatris punctata</u> <u>Psoralea tenuiflora</u> <u>Sphaeralcea coccinea</u>	+Ragweed Heath aster Wavyleaf thistle Broom snakeweed Dotted gay-feather Slimflower scurf pea Scarlet globe mallow
Habitat conditions: Moist uplands and lowlands				
Grasses, under 4 ft	<u>Aristida longiseta</u> <u>Aristida purpurea</u> <u>Bromus japonicus</u> <u>Chloris verticillata</u> <u>Echinochloa crusgalli</u> <u>Panicum capillare</u> <u>Schedonnardus paniculatus</u> <u>Setaria lutescens</u>	Red three-awn Purple three-awn Japanese brome Wind-mill grass Barnyard grass Common witchgrass Tumblegrass Yellow bristlegrass	<u>Agropyron smithii</u> <u>Andropogon gerardi</u> <u>Andropogon scoparius</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Bouteloua hirsuta</u> <u>Bromus japonicus</u> <u>Buchloe dactyloides</u> <u>Panicum virgatum</u>	#Western wheatgrass #Big bluestem #Little bluestem #Side-oats grama Blue grama Hairy grama #Japanese brome Buffalo grass Switchgrass
Forbs, under 6 ft	<u>Amaranthus retroflexus</u> <u>Chenopodium album</u> <u>Coryza canadensis</u> <u>Grindelia squarrosa</u> <u>Helianthus annuus</u> <u>Kochia scoparia</u> <u>Salsola collina</u>	Rough pigweed Lamb's-quarters *Horseweed Curlycup gumweed *Sunflower *Kochia Collin's thistle	<u>Ambrosia psilostachya</u> <u>Amorpha canescens</u> <u>Aster ericoides</u> <u>Echinacea angustifolia</u> <u>Gutierrezia sarothrae</u> <u>Oenothera serrulata</u> <u>Psoralea tenuiflora</u> <u>Solidago missouriensis</u> <u>Solidago mollis</u> <u>Solidago rigida</u> <u>Sphaeralcea coccinea</u> <u>Verbena stricta</u> <u>Vernonia baldwini</u> var. <u>interior</u>	#Ragweed Leadplant Heath aster Black Samson Broom snakeweed Serrateleaf evening-primrose Slimflower scurf pea Missouri goldenrod Ashy goldenrod Stiff goldenrod Scarlet globe mallow Woolly verbena Inland ironweed

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#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

Table 3110-49.1 [28] Selected Plant Species Common to the Sand Sagebrush—Bluestem Subsection

Growth form	Early successional plants ^a		Late successional plants ^a	
Habitat conditions: Dry uplands				
Shrubs, under 5 ft			<u>Artemisia caudata</u> <u>Artemisia filifolia</u> <u>Prunus angustifolia</u> <u>Rhus trilobata</u> <u>Yucca glauca</u>	Sagebrush +Sand sagebrush Chickasaw plum Fragrant sumac Small soapweed
Grasses, under 5 ft	<u>Bouteloua gracilis</u> <u>Cenchrus pauciflorus</u> <u>Digitaria filiformis</u> <u>Digitaria sanguinalis</u> <u>Echinochloa crusgalli</u> <u>Eragrostis cilianensis</u> <u>Eragrostis curtipedicellata</u> <u>Eragrostis hirsuta</u> <u>Eragrostis oxylepis</u> <u>Eragrostis secundiflora</u> <u>Eragrostis sessilispica</u> <u>Paspalum ciliatifolium</u> <u>Paspalum stramineum</u> <u>Sporobolus cryptandrus</u>	Blue grama *Sandbur Slender fingergrass *Crabgrass Barnyard grass Stinkgrass *Gummy lovegrass Lovegrass Red lovegrass Lovegrass Tumble lovegrass Fringeleaf paspalum *Sand paspalum Sand dropseed	<u>Andropogon gerardi</u> <u>Andropogon hallii</u> <u>Andropogon scoparius</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Buchloe dactyloides</u> <u>Calamovilfa longifolia</u> <u>Eragrostis trichodes</u> <u>Leptoloma cognatum</u> <u>Panicum virgatum</u> <u>Paspalum stramineum</u> <u>Poa arachnifera</u> <u>Sorghastrum nutans</u> <u>Sporobolus cryptandrus</u>	Big bluestem Sand bluestem +Little bluestem +Side-oats grama +Blue grama Buffalo grass Prairie sandreed Sand lovegrass Fall witchgrass Switchgrass Sand paspalum Texas bluegrass Indian-grass Sand dropseed
Forbs, under 3 ft	<u>Artemisia filifolia</u> <u>Croton glandulosa</u> <u>Croton texensis</u> <u>Eriogonum annuum</u> <u>Helianthus petiolaris</u> <u>Prunus angustifolia</u>	Sand sagebrush Tropic croton Texas croton Annual eriogonum Plains sunflower Chickasaw plum	<u>Allium canadense</u> <u>Baptisia australis</u> <u>Baptisia leucantha</u> <u>Chrysopsis stenophylla</u> <u>Carex heliophila</u> <u>Echinacea paradoxa</u> <u>Erigeron bellidiastrium</u> <u>Gilia longiflora</u> <u>Gutierrezia sarothrae</u> <u>Liatriis punctata</u> <u>Oenothera linifolia</u> <u>Oenothera missouriensis</u> <u>Opuntia polycantha</u> <u>Petalostemum villosum</u> <u>Psoralea tenuiflora</u> <u>Sisyrinchium albidus</u>	Wild onion Wild indigo Atlantic wild indigo Goldaster Sedge Pale echinacea Western fleabane Whiteflower gilia Broom snakeweed Dotted gay-feather Narrowleaf evening-primrose Evening-primrose Plains prickly pear Silky prairie clover Slimflower scurf pea White blue-eyed grass
Habitat conditions: Moist to wet lowlands				
Shrubs, under 4 ft	<u>Artemisia filifolia</u>	Sand sagebrush	<u>Artemisia filifolia</u>	@Sand sagebrush
Grasses, under 8 ft	<u>Bouteloua gracilis</u> <u>Cenchrus pauciflorus</u> <u>Digitaria filiformis</u> <u>Digitaria sanguinalis</u> <u>Echinochloa crusgalli</u> <u>Eragrostis cilianensis</u> <u>Eragrostis curtipedicellata</u> <u>Eragrostis hirsuta</u> <u>Eragrostis oxylepis</u> <u>Eragrostis secundiflora</u> <u>Eragrostis sessilispica</u> <u>Helianthus petiolaris</u> <u>Paspalum ciliatifolium</u> <u>Paspalum stramineum</u> <u>Sporobolus cryptandrus</u>	Blue grama *Sandbur Slender fingergrass *Crabgrass Barnyard grass Stinkgrass Gummy lovegrass Lovegrass Red lovegrass Lovegrass Tumble lovegrass Plains sunflower Fringeleaf paspalum *Sand paspalum Sand dropseed	<u>Panicum virgatum</u> <u>Spartina michauxiana</u> <u>Tripsacum dactyloides</u>	#Switchgrass Michaux cordgrass #Eastern grama grass
Forbs, under 5 ft	<u>Croton glandulosus</u> <u>Croton texensis</u> <u>Eriogonum annuum</u>	Tropic croton *Texas croton Annual eriogonum	<u>Cicuta maculata</u> <u>Coreopsis lanceolata</u> <u>Oenothera biennis</u> <u>Petalostemum multiflorum</u> <u>Potentilla canadensis</u> <u>Solidago rigida</u> <u>Vernonia crinita</u>	Water-hemlock #Narrowleaf coreopsis Common evening-primrose Round-headed prairie clover Canada cinquefoil Stiff goldenrod Bur ironweed

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+Collectively, indicators of desirable late successional plant species composition for wildlife on dry uplands.

#Collectively, indicators of desirable late successional plant species composition for wildlife on moist lowlands.

@Collectively, indicators of desirable late successional plant species composition for wildlife on side hill sites.

Table 3110-49.2 Ecological Characteristics of Selected Plant Species Common to the Great Plains Short-grass Prairie

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western wheatgrass <u>Agropyron smithii</u> Rydb. 3111, 3112, 3112	Heavy soils, alkali-tolerant wide range of moisture condition	Perennial, erect sod-forming with long slender rhizomes	Caryopsis, May- Aug.	Used as forage by many mammals, seeds eaten by some birds	High value for live- stock
Bluebunch wheatgrass <u>Agropyron spicatum</u> (Pursh) Scribn. & Smith 3111	Dry soils	Tufted to 3 ft tall	Caryopsis, June- July		
Ragweed <u>Ambrosia psilostachya</u> DC. 3113	Dry rocky prairies, hills, pastures, disturbed soil	To 3 ft tall, erect	Flowers, Aug.-Oct., round elliptical	Seeds eaten by turkey	Causes hayfever
Serviceberry <u>Amelanchier alnifolia</u> Nutt. 3111, 3113	Thickets, borders of woods and banks of streams	Stoloniferous and colonial shrub, to 20 ft tall	Pome, available July-Sept.	Fruit eaten by grouse; browsed by white-tailed deer	Deep spreading root system
Big bluestem <u>Andropogon gerardii</u> Vitm. 3113	Dry soils and open woods, in valleys, ravines, slopes, and lower hill- sides	Erect perennial, to 6 ft tall, often forms large tufts, with short, thick, scaly rhizomes	Caryopsis, abun- dant crop of seed produced annually	Seeds, leaves and plants consumed by songbirds, hoofed brow- sers, upland gamebirds	
Sand bluestem <u>Andropogon hallii</u> Hack. 3113	Sandhills and sandy soil	Erect perennial, to 6 ft tall, with creeping rhizomes	Caryopsis, awn of sessile spikelet, rarely .2 in long	Seeds eaten by song- birds and upland game- birds; leaves and plants eaten by hoofed browsers	
Little bluestem <u>Andropogon scoparius</u> Michx. 3111, 3112, 3113	Prairies, glades, rocky open woods, sandy open ground, waste places	Erect perennial, to 3 ft tall, free branching with short, scaly rhizomes	Caryopsis, Sept.- Oct.	Same as <u>A. hallii</u>	
Red Three-awn <u>Aristida longiseta</u> Steud. 3111, 3112	Dry plains and foothills	Tufted perennial, culms, to 1 ft tall	Caryopsis, June- July	Seeds eaten by small rodents	
Sand sagebrush <u>Artemisia filifolia</u> Torr. 3113	Sandy soils, waste places disturbed soil	Low shrub, to 3 ft tall, branches erect, flower heads silvery	Fruits, July-Oct.	Foliage, flowers, twigs and seeds eaten by sage grouse, ante- lope, mule deer	May flavor milk of grazing cattle
Pasture sage <u>Artemisia frigida</u> Willd. 3111, 3112	Dry prairies, plains and rocks	Woody base forking into many crowns, flowering stems slender, to 1.5 ft tall, heads nodding	Available July- Sept.	Plant eaten by sage grouse, antelope, mule deer, white-tailed deer	
Prairie sage <u>Artemisia gnaphaloides</u> Nutt. 3112	Prairies and river banks	Perennial, stem to 2 ft tall		Same as <u>A. frigida</u>	
Heath aster <u>Aster ericoides</u> L. 3111, 3112	Open sites and plains	Rhizomatous much branched, to 1.5 ft long	Minute	Relatively little value to wildlife	
Milk-vetch <u>Astragalus</u> spp. L. 3113	Hillsides, open woods, arid slopes, 2,000-10,000 ft	Mostly low herba- ceous perennials, to 6 in	Pods, dehiscent or indehiscent	Seeds eaten by game- birds to limited extent	Possibly poisonous to livestock
Side-oats grama <u>Bouteloua curtipendula</u> (Michx.) Torr. 3111, 3112, 3113	Limestone glades and rocky open- ings in woodlands	Perennial, in clumps, to 1.5 ft tall	Caryopsis, July- Sept.	Important food for American bison	Nutritious for live- stock

continued

Table 3110-49.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Blue grama <i>Bouteloua gracilis</i> (HBK.) Lag. ex Steud. 3111, 3112, 3113	On hills and disturbed soil	Perennial, densely tufted, erect, 1.5 ft tall	Caryopsis, July-Sept.	Important food for American bison	Withstands extreme drought; is palatable and nutritious for livestock
Japanese brome <i>Bromus japonicus</i> Thunb. 3111, 3112, 3113	Fields, waste ground along disturbed soil, introduced	Erect, to 2 ft tall, broadly pyramidal, lower branches somewhat drooping, winter annual	Caryopsis, May-July	Seeds eaten by songbirds and rodents	
Downy brome <i>Bromus tectorum</i> L. 3112	Waste places and sandy soil	Erect or spreading slender to 2 ft tall, tufted annual		Seeds eaten by kangaroo rat, large number of birds, small mammals	
Buffalo grass <i>Buchloe dactyloides</i> (Nutt.) Engelm. 3113	In prairies and along roadsides on black calcareous clay loam	Stoloniferous perennial, blades to 4 in long, tufted	Caryopsis	Plants eaten by hoofed browsers; seeds eaten by a few songbirds	Valuable forage
Big sandreed <i>Calamovilfa gigantea</i> (Nutt.) Scribn. & Merr. 3111, 3112	Loose sand hills and active dunes	Rhizomatous perennial, aerial culms erect to 7 ft tall	Caryopsis		
Prairie sandreed <i>Calamovilfa longifolia</i> Hook. 3113	Sandy soil	Culms to 4.5 ft tall, stout	Caryopsis, available July-Sept.		
Needleleaf sedge <i>Carex eleocharis</i> Bailey 3111, 3112	Moist soils of marshes, meadows along shores, at all elevations	Perennial herbs, solitary or clumped, stems triangular to round and hollow	Achene, June-Aug.	Seeds eaten by waterfowl, marshbirds, songbirds; nesting cover for waterfowl	Soil builder in bogs and bays; aids in aging process of lakes
Threadleaf sedge <i>Carex filifolia</i> Nutt. 3112, 3113	Plains and ridges	Culms, to 1 ft tall	Minute	Seeds eaten by waterfowl, upland gamebirds, songbirds, chipmunk; browsed by white-tailed deer	
Upland sedge <i>Carex heliophila</i> Mack. 3112, 3112	Upland prairies and plains	Culms, to 10 in high	Nutlet, June-Sept.		
Common hackberry <i>Celtis occidentalis</i> L. 3111, 3112, 3113	Low woods and upland slopes, rocky barrens, sandy soil	Tree or coarse shrub, to +90 ft tall	Drupe, purple blackstone .25 in long	Fruit eaten by several species of songbirds; twigs used by deer	Large or small tree or low shrub varying in respect to habitat
Netleaf hackberry <i>Celtis reticulata</i> Torr. 3113	Low woods and upland slopes, rocky barrens, sandy soil	Tree or coarse shrub, to 50 ft tall	Drupe, purple-black	Same as <i>C. occidentalis</i>	Same as <i>C. occidentalis</i>
Sandbur <i>Cenchrus pauciflorus</i> Benth 3113	Sandy banks and waste places	Erect or decumbent annual stem branching to 3 ft long	Caryopsis, May-Oct.	Seeds eaten by few species of songbirds	May puncture the skin of grazing animals and decrease the value of sheeps wool
Rabbit brush <i>Chrysothamnus nauseosus</i> (Pursh) Britt. 3112, 3112	Hillsides and open areas	Shrub, to 3 ft high	Achene, June-Aug.	Plant eaten by white-tailed jackrabbit and antelope	
Erect dayflower <i>Commelina erecta</i> L. 3113					
Horseweed <i>Conyza canadensis</i> (L.) Cronq. 3113	Rocky open glades, waste places, disturbed soil	Annual, to 6 ft tall, with bristly hairs	.06 in long		

continued

Table 3110-49.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Narrowleaf coreopsis <u>Coreopsis lanceolata</u> L. 3113	Dry, sandy, gravelly or rocky soils	Perennial, stems, to 2.6 ft tall	Achene, minute		
Douglas hawthorn <u>Crataegus douglasii</u> Lindl. 3111	Dry-moist, open areas of open woods	Shrub to small tree, thorns present, large red, .5 in long	Pome, Aug.-Sept., .5 in long	Fruit eaten by upland gamebirds, songbirds, raccoon	Possibly the most problematic genus in North America; from 100-1,500 named species
Texas croton <u>Croton texensis</u> (Klotzsch) O. F. Muell. 3113	Dry soils of prairies and plains	Annual, to 2 ft tall, forking	Capsule, .33 in in diameter	Seeds eaten by several species of songbirds, quail, dove, small mammals	Poisonous to cattle
Plains larkspur <u>Delphinium virescens</u> Nutt. 3113	Prairies, barrens and dry open woods	Stem simple, erect, to 3 ft tall	Seeds wingless		
Crabgrass <u>Digitaria sanguinalis</u> (L.) Scop. 3113	Rocky open soil, waste and cultivated ground introduced	Stout, annual, to 3 ft long, when prostrate rooting at joints	Caryopsis, Aug.-Sept., .09 in long	Seeds occasionally eaten by songbirds	
Black Samson <u>Echinacea angustifolia</u> DC. 3112, 3113	Prairies	Perennial, with taproot, stem, erect, to 2 ft tall			
Barneyard grass <u>Echinochloa crusgalli</u> (L.) Beauv. 3113	Cultivated areas, waste ground, ditches	Annual, culms stout, erect to decumbent, to 3 ft tall	Caryopsis, available, June-Oct.	Seeds eaten by waterfowl	
Canada wild rye <u>Elymus canadensis</u> L. 3113	Rocky open woods, alluvial soils	Erect, perennial with short rhizomes	Caryopsis		
Gummy lovegrass <u>Eragrostis curtipedicellata</u> Buckl. 3113	Plains, open woods and dry slopes	Perennial, tufted erect, to 3 ft tall	Caryopsis, July-Oct., .03 in long	Seeds eaten by songbirds and some small mammals	
Wild buckwheat <u>Eriogonum</u> spp. Michx. 3111	Varied habitats	Perennials 1-2 ft tall	Available usually July-Oct.	Seeds eaten by songbirds	
Annual eriogonum <u>Eriogonum annuum</u> Nutt. 3113	Sandy soil	Annual, to 3 ft high, irregularly branching		Plant of moderate food value to wildlife	
Sulfur buckwheat <u>Eriogonum umbellatum</u> Torr. 3111	Varies habitats, from sagebrush desert to alpine ridges	Perennial, from taproot, to 1 ft tall, freely branching crown, prostrate		Seeds eaten by songbirds	Forms mats up to 2 ft broad
Spurge <u>Euphorbia</u> spp. L. 3113	Many different species occupying different sites	Mostly herbs less than 4 ft tall		Seeds eaten by few species of birds	
Idaho fescue <u>Festuca idahoensis</u> Elmer 3111	Grassland and sagebrush desert to dry and rocky mountain slopes and meadows, up to 12,000 ft	Perennial grass, truly caespitose, non-rhizomatous, basal leaves, .5-3.5 ft high	Caryopsis, awns 2-5 mm	Seeds and foliage eaten by several species of wildlife	
Six-weeks fescue <u>Festuca octoflora</u> Walt. 3112, 3113	Dry sandy soil	Usually tufted, stems to 1.3 ft tall	Caryopsis	Plant eaten by mountain sheep	

continued

Table 3110-49.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Broom snakeweed <u>Gutierrezia sarothrae</u> (Pursh) Britt. & Rusby 3111, 3112, 3113	Usually on calcareous soils	Shrublet, to 3 ft tall, much branched	Achene, small	Seeds eaten by a few species of birds; plant eaten by deer	
Sunflower <u>Helianthus</u> spp. L. 3111, 3112, 3113	Different species occupying a wide variety of sites	Coarse, stout herbs, to 14 or more ft tall	Achene, available toward autumn	Seeds eaten by dove, quail, many species of songbirds, squirrel	
Sunflower <u>Helianthus annuus</u> L. 3113	Low meadows, cultivated ground waste places	Stem coarse, to 15 ft tall, branched or unbranched	Flattened oval seed usually striped light and dark gray, available July-Nov.	Outstanding wildlife value in prairies; seeds eaten by many species of gamebirds, songbirds, small mammals; plant eaten by deer	
Prairie sunflower <u>Helianthus petiolaris</u> Nutt. 3111, 3113	Sandy soil	Stem to 10 ft tall	Achene, June-Oct.	Same as <u>H. annuus</u>	
Juniper <u>Juniperus</u> spp. L. 3112	Open woods to dry hills, mountain valleys, to open rocky slopes, sea level to alpine areas	Prostrate and trailing-branched, shrub to small tree, to 20 ft tall	Berry, available Sept., persistent all year	Fruit eaten by several species of birds, including grouse, quail, pheasant; browsed by white-tailed deer	Intolerant of shade
Kochia <u>Kochia scoparia</u> (L.) Schrad. 3113	Dry pastures and rangeland	Annual, much branched to 6 ft tall, growing from a taproot	Seed .06 in long oval, flattened		Drought resistant, serious weed in agriculture
Prairie junegrass <u>Koeleria cristata</u> (L.) Pers. 3111, 3113	Sagebrush desert, prairies and open forest to subalpine ridges; mostly on sandy to rocky soil	Perennial grass, usually tufted, .5-2.5 ft high	Caryopsis	Forage for mule deer	
Bladderpod <u>Lesquerella</u> spp. Wats. 3113	Different species require a variety of site conditions	Annual or tufted perennial herbs, mostly less than 1 ft tall	Pods		
Gay-feather <u>Liatris</u> spp. Schreb. 3111		Perennial herbs from underground corms	Achene	Plant eaten slightly by pronghorn antelope	
Dotted gay-feather <u>Liatris punctata</u> Hook. 3111, 3112	Calcareous uplands	Stems numerous, to 2.5 ft tall	Achene, small	Same as <u>Liatris</u> spp.	
Sandhill muhly <u>Muhlenbergia pungens</u> Thurb. 3113	Sandhills and badlands	Perennial, with creeping rootstock, stems to 1.3 ft tall	Caryopsis, July-Aug.	Plant eaten by big game	
Plains prickly pear <u>Opuntia polyantha</u> Haw. 3112, 3113	Plains and prairies	Stem prostrate	Oval, dry, spinulose, to 1 in long	Fruit eaten by small rodents	
Indian rice-grass <u>Oryzopsis hymenoides</u> (Roem. & Schult) Ricker 3113	Deserts and plains, medium altitudes	Culms densely tufted, to 2 ft tall	Caryopsis		

continued

Table 3110-49.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Switchgrass <u>Panicum virgatum</u> L. 3113	Moist or dry prairie, usually sunny, open wet or dry woods moist seepage, gravel bars, etc.	Erect, perennial with large scaly rhizomes	Caryopsis, July-Sept.	Seeds eaten by a large variety of birds and mammals	
Sand paspalum <u>Paspalum stramineum</u> Nash 3113	Dry, sand slopes, open woods, along springs	Erect, to 3 ft tall, yellowish-green	Caryopsis, June-Oct.	Seeds eaten by a variety of birds; browsed by some mammals	
Penstemon <u>Penstemon</u> spp. Mitch. 3112, 3113	Dry moist, open areas, roadsides	Herbaceous perennial, often in small clumps; flowers tube-like	Capsule, July-Aug.	Seeds eaten by ground squirrels	
Purple prairie clover <u>Petalostemum purpureum</u> (Vent.) Rydb. 3111, 3112	Perennial, branched at woody base, stems to 3 ft tall	Legume, June-July			
Silky prairie clover <u>Petalostemum villosum</u> Nutt. 3113	Sandy hills and prairies	Stem to 2 ft tall, soft-downy all over	Short pods, July-Sept.		
Ponderosa pine <u>Pinus ponderosa</u> Dougl. ex Loud. 3111, 3112	Lower levels generally, mostly where rather dry, often in open, pure stands	Evergreen tree, up to 220 ft high, bark thick and plate-like in mature trees	Cones 3-5.5 in long, Aug.-Spet.	Seeds eaten by many species of birds; browsed by white-tailed and mule deer	
Knotweed <u>Polygonum aviculare</u> L. 3112, 3113	Disturbed soil, gardens, and wet areas	Prostrate to upright, annual	Achene, 0.1 in long	Seeds eaten by many upland game and songbirds	
Quaking aspen <u>Populus tremuloides</u> Michx. 3111	Widely distributed in coniferous forest above 6,500 ft	Tree, slender crown, 20-80 ft	Cottony capsules, early spring	Seeds eaten by gamebirds and songbirds; browsed by rabbit, squirrel, deer	Great aesthetic value in fall, sprouts from cut roots
Chickasaw plum <u>Prunus angustifolia</u> Marsh. 3113	Thickets, fields, disturbed soil and prairie streams	Shrub, to 12 ft tall	.75 in diameter, June-July, stone plump	Fruit eaten by fox; forms thickets useful for shelter and protection	
Western choke-cherry <u>Prunus virginiana</u> L. 3111, 3112, 3113	Rich often north facing slopes, fence rows, roadsides	Shrub to small tree, to 30 ft tall	Purplish, cherry, July-Oct.	Fruit eaten by upland gamebirds and songbirds	
Silverleaf scurf pea <u>Psoralea argophylla</u> Pursh 3111	Dry prairies	Stem, to 2 ft tall, silvery silky white throughout	Legume, available June-Aug.		
Lemon scurf pea <u>Psoralea lanceolata</u> Pursh 3113	Sandy plains	Stem, to 1.5 ft tall	Pod, May-Aug.		
Slimflower scurf pea <u>Psoralea tenuiflora</u> Pursh 3111	A variety of site conditions throughout the range	Perennial with long rootstock, stem, to 2 ft tall	Small legume		
Gambel oak <u>Quercus gambelii</u> Nutt. 3113	Dry, well-drained, sun, hillsides and tablelands	Shrub, to 10 ft tall	Acorn, annual	Seeds eaten by several species of birds and ground squirrels	

continued

Table 3110-49.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bur oak <u>Quercus macrocarpa</u> Michx. 3111, 3112, 3113	Dry upland soils, or low woods on acid soils	Tree, to 80 ft tall, broad crown	Acorn, to 1.5 in long	Same as <u>Q. gambelii</u>	Drought resistant
Prairie coneflower <u>Ratibida columnifera</u> (Sims) D. Don 3112, 3113	Open, usually calcareous soils	Erect, branching, to 3.5 ft tall			
Fragrant sumac <u>Rhus aromatica</u> Ait. 3111, 3112, 3113	Dry, well-drained sites in sun or shade	Rambling shrub, to 10 ft tall	Fruits small red hairy drupe, available July-Aug.	Fruit eaten by many species of birds	Thicket forming shrub
Squawbush <u>Rhus trilobata</u> Nutt. 3113	Along streams, in canyons, on slopes in chaparral, 2,500-7,500 ft, sun	Aromatic deciduous shrub, 2-7 ft	Berrylike, Mar.-June	Browsed by deer	
Gooseberry <u>Ribes inebrians</u> Lindl. 3113	Dry hills	Low scraggling shrub, to 3 ft tall	Fruit to 0.3 in diameter, May-July		
Wild rose <u>Rosa</u> spp. L. 3111	Various, dry, wet open fields or deep woods	Shrubs to 8 ft, leaves stipulate, stems mostly with prickles	Achene, July-Nov. enclosed in an hypanthium ("hip")	Fruit eaten by upland gamebirds; browsed by white-tailed deer	Fruits available in winter; the "hip" is high in vitamin C
Collins thistle <u>Salsola collina</u> L. 3111, 3112	Waste places, cropland, disturbed soil	Annual, to 3 ft tall, reproducing by seed, profusely branched, mature leaves forming short prickles at tip	Coiled, scattered by wind, moderate size	Seeds eaten by birds; plant eaten by prairie dogs and occasionally by hoofed browser	
Russian thistle <u>Salsola iberica</u> L. 3111, 3112	Disturbed areas, roadsides, ditch-banks, etc.	Annual herb, reproducing by seed, bushy stems, to 4.5 ft tall	Seed winged, available Aug.-winter	Plant eaten by white-tailed prairie dogs	
Yellow bristlegrass <u>Setaria lutescens</u> F. T. Hubb. 3113	Weedy and waste places	Annual, tufted, culms erect, to 4 ft tall	Caryopsis	Seeds eaten by many species of songbirds	
Green bristlegrass <u>Setaria viridis</u> (L.) Beauv. 3111, 3112, 3113	Disturbed soil	Tufted annual, culms to 12 ft tall	Caryopsis	Same as <u>S. lutescens</u>	
Squirreltail (bottle-brush squirreltail) <u>Sitanion hystrix</u> Nutt. 3111, 3112, 3113	Desert slopes to subalpine meadows	Tufted, erect perennial grass, 6-28 in	Stiffly awned grain, year round depending on habitat		A preferred forage
Indian-grass <u>Sorghastrum nutans</u> (L.) Nash 3113	Open places	Perennial, to 8 ft tall, from scaly rhizomes			Planted for forage
Scarlet globe mallow <u>Sphaeralcea coccinea</u> (Pursh) Rydb. 3111, 3113	Caliche outcrops and gypsum on breaks, plains and hills	Taprooted perennial, stems, to 1.5 ft long		Plant eaten by white-tailed prairie dogs, antelope, bighorn sheep	
Sand dropseed <u>Sporobolus cryptandrus</u> (Torr.) Gray 3111, 3112	Sandy soils, less frequent on finer, disturbed soil	Tufted perennial, culms, to 3 ft long	Caryopsis	Plant eaten by American bison; seeds eaten by several species of songbirds	
Needle-and-thread <u>Stipa comata</u> Trin. & Rupr. 3111, 3112, 3113	Prairies and grassy dry slopes	Tufted perennial, culms erect, to 3.5 ft tall	Caryopsis, May-July		

continued

Table 3110-49.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Green needlegrass <u>Stipa viridula</u> Trin. 3112, 3113	Dry to moist, deep fertile soil	Erect, tufted perennial	Caryopsis		
Common snowberry <u>Symphoricarpos albus</u> (L.) Blake 3111, 3112, 3113	Dry, well-drained, moist, sun and shade, thickets, woodlands and open slopes, lowlands to moderate ele- vations	Erect, branching shrub, to 6 ft tall, leaves ellip- tic with irregular teeth	Berry, available year round	Fruit eaten by several species of gamebirds and songbirds; browsed by white-tailed and mule deer	Forms thickets
Western snowberry <u>Symphoricarpos</u> <u>occidentalis</u> Hook 3111, 3112, 3113	Dry, well-drained, sun	Stoloniferous shrub, to 3 ft tall			
Eastern grama grass <u>Tripsacum dactyloides</u> L. 3113	Swales, moist fields, borders of woods, and shores	Erect, to over 8 ft tall	Caryopsis, June- Sept.		
Large-bracted verbena <u>Verbena bracteata</u> Michx. 3112, 3113	Waste places, prairies and plains	Annual or perennial, stem, to 1.5 ft tall	Nutlet		
Yucca <u>Yucca</u> spp. L. 3111	Dry sandy sites	Stems, woody, to 10 ft tall	Seeds small		

50 PROVINCE 3120 Palouse Grassland

The Palouse Grassland Province extends in a semicircle from central Washington east and south to western Idaho, and south and west to north central Oregon. It is mostly untimbered grassland frequently surrounded by ponderosa pine, Douglas-fir, or lodgepole pine.

The Palouse Grassland Province borders on the Pacific Forest (Province M2410) in the northwest; on the

Columbia Forest (Province M2110) in the northeast; on the Rocky Mountain Forest (Province M3110) in the southwest; and on the Intermountain Sagebrush (Province 3130) in the west. Species listed for the Palouse Grassland reflect the strong influences of surrounding provinces.

Characteristic species of the Palouse Grassland include bunchgrasses of the fescue and wheatgrass groups and an abundance of forbs and herbs. Trees include ponderosa pine, Douglas-fir, or lodgepole pine at moderate elevations; and alpine fir or whitebark pine at higher elevations.

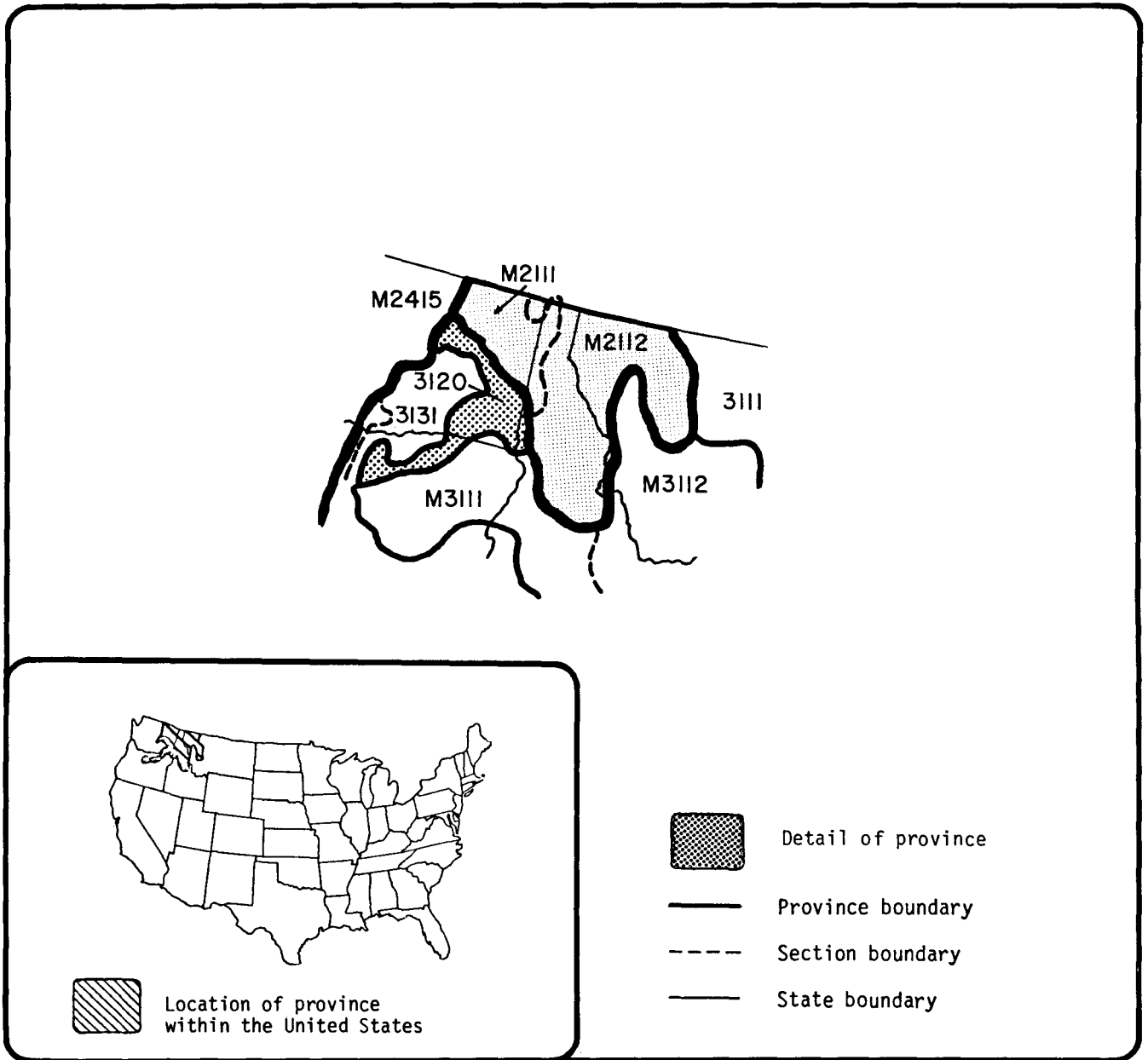


Figure 50.1 Province 3120, Palouse Grassland

Table 3120-50.1 Selected Plant Species Common to the Palouse Grassland

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
(Wheatgrass--fescue communities)				
Low shrubs			<u>Chrysothamnus nauseosus</u> var. <u>albicaulis</u>	Whitestem gray rabbit brush
			<u>Phlox longifolia</u>	Longleaf phlox
Lesser vegetation - grasses, herbs, ferns, mosses			<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Astragalus spaldingii</u> <u>Bromus tectorum</u> <u>Draba verna</u> <u>Epilobium paniculatum</u> <u>Festuca idahoensis</u> <u>Festuca microstachys</u> <u>Holosteum umbellatum</u> <u>Lactuca serriola</u> <u>Lithophragma bulbifera</u> <u>Lomatium triternatum</u> <u>Microseris troximoides</u> <u>Plantago patagonica</u> <u>Poa sandbergii</u> <u>Tragopogon dubius</u>	Western yarrow Bluebunch wheatgrass Spalding's milk-vetch Cheat Vernal draba Autumn willowweed Idaho fescue Nuttall's fescue Jagged chickweed Prickly lettuce Slender fringe cup Nineleaf lomatium False agoseris Indian wheat Sandberg bluegrass Yellow salsify
(Sagebrush--fescue communities)				
Medium shrubs	<u>Bromus tectorum</u> <u>Festuca microstachys</u>	Cheat Nuttall's fescue		
Low shrubs	<u>Artemisia tripartita</u> <u>Plantago patagonica</u>	Three-tip sagebrush Indian wheat		
Lesser vegetation - grasses, herbs, ferns, mosses			<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Brodiaea douglasii</u> <u>Bromus tectorum</u> <u>Calochortus macrocarpus</u> <u>Carex filifolia</u> <u>Collinsia parviflora</u> <u>Draba verna</u> <u>Epilobium paniculatum</u> <u>Erigeron corymbosus</u> <u>Festuca idahoensis</u> <u>Festuca microstachys</u> <u>Koeleria cristata</u> <u>Lactuca serriola</u> <u>Lithophragma bulbifera</u> <u>Lithospermum ruderales</u> <u>Lomatium triternatum</u> <u>Lupinus sericeus</u> <u>Microseris troximoides</u> <u>Microsteris gracilis</u> <u>Montia linearis</u> <u>Plantago patagonica</u> <u>Poa sandbergii</u> <u>Stipa occidentalis</u> <u>Tragopogon dubius</u> <u>Zigadenus venenosus</u>	Western yarrow Bluebunch wheatgrass Douglas' brodiaea Cheat Green-banded mariposa lily Threadleaf sedge Littleflower collinsia Vernal draba Autumn willowweed Longleaf fleabane Idaho fescue Nuttall's fescue Prairie junegrass Prickly lettuce Slender fringe cup Western gromwell Nineleaf lomatium Silky lupine False agoseris Pink microsteris Narrow-leaved montia Indian wheat Sandberg bluegrass Western needlegrass Yellow salsify Meadow deathcamas
(Wheatgrass--bluegrass community)				
Low shrubs			<u>Chrysothamnus nauseosus</u> var. <u>albicaulis</u>	Whitestem gray rabbit brush
			<u>Phlox longifolia</u>	Longleaf phlox
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Bromus tectorum</u> <u>Festuca microstachys</u> <u>Festuca octoflora</u>	Cheat Nuttall's fescue Eight-flowered fescue	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Balsamorhiza careyana</u> <u>Bromus tectorum</u> <u>Draba verna</u> <u>Erigeron pumilus</u>	Western yarrow Bluebunch wheatgrass Carey's balsamroot Cheat Vernal draba Shaggy daisy

continued

Table 3120-50.1 (Concluded)

Growth form	Early successional plants	Late successional plants
(Wheatgrass--bluegrass community) (Continued)		
Lesser vegetation -- (Continued)	<u>Festuca microstachys</u> <u>Festuca octoflora</u> <u>Holosteum umbellatum</u> <u>Lactuca serriola</u> <u>Lomatium macrocarpum</u> <u>Plantago patagonica</u> <u>Poa sandbergii</u> <u>Tragopogon dubius</u>	Nuttall's fescue Eight-flowered fescue Jagged chickweed Prickly lettuce Bigseed lomatium Indian wheat Sandberg bluegrass Yellow salsify
(Fescus--snowberry community)		
Low shrubs	<u>Rosa nutkana</u> <u>Rosa woodsii</u> <u>Symphoricarpos albus</u>	Nootka rose Woods' rose Common snowberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Balsamorhiza sagittata</u> <u>Besseyia rubra</u> <u>Brodiaea douglasii</u> <u>Bromus japonicus</u> <u>Castilleja lutescens</u> <u>Collinsia parviflora</u> <u>Draba verna</u> <u>Epilobium paniculatum</u> <u>Festuca idahoensis</u> <u>Geranium viscosissimum</u> <u>Geum triflorum</u> <u>Haplopappus triatritiformis</u> <u>Helianthella uniflora</u> <u>Hieracium albertinum</u> <u>Iris missouriensis</u> <u>Koeleria cristata</u> <u>Lactuca serriola</u> <u>Lithophragma bulbifera</u> <u>Lithophragma parviflora</u> <u>Lithospermum ruderae</u> <u>Lomatium dissectum</u> <u>Lomatium triternatum</u> <u>Lupinus sericeus</u> <u>Microsteris gracilis</u> <u>Montia linearis</u> <u>Poa ampla</u> <u>Potentilla gracilis</u> <u>Senecio integerrimus</u> <u>Stellaria nitens</u> <u>Zigadenus venenosus</u>	Western yarrow Bluebunch wheatgrass Arrowleaf balsamroot Red besseyia Douglas' brodiaea Japanese brome Yellow paintbrush Littleflower collinsia Vernal draba Autumn willowweed Idaho fescue Sticky geranium Three-flowered avens Palouse haplopappus False sunflower Western hawkweed Western iris Prairie junegrass Prickly lettuce Slender fringe cup Small-flowered fringe cup Western gromwell Lace-leaved lomatium Nineleaf lomatium Silky lupine Pink microsteris Narrow-leaved montia Merrill's bluegrass Beauty cinquefoil Western groundsel Shining chickweed Meadow deathcamas

Table 3120-50.2 Ecological Characteristics of Selected Plant Species Common to the Palouse Grassland

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western yarrow <u>Achillea millefolium</u> L.	Circumpolar, common, variable and not fully understood	Aromatic perennial herb, stems 1-3 ft, leaves slender	Achenes	Sage-scented leaves are eaten by a few wildlife species	
Bluebunch wheatgrass <u>Agropyron spicatum</u> (Pursh.) Scribn. & Smith	Widespread	Perennial grass, rhizomatous, spikes loose, stems 1.5-3.5 ft	Caryopsis, awnless to strongly and divergently awned, lemmas glabrous or puberulent	Forage for wildlife	Considered one of the most valuable native range grasses
Three-tip sagebrush <u>Artemisia tripartita</u> Rydb.	Dry plains and hills but usually on moister sites than big sagebrush	Aromatic shrub, .5-2 ft, leaves deeply cleft and persistent	Glabrous achene	Foliage and flower clusters constitute most of the diet of the sage grouse; a primary food source for mule deer, furnishes cover for smaller desert animals	Sprouts freely after fire; tolerates alkaline soils
Spalding's milk-vetch <u>Astragalus spaldingii</u> Gray	Grassland and sagebrush desert, xerophytic areas	Perennial herb; .5-1.5 ft, stems slender from a freely branched woody base, plant densely villous-tomentose	Pod, short, dense white-woolly, usually 1-seeded	Seeds eaten by gamebirds and rodents; big game forage to a limited extent	Many milk-vetch species are poisonous to livestock
Carey's balsamroot <u>Balsamorhiza careyana</u> Gray	Dry plains east of Cascade Mountains	Herbaceous perennial	Achene, 4-angled without a pappus	Plants eaten by deer	
Arrowleaf balsamroot <u>Balsamorhiza sagittata</u> (Pursh.) Nutt.	Widespread in lowland to mid-elevation in mountains	Perennial herb, dense and softly hairy, leaves large	Achenes without pappus	Plants eaten by deer	
Red besseyia <u>Besseyia rubra</u> (Dougl.) Rydb.	Open slopes and dry meadows in foothills and lowlands on the east slopes of Cascade Mountains	Fibrous rooted, perennial herb, 1-1.5 ft, erect leafy stems	Capsule with many seeds		
Douglas' brodiaea <u>Brodiaea douglasii</u> Wats.	Grassland and sagebrush desert to Ponderosa pine woodlands	Perennial scabrous herbs with deep-seated corms, leaves 1-5, linear, greatly elongated	Capsule		Easily cultivated; bulb used as food by gophers and birds in other areas
Japanese brome <u>Bromus japonicus</u> Thunb.	Weed of roadside or wasteland, generally east of Cascade Mountains	Introduced annual grass, culms slender, 1.5-2.5 ft	Caryopsis, lemmas broad, awns spreading	Seeds eaten by a number of songbirds, gamebirds, rodents; leaves are consumed by ungulates	
Cheat <u>Bromus tectorum</u> L.	Common in waste or disturbed (especially overgrazed) areas throughout the Province	Annual grass, culms .5-3.5 ft	Caryopsis, lemmas narrow, awns rough	Same as <u>B. japonicus</u>	Perhaps the most common of all grasses in the area
Green-banded mariposa lily <u>Calochortus macrocarpus</u> Dougl.	Arid regions east of Cascade Mountains	Perennial herb, 1-2.5 ft	Capsule, elongated, 3-angled, about 2 in long	Quail eat seeds	
Threadleaf sedge <u>Carex filifolia</u> Nutt.	Dry site species, often with sagebrush, plains to lower valleys, only occasionally in high mountains	Densely tufted, stiffly erect, sedge, 3-12 in, leaf blades very narrow	Achene, perigynia about 3 mm long, abruptly tapering to a very short beak	Achenes eaten by many kinds of birds and rodents; provides cover for many wildlife species; also provides nesting cover for some birds	

continued

Table 3120-50.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Yellow paintbrush <i>Castilleja lutescens</i> (Greenm.) Rydb.	Low, dry grasslands and woodlands, 1,000-5,500 ft elevation	Perennial herb, few to several stems clustered on a stout woody caudex, 1-2.5 ft	Capsule, narrow with many seeds	Slight ungulate forage	
Whitestem gray rabbit brush <i>Chrysothamnus nauseosus</i> var. <i>albicaulis</i> (Nutt.) Rydb.	Common and widespread in arid regions	Branched shrub, 1.5-6.5 ft, alternate, sessile leaves	Achene, summer-fall, pappus of many capillary bristles	Seed heads and foliage are consumed by wildlife, especially rabbits and ungulates	Provides useful cover in otherwise open areas
Littleflower collinsia <i>Collinsia parviflora</i> Lindl.	Widespread in areas that are moist in the spring	Slender annual, often decumbent or reclining, 4-16 in high	Capsule with many seeds		
Vernal draba <i>Draba verna</i> L.	Open grassy plains to sagebrush desert and lower mountains; common	Annual herb, leaves all in a basal rosette, scape 2-6 in high	Siliqua long and narrow		Introduced
Autumn willowweed <i>Epilobium paniculatum</i> Nutt. ex T. & G.	Mostly on dry soil in open to wooded areas; often in Ponderosa pine woodlands; common	Tall, annual herb, 1-8 ft, usually copiously branched, leaves linear	Capsule, seeds at least 1 mm	Valuable browse for ungulates; seeds eaten by some small mammals	Potentially bad weeds, valuable honey plants for bee keepers
Longleaf fleabane <i>Erigeron corymbosus</i> Nutt.	Open, dry places, often with sagebrush	Perennial herb, .5-1.5 ft high, stems slender, mostly erect	Achene with pappus bristles	Highly preferred summer forage for ungulates	
Shaggy daisy <i>Erigeron pumilus</i> Nutt.	Widespread east of Cascade Mountains	Perennial herb with stems clustered on a woody base; 4-12 in high, 1-many heads	Achene with scant whitish pappus	Same as <i>E. corymbosus</i>	
Desert buckwheat <i>Eriogonum heracleoides</i> Nutt.	Loamy to rocky places from sagebrush desert to Ponderosa pine forest and mountain ridges, up to 6,000 ft	Perennial herb, stem shrubby, loosely branched, prostrate or decumbent, 4-20 in long	Achene	Seeds and other parts are moderately important to birds; grazing value slight	
Idaho fescue <i>Festuca idahoensis</i> Elmer	Grassland and sagebrush desert to dry and rocky mountain slopes and meadows, up to 12,000 ft	Perennial grass, truly caespitose, non-rhizomatose, basal leaves .5-3.5 ft high	Caryopsis, awns 5 mm, lemmas strongly inrolled and rigid	Seeds and foliage are considered valuable to wildlife, particularly deer and gopher	
Nuttall's fescue <i>Festuca microstachys</i> Nutt.	Desert and woodland or foothill forests, often weedy	Annual grass; culms slender, erect, 4-16 in high	Caryopsis, awn usually longer than the body, lemmas appressed pubescent 10-12 mm long	Same as <i>F. idahoensis</i>	
Eight-flowered fescue <i>Festuca octoflora</i> Walt.	Dry, open ground, mainly east of Cascade Mountains	Annual grass, somewhat tufted, slender, 6-12 in high	Caryopsis, lemmas glabrous to scabrous	Seeds and foliage are considered valuable to wildlife, including mule deer; seeds are commonly eaten by birds	
Sticky geranium <i>Geranium viscosissimum</i> F. & M.	Meadows east of Cascade Mountains	Perennial herb, usually closely clustered, 12-20 in high	Capsule, several to many seeded	Seeds eaten by birds and rodents	
Three-flowered avens <i>Geum triflorum</i> Pursh.	Moister spots from sagebrush plains and desert foothills to subalpine ridges	Perennial herb, 2-30 in high	Achenes in a prominent receptacle	Seeds may be eaten by some gamebirds	

continued

Table 3120-50.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Palouse haplopappus <i>Haplopappus</i> <i>liatrifolius</i> (Greene) St. John	Grassy hillsides and prairies of Palouse region	Tall, perennial herb	Achenes, pappus of many bristles, Aug.-Sept.	Leaves may be eaten by some gamebirds	
False sunflower <i>Helianthella uniflora</i> (Nutt.) T. & G.	Hillsides and open woods, east of Cascade Mountains	Leafy-stemmed perennial herb with a few or solitary, rather large heads, taprooted, 1.5-3 ft	Achenes, flat, 2-awned	Large, nutritious seeds eaten by gamebirds, songbirds, rodents	
Western hawkweed <i>Hieracium albertinum</i> Farr.	Widespread, wood	Large perennial herb, stems mostly solitary, stout and 1-2 ft high	Achenes strongly ribbed, pappus bristles fine	Hairy basal leaves eaten by several wildlife species	
Jagged chickweed <i>Holosteum umbellatum</i> L.	Common weed, introduced	Erect annual herb, branched at base, 4-10 in high	Many seeded capsule, 5-7 mm		
Western iris <i>Iris missouriensis</i> Nutt.	Common, especially in sagebrush desert to Ponderosa pine forests, in wet meadows and streambanks	Perennial herb with linear, chiefly basal leaves, stout stems, 1-2 ft	Capsule	May provide nectar for hummingbirds	
Prairie junegrass <i>Koeleria cristata</i> Pers.	Sagebrush desert, prairies, and open forest to subalpine ridges, mostly on sandy to rocky soils	Perennial grass, usually tufted, .5-2.5 ft	Caryopsis, glumes and lemmas about equal	Forage for elk and mule deer	
Prickly lettuce <i>Lactuca serriola</i> L.	European weed of fields and waste places	Leafy stemmed herb, 1-5 ft	Achene with a filiform beak, pappus white	Seeds are occasionally eaten by wildlife; flowers eaten by gamebirds	
Slender fringe cup <i>Lithophragma bulbifera</i> Rydb.	Grassy hillsides and sagebrush desert to Ponderosa pine and Douglas-fir forests	Perennial herb, .5-1.5 ft	Capsule 3-peaked, seeds about .5 mm	Gamebirds may eat seeds	
Small-flowered fringe cup <i>Lithophragma parviflora</i> (Hook.) Nutt. ex T. & G.	Sagebrush desert and grasslands to lower montane forest, in moist places	Perennial herb, slender, .5-1.5 ft	Capsule 3-peaked, seeds about .5 mm		
Western groundwell <i>Lithospermum ruderales</i> Dougl. ex Lehm.	Fairly dry places up to mid-elevation in mountains	Perennial herb, taprooted, stems clustered .5-2 ft, stout	4 nutlets, smooth, 5-6 mm	Seeds eaten by some gamebirds	
Lace-leaved lomatium <i>Lomatium dissectum</i> (Nutt.) Math. & Const.	Open, often rocky slopes and dry meadows, lowland to midmountain	Perennial herb, robust, 1.5-10 ft	Dry schizocarp, 8-18 mm long	Seeds eaten by some gamebirds	
Bigseed lomatium <i>Lomatium macrocarpum</i> (Nutt.) Coult. & Rose	Open, rocky hills and plains, scarcely montane	Perennial herb, .5-1.5 ft, large, fleshy taproot	Dry schizocarp, 10-20 mm	Same as <i>L. dissectum</i>	
Nineleaf lomatium <i>Lomatium triternatum</i> (Pursh.) Coult. & Rose	Open slopes and meadows, dry to fairly moist soil, lowland to mid-montane	Perennial herb, 1-2.5 ft, fleshy taproot	Dry schizocarp, glabrous, 9-13 mm long	Same as <i>L. dissectum</i>	
Silky lupine <i>Lupinus sericeus</i> Pursh.	Sagebrush desert to lower montane forest	Perennial herb, stem erect, stout, freely branching, 1-2.5 ft	Pod, flattened, 1-1.5 in long, hairy, seeds 4+	Seeds are valuable to several upland gamebirds	Some species are poisonous to livestock

continued

Table 3120-50.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
False agoseris <u>Microseris troximoides</u> Gray	Dry, open places in foothills and lowlands	Perennial herb, basal leaves	Achene, 7-8 mm long, pappus of 10-30 very slender scales, early summer	Flowers eaten by blue grouse	
Pink microsteris <u>Microsteris gracilis</u> (Hook.) Greene	Moist places, generally in foot- hills and lowlands	Annual herb, to 1 ft high, stem usually erect	Capsule, globose, 3-seeded		
Narrow-leaved montia <u>Montia linearis</u> (Dougl.) Greene	Lowlands to foot- hills where dry or moist	Annual herb, 2-8 in, stems erect or decumbent	Capsule with 1-3 black and shining seeds, 1.5-2 mm		
Longleaf phlox <u>Phlox longifolia</u> Nutt.	Dry, often rocky places from low- land to mid or occasionally high elevation in mountains	Perennial herb, 2-16 in, hairy	Capsule	Nectar used by humming- birds; browsed by mule deer but of little value	
Indian wheat <u>Plantago patagonica</u> Jacq.	Common east of Cascade Mountains	Annual herb, woolly, inflor- escence a spike	Capsule, top deciduous, 2- seeded	Seeds eaten by many birds; leaves are a favorite food of rab- bit; rodents eat the seeds freely	
Merrill's bluegrass <u>Poa ampla</u> L.	Sagebrush areas, often where alkaline	Perennial grass, basal leaves .5- 1 mm wide, upper leaves 1-2.5 mm	Caryopsis	Seeds eaten by several kinds of songbirds and rodents; leaves grazed by rabbit and big game	Great value as range forage
Sandberg bluegrass <u>Poa sandbergii</u> Vasey	Desert or dry exposed areas in lower mountains	Perennial grass, 2.5-3 ft	Caryopsis, seeds in panicle	Same as <u>P. ampla</u>	Great value as range forage
Beauty cinquefoil <u>Potentilla gracilis</u> Dougl. ex Hook.	Grassland and moist areas in deserts to sub- alpine meadows	Perennial herb, less than 15 in	Achene	Eaten by upland game- birds, songbirds and small mammals to some extent	
Nootka rose <u>Rosa nutkana</u> Presl	Wooded or moist areas, often mon- tane	Woody vine	Berry-like, achenes enclosed within fleshy hypanthium	Achenes and hips impor- tant to upland game- birds in winter, fruits, twigs and foliage eaten by mammals and especial- ly by hoofed browsers; thickets excellent nest- ing and protective cov- er for gamebirds and songbirds	
Woods' rose <u>Rosa woodsii</u> Lindl.	Mostly of low- lands and hills	Woody vine, 3 ft long	Berry-like, achenes enclosed within fleshy hypanthium	Same as <u>R. nutkana</u>	
Western groundsel <u>Senecio integerrimus</u> Nutt.	Widespread in open places	Perennial herb with short-lived crown	Achenes, Sept.		
Shining chickweed <u>Stellaria nitens</u> Nutt.	Gravelly, meadows to grassy hill- sides, often where moist	Annual herb	Many seeded capsule		Common
Western needlegrass <u>Stipa occidentalis</u> Thurb. ex Wats.	Grassland and sagebrush desert to subalpine for- ests and ridges	Caespitose, peren- nial grass	Caryopsis	Seeds important for songbirds and rodents; foliage consumed by hoofed browsers	Injurious to live- stock
Common snowberry <u>Symphoricarpos albus</u> (L.) Blake	Widespread species of thickets, woods and open slopes, from lowland to mid-elevations	Erect shrub, 3-6.5 ft	Nutlets, 4-5 mm	Seeds important food, especially for sharp- tailed and spruce grouse; foliage and twigs eaten extensive- ly by deer; nesting cover for gamebirds, rabbit, other animals	

continued

Table 3120-50.2 (Concluded)

Species	Habitat	From	Fruit	General wildlife use	Notes
Yellow salsify <i>Tragopogon dubius</i> Scop.	Widespread, often also on relatively little-disturbed sites	Taprooted, biennial herb	Achene		Introduced weed
Meadow deathcamas <i>Zigadenus venenosus</i> Wats.	Sagebrush slopes and montane forests in exposed places	Perennial herb with tunicated bulbs	Membranous to leathery capsule		One of the most virulent stock-poisoning plants

51 PROVINCE 3130 Intermountain Sagebrush

SECTION 3131

SAGEBRUSH—WHEATGRASS

SECTION 3132

LAHONTAN SALT BUSH—GREASEWOOD

SECTION 3133

GREAT BASIN SAGEBRUSH

SECTION 3134

BONNEVILLE SALT BUSH—GREASEWOOD

SECTION 3135

PONDEROSA SHRUB FOREST

The sections listed above contain essentially the same major biotic communities and are treated here as a single unit in an effort to reduce unnecessary repetition. These sections, which include much of Nevada and western Utah, are characterized by narrow to quite broad valleys and basins of Great Basin desertscrub at elevations of 3500 to 6000 feet. These broad expanses of high desert are broken by numerous mountain ranges commonly 10,000 feet, but often greater than 12,000 feet in elevation.

The gradient in annual precipitation ranges from as little as 4 inches in the lower valleys to 30 inches on the tops of mountains only a few miles away. This precipitation gradient, coupled with temperature and edaphic and topographic features, is reflected in the density, growth form, and species composition of the vegetation. Many highly saline playas in the lower basins are completely devoid of vegetation except along their perimeters.

Although the biotic communities of this region vary slightly latitudinally, they progress altitudinally from Great Basin saltwater marshland at the lower limits up through Great Basin desertscrub to conifer woodland and montane chaparral to subalpine conifer forest.

The current understanding of succession in many southwestern plant communities is based largely on studies of fire and habitat manipulation by the U.S. Forest Service. In most of these communities the species revegetating an area after fire, clearing, or other disturbance are usually the same species present in the climax community. Early and late successional species

are therefore not generally differentiated within these communities.

Succession rarely occurs in desert communities (Shreve 1925; Lowe 1959). In chaparral communities, the dominant shrub species demonstrate strong crown sprouting characteristics which generally make them resistant to fire and other disturbance (Pond 1971; Pase and Lindenmuth 1971). The result is a gradual ascendance of pre-fire (predisturbance) species rather than a series of vegetational replacements (Hanes 1970).

Removal of overstory species in woodland communities (junipers, oaks, and pinyon pines) generally results in an increase in the abundance of herbaceous and shrub species associated with the climax community (Cary 1971; Cary et al. 1974). Removal of tree overstory species in montane conifer forest also results in an increase in native herbaceous and shrub species with junipers occasionally revegetating the drier, warmer sites. Ponderosa pine is sometimes an early colonizer on wetter, cooler sites.

Many mixed conifer associations seem to have been initiated, in part, by wildfires (Jones 1973). Following fire, the first stages of revegetation commonly include forbs, trembling aspen, or Gambel oak. Fire and other clearing often stimulates the sprouting of trembling aspen (Patton and Avant 1970). Ponderosa pine occasionally revegetates burned areas.

The communities described are generally represented as either climatic or edaphic climax associations. Major differences in soil moisture normally do not occur, and when present usually result in different biotic communities. Species occurring on wet or dry soils have therefore not been differentiated.

Great Basin Saltwater Marshland

Such marshlands occur commonly in highly saline basins which receive enough water to maintain an aquatic condition and prevent conversion to a dry playa. This community is most common and best represented in the Bonneville Basin of Section 3134 (e.g., Great Salt Lake and its Bear River marshes).

Great Basin Desertscrub

This desertscrub community is typically dominated by low growing shrubs. Cronquist et al. (1972) divide it into a shadscale subdivision and a sagebrush subdivision. These two associations are discussed separately because

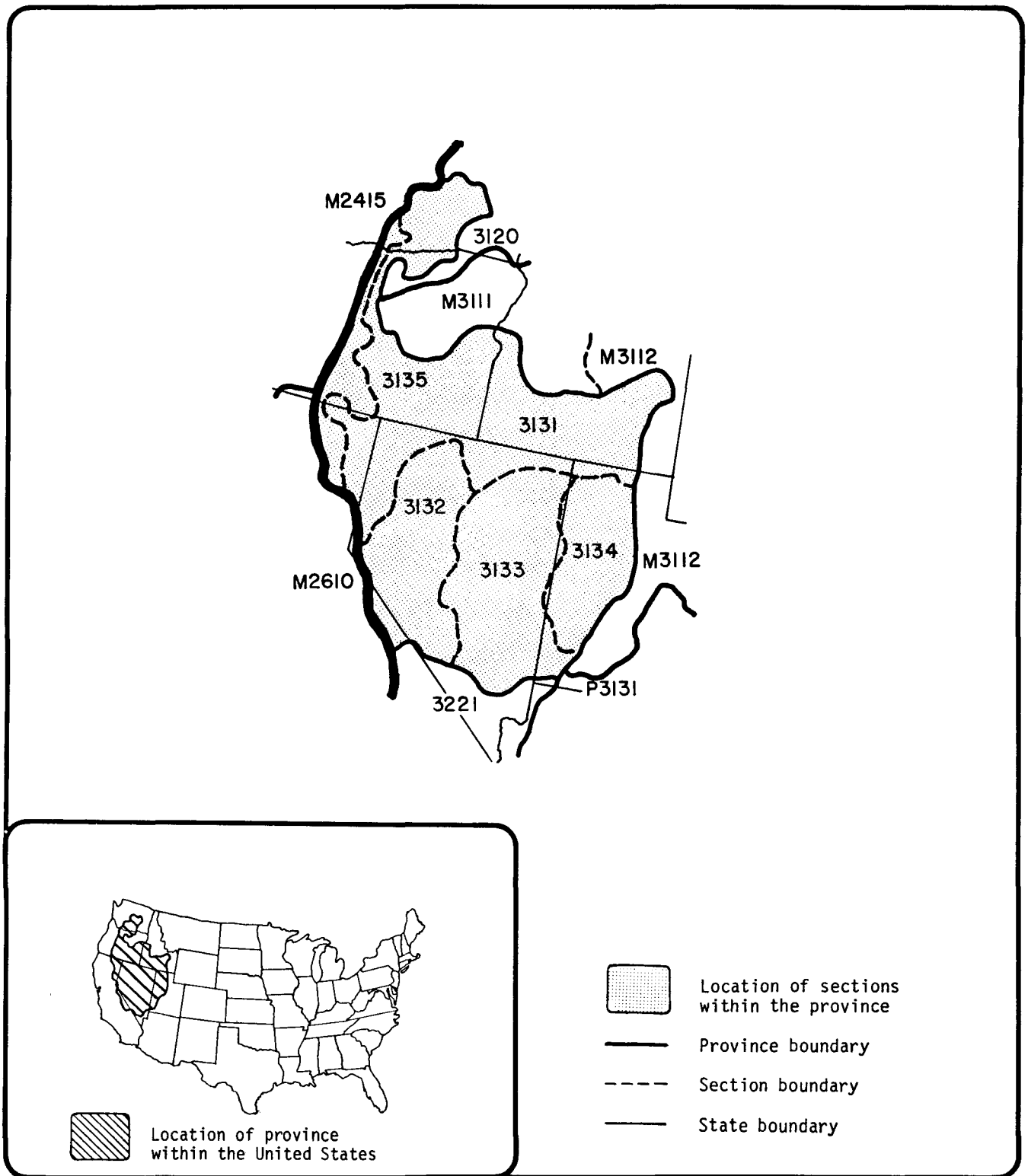


Figure 51.1 Province 3130, Intermountain Sagebrush; Sections 3131, Sagebrush—Wheatgrass; 3132, Lahontan Saltbush—Greasewood; 3133, Great Basin Sagebrush; 3134, Bonneville Saltbush—Greasewood; 3135, Ponderosa Shrub Forest

of their vegetative differences, and the large geographic areas they occupy.

Shadscale subdivision — This subdivision is dominated by low, widely spaced, small-leaved shadscale shrubs which cover only about 10 percent of the ground area. Annual precipitation is generally from 3.5 to 7 inches. Within this area are several distinct plant communities, each controlled by differences in tolerance to soil salinity. For example, a shadscale—galleta grass association grows on relatively nonalkaline soils, whereas a greasewood association is an edaphically controlled halophytic one. As such, greasewood associations occur in the bottom of valleys in saline soils and around the margins of playas.

Sagebrush subdivision — This subdivision occurs in an elevated region from about 5000 to almost 10,000 feet in some areas. The annual precipitation averages about 7 to 16 inches. Occupying a narrow to wide altitudinal belt on the rocky sides of mountains, this climatic climax often exclusively dominates broad valleys and lower foothills in the northern areas, being best developed on well-drained soils. It is composed of relatively large (2 to 6 feet high) shrubs covering 15 to 40 percent of the ground; big sagebrush is the common dominant species. Bunchgrasses are generally abundant, and it is believed that sagebrush has encroached on previous bunchgrass areas (particularly in Utah) following severe overgrazing (Christenson and Johnson 1964). Thickspike wheatgrass and Sandberg bluegrass are often the most common of these grasses and frequently codominate with sagebrush.

Rocky Mountain and Great Basin Conifer Woodland

This woodland consists of low evergreen trees which rarely exceed 30 feet in height (usually less than 20 feet), with an understory of varying admixtures of shrubs and

herbaceous plants. The elevational range of this community varies, but it is usually found between 5000 and 8000 feet where annual precipitation exceeds 12 inches (generally 12 to 20 inches). Dominant species include Utah juniper, singleleaf pinyon, Colorado pinyon, and mountain-mahogany.

Montane Chaparral

Montane chaparral generally occurs above the conifer woodland, usually above 7500 feet, but occasionally as low as 5500 feet. It is dominated by facultative brush forms of Gambel oak, western choke-cherry, mountain-mahogany, snowberry, or serviceberry, or mixtures of these. Montane chaparral tends to mix with conifer woodland and largely replaces it in some northern areas. An average annual precipitation of from 15 to 25 inches may be expected. Browse plants and grasses are scattered throughout or absent depending on range condition and density of the brush. Sagebrush is prevalent throughout.

Rocky Mountain Subalpine Conifer Forest— Great Basin Fasciation

This community is usually best developed between about 9500 feet elevation and timberline, about 10,500 feet. It is an open forest (woodland) with trees generally averaging 30 to 40 feet in height at the lower limits and forming a zone of stunted, shrublike growth at timberline. Within these three sections (3132, 3133, 3134), bristle-cone pine is usually the dominant species in the southern areas and limber pine in the northern areas. Annual precipitation generally averages greater than 16 inches.

No treatment is given for the Great Basin alpine tundra since it only occurs on and near the peaks of a few of the highest mountains (greater than 11,000 feet) and it is unlikely that it would be included in any transmission line ROW.

Table 3130-51.1 [3131CB] Selected Plant Species Common to the Sagebrush—Wheatgrass Section (Columbia Basin Region)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Dry to moist/excessive to well-drained		
(Big sagebrush--grassland communities)		
Medium shrubs	<u>Artemisia tridentata</u> <u>Artemisia tripartita</u> <u>Atriplex spinosa</u> <u>Chrysothamnus</u> <u>viscidiflorus</u> <u>Tetradymia canescens</u>	Big sagebrush Three-tip sagebrush Spiny hop-sage Rabbit brush Gray horsebrush
Low shrubs	<u>Arenaria congesta</u> <u>Chrysothamnus nauseosus</u> <u>var. albicaulis</u> <u>Erigeron filifolius</u> <u>Erigeron linearis</u> <u>Eriogonum heracleoides</u> <u>Eriogonum niveum</u> <u>Eriogonum strictum</u> <u>Phlox longifolia</u>	Dense-flowered sandwort Whitestem gray rabbit brush Threadleaf fleabane Lineleaf fleabane Desert buckwheat Snowy eriogonum Desert buckwheat Long leaf phlox
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Antennaria dimorpha</u> <u>Astragalus spaldingii</u> <u>Balsamorhiza careyana</u> <u>Brodiaea douglasii</u> <u>Bromus tectorum</u> <u>Calochortus macrocarpus</u> <u>Descurainia pinnata</u> <u>Draba verna</u> <u>Epilobium paniculatum</u> <u>Erigeron pumilus</u> <u>Festuca idahoensis</u> <u>Festuca microstachys</u> <u>Festuca octoflora</u> <u>Gilia minutiflora</u> <u>Lactuca serriola</u> <u>Lappula redowskii</u> <u>Linanthus pharnaceoides</u> <u>Lithophragma bulbifera</u> <u>Lithospermum ruderae</u> <u>Lomatium macrocarpum</u> <u>Lomatium triternatum</u> <u>Microseris troximoides</u> <u>Microseris gracilis</u> <u>Myosurus aristatus</u> <u>Plantago patagonica</u> <u>Poa cusickii</u> <u>Poa sandbergii</u> <u>Stipa comata</u> <u>Stipa thurberiana</u>	Western yarrow Bluebunch wheatgrass Low pussy's-toes Spalding's milk-vetch Carey's balsamroot Douglas' brodiaea Cheat Green-banded mariposa lily Pinnate tansy mustard Vernal draba Autumn willowweed Shaggy daisy Idaho fescue Nuttall's fescue Eight-flowered fescue Small-flowered gilia Prickly lettuce Western stickseed Thread-stemmed linanthus Slender fringecup Western gromwell Bigseed lomatium Nineleaf lomatium False agoseris Pink microsteris Bristly mousetail Indian wheat Cusick bluegrass Sandberg bluegrass Needle-and-thread Thurber needlegrass
(Wheatgrass--bluegrass communities)		
Low shrubs	<u>Chrysothamnus nauseosus</u> <u>var. albicaulis</u> <u>Phlox longifolia</u>	Whitestem gray rabbit brush Longleaf phlox
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Balsamorhiza careyana</u> <u>Bromus tectorum</u> <u>Draba verna</u> <u>Erigeron pumilus</u> <u>Festuca microstachys</u> <u>Festuca octoflora</u> <u>Holosteum umbellatum</u> <u>Lactuca serriola</u> <u>Lomatium macrocarpum</u> <u>Plantago patagonica</u> <u>Poa sandbergii</u>	Western yarrow Bluebunch wheatgrass Carey's balsamroot Cheat Vernal draba Shaggy daisy Eight-flowered fescue Nuttall's fescue Jagged chickweed Prickly lettuce Bigseed lomatium Indian wheat Sandberg bluegrass

continued

Table 3130-51.1 [3131CB] (Continued)

Growth form	Early successional plants		Late successional plants	
Dry/excessive (Continued)				
(Bitterbrush--fescue communities)				
Medium shrubs			<u>Purshia tridentata</u>	Bitterbrush
Low shrubs	<u>Chrysothamnus nauseosus</u> var. <u>albicaulis</u>	Whitestem gray rabbit brush	<u>Eriogonum heracleoides</u>	Desert buckwheat
	<u>Eriogonum heracleoides</u>	Desert buckwheat		
Lesser vegetation - grasses, forbs, mosses	<u>Bromus tectorum</u> <u>Poa sandbergii</u> <u>Sitanion hystrix</u> <u>Stipa occidentalis</u>	Cheat Sandberg bluegrass Bottlebrush squirreltail Western needlegrass	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Antennaria rosea</u> <u>Balsamorhiza sagittata</u> <u>Brodiaea douglasii</u> <u>Bromus tectorum</u> <u>Collinsia linearis</u> <u>Collinsia parviflora</u> <u>Crepis atriobarba</u> <u>Epilobium paniculatum</u> <u>Erigeron corymbosus</u> <u>Festuca idahoensis</u> <u>Hieracium cynoglossoides</u> <u>Koeleria cristata</u> <u>Lithophragma bulbifera</u> <u>Microsteris gracilis</u> <u>Poa ampla</u> <u>Poa sandbergii</u>	Western yarrow Bluebunch wheatgrass Rosy pussy's-toes Arrowleaf balsamroot Douglas' brodiaea Cheat Narrow-leaved collinsia Littleflower collinsia Slender hawksbeard Autumn willowweed Longleaf fleabane Idaho fescue Houndstongue hawkweed Prairie junegrass Slender fringecup Pink microsteris Merrill's bluegrass Sandberg bluegrass
(Specialized associations on lithosolic sites)				
Low shrubs			<u>Artemisia rigida</u> <u>Eriogonum compositum</u> <u>Eriogonum douglasii</u> <u>Eriogonum microthecum</u> <u>Eriogonum niveum</u> <u>Eriogonum sphaerocephalum</u> <u>Eriogonum thymoides</u>	Stiff sagebrush Northern buckwheat Douglas buckwheat Slenderbush eriogonum Snowy eriogonum Rock buckwheat Thyme buckwheat
Lesser vegetation - grasses, forbs, mosses			<u>Allium acuminatum</u> <u>Haplopappus stenophyllus</u> <u>Lomatium dissectum</u> <u>Mentzelia laevicaulis</u> <u>Phlox hoodii</u> <u>Physaria oregana</u> <u>Poa sandbergii</u>	Onion Narrow-leaved haplopappus Lace-leaved lomatium Blazing-star Hood's phlox Oregon double bladderpod Sandberg bluegrass
(Specialized associations on saline-alkali soils)				
Low shrubs			<u>Sarcobatus vermiculatus</u>	Greasewood
Lesser vegetation - grasses, forbs, mosses	<u>Bassia hyssopifolia</u> <u>Bromus tectorum</u> <u>Lepidium perfoliatum</u>	Five-hook bassia Cheat Yellow-flowered peppergrass	<u>Distichlis stricta</u> <u>Elymus cinereus</u>	Desert saltgrass Wild rye
(Specialized associations on grasslands)				
Low shrubs			<u>Chrysothamnus nauseosus</u> var. <u>albicaulis</u>	Whitestem gray rabbit brush
Lesser vegetation - grasses, forbs, mosses			<u>Aristida longiseta</u> <u>Poa sandbergii</u> <u>Sporobolus cryptandrus</u>	Red three-awn Sandberg bluegrass Sand dropseed
(Speicalized associations on talus slopes)				
Low-growing trees and tall shrubs			<u>Amelanchier alnifolia</u> <u>Grayia spinosa</u> <u>Philadelphus lewisii</u> <u>Prunus virginiana</u> <u>Rosa spp.</u>	Serviceberry Spiny hop-sage Lewis mock orange Western choke-cherry Wild rose
Lesser vegetation - grasses, forbs, mosses			<u>Bromus tectorum</u>	Cheat

continued

Table 3130-51.1 [3131CB] (Concluded)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (Continued)</u>		
(Specialized associations on collovium and alluvium soils in canyons)		
Low-growing trees and tall shrubs	<u>Celtis reticulata</u> <u>Rhus glabra</u>	Netleaf hackberry Smooth sumac
Lesser vegetation - grasses, forbs, mosses	<u>Agropyron spicatum</u> <u>Aristida longiseta</u> <u>Bromus tectorum</u> <u>Erodium cicutarium</u> <u>Sporobolus cryptandrus</u>	Bluebunch wheatgrass Red three-awn Cheat Filaree Sand dropseed
(Specialized associations on sand dunes)		
Low-growing trees and tall shrubs	<u>Juniperus scopulorum</u>	Rocky Mountain juniper
Medium shrubs	<u>Artemisia tridentata</u> <u>Chrysothamnus viscidiflorus</u>	Big sagebrush Rabbit brush
Low shrubs	<u>Chrysothamnus nauseosus</u> var. <u>albicaulis</u>	Whitestem gray rabbit brush
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Descurainia pinnata</u> <u>Elymus flavescens</u> <u>Holosteum umbellatum</u> <u>Koeleria cristata</u> <u>Microsteris gracilis</u> <u>Oryzopsis hymenoides</u> <u>Poa sandbergii</u> <u>Psoralea lanceolata</u> <u>Rumex venosus</u>	Western yarrow Bluebunch wheatgrass Pinnate tansy mustard Yellow wild rye Jagged chickweed Prairie junegrass Pink microsteris Indian rice-grass Sandberg bluegrass Lemon scurf pea Veiny dock
(Riparian)		
Low-growing trees and tall shrubs	<u>Alnus rhombifolia</u> <u>Amelanchier alnifolia</u> <u>Crataegus columbiana</u> <u>Crataegus douglasii</u> <u>Populus tremuloides</u> <u>Populus trichocarpa</u> <u>Prunus virginiana</u>	White alder Serviceberry Columbia hawthorn Douglas hawthorn Quaking aspen Black cottonwood Western choke-cherry
Medium shrubs	<u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u>	Shinyleaf spiraea Common snowberry
Lesser vegetation - grasses, forbs, mosses	<u>Cirsium vulgare</u> <u>Dipsacus sylvestris</u> <u>Poa compressa</u> <u>Poa pratensis</u> <u>Taraxacum officinale</u>	Common thistle Common teasel Canada bluegrass Kentucky bluegrass Dandelion
	<u>Circaea alpina</u> <u>Elymus glaucus</u> <u>Galium boreale</u> <u>Geranium viscosissimum</u> <u>Heracleum lanatum</u> <u>Hydrophyllum fendleri</u> <u>Iris missouriensis</u> <u>Potentilla gracilis</u> <u>Urtica dioica</u>	Alpine circaea Blue wild rye Northern bedstraw Sticky geranium Cow parsnip Fendler waterleaf Western iris Beauty cinquefoil Bigsting nettle

Table 3130-51.1 [3131SI] Selected Plant Species Common to the Sagebrush—Wheatgrass Section (Southern Idaho Region)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Dry to moist/excessive to well-drained		
(Sagebrush shrub steppe communities)		
Medium shrubs	<u>Artemisia tridentata</u> <u>Artemisia tripartita</u> <u>Purshia tridentata</u> <u>Tetradymia canescens</u>	Big sagebrush Three-tip sagebrush Bitterbrush Gray horsebrush
Low shrubs	<u>Atriplex nuttallii</u> <u>Gutierrezia sarothrae</u> <u>Sarcobatus vermiculatus</u>	Gardner saltbush Snakeweed Black greasewood
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Agropyron dasystachyum</u> <u>Agropyron spicatum</u> <u>Antennaria dimorpha</u> <u>Antennaria parvifolia</u> <u>Arnica fulgens</u> <u>Astragalus convallarius</u> <u>Astragalus stenophyllus</u> <u>Balsamorhiza sagittata</u> <u>Calamagrostis montanensis</u> <u>Comandra umbellata</u> <u>Crepis acuminata</u> <u>Eriogeron corymbosus</u> <u>Eriogonum caespitosum</u> <u>Eriogonum heracleoides</u> <u>Eriogonum ovalifolium</u> <u>Festuca idahoensis</u> <u>Koeleria cristata</u> <u>Lomatium macdougalii</u> <u>Lomatium macrocarpum</u> <u>Lupinus caudatus</u> <u>Lupinus leucophyllus</u> <u>Oryzopsis hymenoides</u> <u>Penstemon deustus</u> <u>Penstemon radicosus</u> <u>Phlox hoodii</u> <u>Phlox longifolia</u> <u>Poa nevadensis</u> <u>Poa sandbergii</u> <u>Senecio integerrimus</u> <u>Stipa columbiana</u> <u>Stipa comata</u> <u>Viola beckwithii</u>	Western yarrow Thicksipke wheatgrass Bluebunch wheatgrass Low pussy's-toes Littleleaf pussy's-t Orange arnica Timber poison vetch Narrowleaf milk-vetch Arrowleaf balsamroot Plains reedgrass Common comandra Hawksbeard Longleaf fleabane Mat buckwheat Desert buckwheat Cushion buckwheat Idaho fescue Prairie junegrass MacDougal lomatium Bigseed lomatium Tailcup lupine Velvet lupine Indian rice-grass Scabland penstemon Matroot penstemon Hood's phlox Longleaf phlox Nevada bluegrass Sandberg bluegrass Western groundsel Columbian needlegrass Needle-and-thread Beckwith's violet
(Oak--mountain-mahogany communities)		
Medium shrubs	<u>Amelanchier utahensis</u> <u>Cercocarpus ledifolius</u> <u>Purshia tridentata</u> <u>Symphoricarpos spp.</u>	Utah serviceberry Curleaf mountain- mahogany Bitterbrush Snowberry
(Juniper--Pinyon communities)		
Low-growing trees and tall shrubs	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus flexilis</u> <u>Pinus monophylla</u>	Utah juniper Rocky Mountain juniper Limber pine Singleleaf pinyon

Table 3130-51.1 [313ISO] Selected Plant Species Common to the Sagebrush—Wheatgrass Section (Southeastern Oregon Region)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Dry to moist/excessive to well-drained (Sagebrush--wheatgrass communities)		
Low-growing trees and tall shrubs	<u>Juniperus occidentalis</u>	Western juniper
Medium shrubs	<u>Artemisia tridentata</u> <u>Chrysothamnus viscidiflorus</u> <u>Purshia tridentata</u> <u>Ribes cereum</u> <u>Symphoricarpos rotundifolius</u>	Big sagebrush Rabbit brush Bitterbrush Wax currant Round-leaved snowberry
Lesser vegetation - grasses, forbs, mosses	<u>Agropyron spicatum</u> <u>Antennaria corymbosa</u> <u>Aster scopulorum</u> <u>Astragalus filipes</u> <u>Astragalus lentiginosus</u> <u>Balsamorhiza sagittata</u> <u>Bromus tectorum</u> <u>Calochortus nitidus</u> <u>Carex rossii</u> <u>Chaenactis douglasii</u> <u>Collinsia parviflora</u> <u>Cryptantha ambigua</u> <u>Elymus cinereus</u> <u>Epilobium minutum</u> <u>Eriogonum umbellatum</u> <u>Festuca idahoensis</u> <u>Gayophytum ramosissimum</u> <u>Koeleria cristata</u> <u>Lomatium macrocarpum</u> <u>Lomatium triternatum</u> <u>Lupinus sericeus</u> <u>Machaeranthera canescens</u> <u>Microseris troximoides</u> <u>Microsteris gracilis</u> <u>Penstemon cusickii</u> <u>Phlox diffusa</u> <u>Poa sandbergii</u> <u>Sitanion hystrix</u> <u>Stipa occidentalis</u> <u>Thlaspi arvense</u> <u>Zigadenus paniculatus</u>	Bluebunch wheatgrass Flattop pussy's-toes Cråg aster Threadstalk milk-vetch Specklepod loco Arrowleaf balsamroot Cheat Big-pod mariposa lily Ross sedge False yarrow Littleflower collinsia Obscure cryptantha Wild rye Small-flowered willowweed Sulfur buckwheat Idaho fescue Hairstem groundsmoke Prairie junegrass Bigseed lomatium Nineleaf lomatium Silky lupine Hoary aster False agoseris Pink microsteris Cusick's penstemon Spreading phlox Sandberg bluegrass Bottlebrush squirreltail Western needlegrass Pennycress Foothills deathcamas
(Low sagebrush communities)		
Low-growing trees and tall shrubs	<u>Juniperus occidentalis</u>	Western juniper
Medium shrubs	<u>Artemisia rigida</u> <u>Purshia tridentata</u>	Stiff sagebrush Bitterbrush
Low shrubs	<u>Artemisia arbuscula</u> <u>Eriogonum sphaerocephalum</u>	Low sagebrush Rock buckwheat
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Agoseris heterophylla</u> <u>Agropyron spicatum</u> <u>Antennaria dimorpha</u> <u>Arabis holboellii</u> <u>Astragalus miser</u> <u>Astragalus stenophyllus</u> <u>Balsamorhiza hookeri</u> <u>Balsamorhiza serrata</u> <u>Bromus tectorum</u> <u>Collinsia parviflora</u> <u>Erigeron linearis</u> <u>Festuca idahoensis</u> <u>Haplopappus stenophyllus</u> <u>Lupinus saxosus</u> <u>Microseris troximoides</u> <u>Penstemon aridus</u> <u>Phlox diffusa</u>	Western yarrow Annual agoseris Bluebunch wheatgrass Low pussy's-toes Holboell rockcress Starved milk-vetch Narrowleaf milk-vetch Hooker balsamroot Serrated balsamroot Cheat Littleflower collinsia Nineleaf fleabane Idaho fescue Narrow-leaved haplopappus Rock lupine False agoseris Stiffleaf penstemon Spreading phlox

continued

Table 3130-51.1 [313ISO] (Concluded)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (Continued)</u>		
(Low sagebrush communities) (Continued)		
Lesser vegetation - (Continued)	<u>Phlox hoodii</u> <u>Phlox longifolia</u> <u>Poa sandbergii</u> <u>Sitanion hystrix</u> <u>Trifolium gymnocarpon</u> <u>Trifolium macrocephalum</u>	Hood's phlox Long leaf phlox Sandberg bluegrass Bottlebrush squirreltail Clover Big-headed clover
(Bitterbrush--mountain-mahogany communities)		
Low-growing trees and tall shrubs	<u>Cercocarpus ledifolius</u> <u>Juniperus occidentalis</u>	Curleaf mountain- mahogany Western juniper
Medium shrubs	<u>Chrysothamnus</u> <u>viscidiflorus</u> <u>Purshia tridentata</u>	Rabbit brush Bitterbrush
Low shrubs	<u>Artemisia arbuscula</u>	Low sagebrush
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Antennaria</u> spp. <u>Astragalus purshii</u> <u>Balsamorhiza sagittata</u> <u>Bromus tectorum</u> <u>Festuca idahoensis</u> <u>Hieracium cynoglossoides</u> <u>Koeleria cristata</u> <u>Microsteris gracilis</u> <u>Poa sandbergii</u> <u>Sitanion hystrix</u>	Western yarrow Bluebunch wheatgrass Pussy's-toes Pursh's milk-vetch Arrowleaf balsamroot Cheat Idaho fescue Houndstongue hawkweed Prairie junegrass Pink microsteris Sandberg bluegrass Bottlebrush squirreltail
(Desert or salt desert shrub communities)		
Medium shrubs	<u>Artemisia tridentata</u>	Big sagebrush
Low shrubs	<u>Artemisia spinescens</u> <u>Atriplex confertifolia</u> <u>Atriplex nuttallii</u> <u>Atriplex spinosa</u> <u>Eurotia lanata</u> <u>Sarcobatus vermiculatus</u>	Sagebrush Shadscale Gardner saltbush Spiny hop-sage Winter-fat Greasewood
Lesser vegetation - grasses, forbs, mosses	<u>Distichlis stricta</u> <u>Elymus cinereus</u> <u>Elymus triticoides</u> <u>Oryzopsis hymenoides</u> <u>Poa sandbergii</u> <u>Sitanion hystrix</u>	Desert saltgrass Wild rye Creeping wild rye Indian rice-grass Sandberg bluegrass Bottlebrush squirreltail
(Riparian and populus communities)		
Low-growing trees and tall shrubs	<u>Populus tremuloides</u> <u>Salix</u> spp.	Quaking aspen Willow
Medium shrubs	<u>Crataegus</u> spp. <u>Prunus virginiana</u>	Hawthorn Western choke-cherry
Low shrubs	<u>Symphoricarpos</u> <u>rotundifolius</u>	Round-leaved snowberry
Lesser vegetation - grasses, forbs, mosses	<u>Bromus carinatus</u> <u>Carex</u> spp. <u>Scirpus validus</u>	California brome Sedge American great bulrush

Table 3130-51.1 [3132, 3133, 3134] Selected Plant Species Common to the Lahontan Saltbush—Greasewood, Great Basin Sagebrush, and Bonneville Saltbush—Greasewood Sections

Growth form	Plant associations	
	(Great Basin Saltwater Marshland)	
Low to medium plants	<u>Allenrolfea occidentalis</u> <u>Phragmites communis</u> <u>Scirpus olneyi</u> <u>Scirpus paludosus</u> <u>Typha angustifolia</u> <u>Typha latifolia</u>	Pickleweed Reed Alkali bulrush Salt-marsh bulrush Narrow-leaved cat-tail Common cat-tail
Lesser vegetation	<u>Berula erecta</u> <u>Calamagrostis canadensis</u> <u>Carex</u> spp. <u>Ceratophyllum demersum</u> <u>Distichlis stricta</u> <u>Eleocharis rostellata</u> <u>Juncus</u> spp. <u>Najas marina</u> <u>Phalaris arundinacea</u> <u>Potamogeton</u> spp. <u>Ruppia maritima</u> <u>Salicornia rubra</u> <u>Salicornia utahensis</u> <u>Sporobolus airoides</u> <u>Suaeda</u> spp. <u>Triglochin</u> spp. <u>Utricularia vulgaris</u>	Water-parsnip Bluejoint reedgrass Sedge Common hornwort Desert saltgrass Spikerush Rush Holly-leaved water nymph Reed canary-grass Pondweed Widgeon-grass Samphire Utah samphire Alkalai sacaton Seepweed Arrowgrass Common bladderpod
	(Great Basin Desertscrub--Shadscale Association)	
Low to medium shrubs	<u>Artemisia spinescens</u> <u>Atriplex canescens</u> <u>Atriplex confertifolia</u> <u>Atriplex lentiformis</u> <u>Atriplex nuttallii</u> <u>Cardaria draba</u> <u>Chrysothamnus viscidiflorus</u> <u>Coloogyne ramosissima</u> <u>Ephedra viridis</u> <u>Eriogonum ovalifolium</u> <u>Eurotia lanata</u> <u>Grayia spinosa</u> <u>Gutierrezia sarothrae</u> <u>Haplopappus lanceolatus</u> <u>Kochia americana</u> <u>Lycium cooperi</u> <u>Opuntia</u> spp. <u>Psoralea polydenius</u> <u>Salsola kali</u> <u>Sarcobatus vermicularis</u> <u>Sphaeralcea ambigua</u> <u>Sphaeralcea grossalariifolia</u> <u>Tetradymia comosa</u> <u>Tetradymia glabrata</u> <u>Thelypodium sagittatum</u>	Sagebrush Four-wing saltbush Shadscale Big saltbush Gardner saltbush Hoary cress Rabbit brush Blackbrush Mormon tea Cushion buckwheat Winter-fat Spiny hop-sage Broom snakeweed Goldenweed Summer cypress Box thorn Prickly pear Indigobush Russian thistle Greasewood Globe mallow Globe mallow White felt-thorn Bald-leaved felt-thorn Thelipody
Grasses and forbs	<u>Bassia hyssopifolia</u> <u>Distichlis stricta</u> <u>Halogeton glomeratus</u> <u>Hermidium alipes</u> <u>Hilaria jamesii</u> <u>Hutchinsia procumbens</u> <u>Iva axillaris</u> <u>Oryzopsis hymenoides</u> <u>Sitanion hystrix</u> <u>Sporobolus airoides</u> <u>Suaeda nigra</u>	Five-hook bassia Desert saltgrass Halogeton Hermidium Galleta grass Hutchinsia Poverty weed Indian rice-grass Bottlebrush squirreltail Alkalai sacaton Sea blite
	(Great Basin Desertscrub--Sagebrush Association)	
Low to medium shrubs	<u>Artemisia</u> spp. <u>Artemisia tridentata</u> <u>Chrysothamnus nauseosus</u>	Sagebrush Big sagebrush Rabbit brush

continued

Table 3130-51.1 [3132, 3133, 3134] (Continued)

Growth form	Plant associations	
(Great Basin Desertscrub--Sagebrush Association) (Continued)		
Low to medium shrubs (Continued)	<u>Chrysothamnus viscidiflorus</u> <u>Coleogyne ramosissima</u> <u>Ephedra torreyana</u> <u>Ephedra viridis</u> <u>Grayia spinosa</u> <u>Leptodactylon pungens</u> <u>Purshia tridentata</u> <u>Ribes velutinum</u> <u>Symphoricarpos</u> spp. <u>Tetradymia glabrata</u>	Rabbit brush Blackbrush Joint-fir Mormon tea Spiny hop-sage Shrubby phlox Bitterbrush Gooseberry Snowberry Bald-leaved felt-thorn
Grasses and forbs	<u>Agoseris</u> spp. <u>Agropyron dasystachyum</u> <u>Agropyron smithii</u> <u>Agropyron spicatum</u> <u>Allium acuminatum</u> <u>Aristida longiseta</u> <u>Astragalus</u> spp. <u>Balsamorhiza sagittata</u> <u>Calochortus nuttallii</u> <u>Castilleja chromosa</u> <u>Chrysopsis villosa</u> <u>Crepis acuminata</u> <u>Delphinium andersonii</u> <u>Elymus cinereus</u> <u>Eriogonum</u> spp. <u>Festuca idahoensis</u> <u>Hymenoxys richardsonii</u> <u>Koeleria cristata</u> <u>Lomatium</u> spp. <u>Lupinus</u> spp. <u>Lupinus caudatus</u> <u>Oryzopsis hymenoides</u> <u>Phlox hoodii</u> <u>Phlox longifolia</u> <u>Poa fendleriana</u> <u>Poa nevadensis</u> <u>Poa sandbergii</u> <u>Sitanion hystrix</u> <u>Sporobolus airoides</u> <u>Stipa comata</u> <u>Viola beckwithii</u> <u>Wyethia amplexicaulis</u> <u>Zigadenus paniculatus</u>	Mountain dandelion Thickspe wheatgrass Western wheatgrass Bluebunch wheatgrass Onion Red three-awn Milk-vetch Arrowleaf balsamroot Mariposa lily Paintbrush Hairy goldaster Hawksbeard Larkspur Wild rye Wild buckwheat Idaho fescue Pingwing Prairie junegrass Biscuit root Lupine Tailcup lupine Indian rice-grass Hood's phlox Longleaf phlox Fendler bluegrass Nevada bluegrass Sandberg bluegrass Bottlebrush squirreltail Alkali sacaton Needle-and-thread Beckwith's violet Mulesears wyethia Foothill deathcames
(Conifer Woodland--Great Basin Fasciation)		
Tall trees	<u>Quercus gambelii</u>	Gambel oak
Medium trees	<u>Acer glabrum</u> <u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus monophylla</u>	Rocky Mountain maple Utah juniper Rocky Mountain juniper Singleleaf pinyon
Low trees and tall shrubs	<u>Cercocarpus ledifolius</u>	Curlleaf mountain-mahogany
Low to medium shrubs	<u>Amelanchier alnifolia</u> <u>Artemisia arbuscula</u> <u>Ceanothus velutinus</u> <u>Chrysothamnus nauseosus</u> <u>Chrysothamnus viscidiflorus</u> <u>Cowania mexicana</u> <u>Ephedra viridis</u> <u>Gutierrezia sarothrae</u> <u>Holodiscus dumosus</u> <u>Purshia tridentata</u> <u>Ribes cereum</u> <u>Ribes velutinum</u> <u>Sambucus racemosa</u> <u>Symphoricarpos oreophilus</u>	Serviceberry Low sagebrush Tobacco brush Rabbit brush Rabbit brush Cliffrose Mormon tea Broom snakeweed Ocean spray Bitterbrush Wax currant Gooseberry Red elderberry Snowberry

continued

Table 3130-51.1 [3132, 3133, 3134] (Continued)

Growth form	Plant associations	
	(Conifer Woodland--Great Basin Fasciation) (Continued)	
Grasses and forbs	<u>Agropyron smithii</u> <u>Agropyron spicatum</u> <u>Bouteloua gracilis</u> <u>Festuca Idahoensis</u> <u>Hesperochloa kingii</u> <u>Koeleria cristata</u> <u>Oryzopsis hymenoides</u> <u>Poa fendleriana</u> <u>Poa secunda</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u> <u>Stipa columbiana</u> <u>Stipa comata</u> <u>Stipa thurberiana</u> <u>Tetradymia canescens</u>	Western wheatgrass Bluebunch wheatgrass Blue grama Idaho fescue Spike fescue Prairie junegrass Indian rice-grass Fendler bluegrass Sandberg bluegrass Bottlebrush squirreltail Sand dropseed Columbian needlegrass Needle-and-thread Thurber needlegrass Gray horsebrush
	(Subalpine Conifer Forest--Great Basin Fasciation)	
Tall trees	<u>Abies concolor</u> <u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Pinus flexilis</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u>	White fir Subalpine fir Engelmann spruce Limber pine Quaking aspen Douglas-fir
Medium trees	<u>Acer glabrum</u> <u>Juniperus occidentalis</u> <u>Pinus albicaulis</u> <u>Pinus aristata</u> <u>Salix</u> spp.	Rocky Mountain maple Western juniper Whitebark pine Bristle-cone pine Willow
Low trees and tall shrubs	<u>Prunus virginiana</u> <u>Sambucus cerulea</u>	Western choke-cherry Canadian elder
Low to medium shrubs	<u>Amelanchier alnifolia</u> <u>Arctostaphylos patula</u> <u>Berberis repens</u> <u>Juniperus communis</u> <u>Penstemon</u> spp. <u>Ribes cereum</u> <u>Ribes montigenum</u> <u>Sambucus racemosa</u>	Serviceberry Greenleaf manzanita Oregon-grape Dwarf juniper Penstemon Wax currant Alpine prickly currant Red elderberry
Grasses and forbs	<u>Agropyron spicatum</u> <u>Antennaria</u> spp. <u>Bromus marginatus</u> <u>Castilleja miniata</u> <u>Delphinium occidentale</u> <u>Elymus</u> spp. <u>Erigeron</u> spp. <u>Pachystima myrsinites</u> <u>Poa pratensis</u> <u>Potentilla</u> spp. <u>Silene douglasii</u> <u>Stipa columbiana</u> <u>Stipa lettermanii</u> <u>Thalictrum fendleri</u> <u>Viola</u> spp.	Bluebunch wheatgrass Pussy's-toes Mountain brome Scarlet paintbrush Larkspur Wild rye Fleabane Myrtle boxleaf Kentucky bluegrass Cinquefoil Douglas silene Columbian needlegrass Letterman needlegrass Meadow-rue Violet
	(Montane Chaparral)	
Tall trees	<u>Pinus ponderosa</u>	Ponderosa pine
Medium trees	<u>Juniperus</u> spp. <u>Pinus edulis</u>	Juniper Colorado pinyon
Low trees and tall shrubs	<u>Acer grandidentatum</u> <u>Celtis reticulata</u> <u>Cercocarpus ledifolius</u> <u>Prunus virginiana</u> <u>Ptelea trifoliata</u> <u>Quercus gambelii</u> <u>Robinia neomexicana</u> <u>Sambucus</u> spp.	Bigtooth maple Netleaf hackberry Curlleaf mountain-mahogany Western choke-cherry Hop-tree Gambel oak New Mexican locust Elderberry

continued

Table 3130-51.1 [3132, 3133, 3134] (Concluded)

Growth form	Plant associations	
(Montane Chaparral) (Continued)		
Low to medium shrubs	<u>Amelanchier alnifolia</u>	Serviceberry
	<u>Artemisia</u> spp.	Sagebrush
	<u>Berberis repens</u>	Oregon-grape
	<u>Ceanothus fendleri</u>	Buckbrush
	<u>Ceanothus velutinus</u>	Tobacco brush
	<u>Cercocarpus montanus</u>	Mountain-mahogany
	<u>Cowania mexicana</u>	Cliffrose
	<u>Penstemon</u> spp.	Penstemon
	<u>Purshia tridentata</u>	Bitterbrush
	<u>Rhus trilobata</u>	Squawbush
	<u>Ribes</u> spp.	Gooseberry
	<u>Rosa</u> spp.	Wild rose
	<u>Symphoricarpos</u> spp.	Snowberry
Grasses and forbs	<u>Achillea</u> spp.	Yarrow
	<u>Agropyron spicatum</u>	Bluebunch wheatgrass
	<u>Campanula rotundifolia</u>	Bluebell
	<u>Geranium</u> spp.	Geranium
	<u>Koeleria cristata</u>	Prairie junegrass
	<u>Poa</u> spp.	Bluegrass
	<u>Senecio serra</u>	Groundsel
	<u>Thalictrum fendleri</u>	Meadow-rue

Table 3130-51.1 [3135ECM] Selected Plant Species Common to the Ponderosa Shrub Forest (Eastern Cascade Mountains Region)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Dry to moist/excessive to well-drained		
(Ponderosa pine--pinegrass--elk sedge community)		
Tall-growing trees	<u>Pinus ponderosa</u>	Ponderosa pine
Tall shrubs	<u>Salix</u> spp.	Willow
Low shrubs	<u>Arctostaphylos nevadensis</u>	Pine-mat manzanita
	<u>Artemisia rigida</u>	Stiff sagebrush
	<u>Purshia tridentata</u>	Bitterbrush
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u>	Western yarrow
	<u>Agropyron spicatum</u>	Bluebunch wheatgrass
	<u>Anaphalis margaritacea</u>	Pearly everlasting
	<u>Antennaria luzuloides</u>	Woodrush everlasting
	<u>Arnica cordifolia</u>	Heartleaf arnica
	<u>Astragalus</u> spp.	Milk-vetch
	<u>Balsamorhiza sagittata</u>	Arrowleaf balsamroot
	<u>Bromus carinatus</u>	California brome
	<u>Calamagrostis rubescens</u>	Pinegrass
	<u>Carex geyeri</u>	Elk sedge
	<u>Danthonia intermedia</u>	Timber danthonia
	<u>Festuca idahoensis</u>	Idaho fescue
	<u>Frasera speciosa</u>	Monument plant
	<u>Lithospermum ruderale</u>	Western gromwell
	<u>Lupinus</u> spp.	Lupine
	<u>Poa nervosa</u>	Wheeler bluegrass
	<u>Poa sandbergii</u>	Sandberg bluegrass
	<u>Sedum stenopetalum</u>	Wormleaf stonecrop
	<u>Sitanion hystrix</u>	Bottlebrush squirreltail
	<u>Stipa occidentalis</u>	Western needlegrass
(Ponderosa pine--Douglas-fir/pinegrass-- elk sedge)		
Tall-growing trees	<u>Abies grandis</u>	Grand fir
	<u>Larix occidentalis</u>	Western Larch
	<u>Pinus ponderosa</u>	Ponderosa pine
	<u>Pseudotsuga menziesii</u>	Douglas-fir

continued

Table 3130-51.1 [3135ECM] (Concluded)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (Continued)</u>		
(Ponderosa pine--Douglas-fir/pinegrass--elk sedge) (Continued)		
Tall shrubs	<u>Amelanchier alnifolia</u> <u>Salix</u> spp.	Serviceberry Willow
Medium shrubs	<u>Holodiscus discolor</u>	Ocean spray
Low shrubs	<u>Arctostaphylos nevadensis</u> <u>Pachistima myrsinites</u> <u>Purshia tridentata</u> <u>Spiraea betulifolia</u>	Pine-mat manzanita Myrtle boxleaf Bitterbrush Shiny leaf spiraea
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Antennaria luzuloides</u> <u>Antennaria rosea</u> <u>Arnica cordifolia</u> <u>Aster</u> spp. <u>Balsamorhiza sagittata</u> <u>Bromus carinatus</u> <u>Calamagrostis rubescens</u> <u>Calochortus macrocarpus</u> <u>Carex geyeri</u> <u>Carex rossii</u> <u>Danthonia intermedia</u> <u>Festuca occidentalis</u> <u>Frasera speciosa</u> <u>Geum macrophyllum</u> <u>Lithospermum ruderale</u> <u>Lupinus</u> spp. <u>Madia glomerata</u> <u>Penstemon</u> spp. <u>Poa nervosa</u> <u>Potentilla gracilis</u>	Western yarrow Woodrush everlasting Rosy pussy's-toes Heartleaf arnica Aster Arrowleaf balsamroot California brome Pinegrass Green-banded mariposa lily Elk sedge Ross sedge Timber danthonia Western fescue Monument plant Largeleaf avens Western groundwell Lupine Stinking tarweed Penstemon Wheeler bluegrass Beauty cinquefoil
(Grasslands)		
Low shrubs	<u>Arctostaphylos nevadensis</u> <u>Artemisia rigida</u>	Pine-mat manzanita Stiff sagebrush
Lesser vegetation - grasses, forbs, mosses	<u>Achillea millefolium</u> <u>Balsamorhiza sagittata</u> <u>Bromus carinatus</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Carex rossii</u> <u>Danthonia unispicata</u> <u>Eriophyllum lanatum</u> <u>Festuca idahoensis</u> <u>Gayophytum nuttallii</u> <u>Madia glomerata</u> <u>Phlox</u> spp. <u>Poa nervosa</u> <u>Poa sandbergii</u> <u>Sedum stenopetalum</u> <u>Sitanion hystrix</u> <u>Stipa occidentalis</u>	Western yarrow Arrowleaf balsamroot California brome Pinegrass Elk sedge Ross sedge Few-flowered wild oatgrass Common woolly sunflower Idaho fescue Nuttall's gayophytum Stinking tarweed Phlox Wheeler bluegrass Sandberg bluegrass Wormleaf stonecrop Bottlebrush squirreltail Western needlegrass

Table 3130-51.1 [3135OPS] Selected Plant Species Common to the Ponderosa Shrub Forest (Oregon Pumice Soils Region)

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
	(Ponderosa pine--ceanothus communities)		(Ponderosa pine--bitterbrush communities)	
Tall-growing trees	<u>Abies concolor</u> <u>Pinus contorta</u> <u>Pinus ponderosa</u>	White fir Lodgepole pine Ponderosa pine	<u>Pinus contorta</u> <u>Pinus ponderosa</u>	Lodgepole pine Ponderosa pine
Low shrubs	<u>Arctostaphylos patula</u> <u>Ceanothus velutinus</u> <u>Purshia tridentata</u>	Greenleaf manzanita Tobacco brush Bitterbrush	<u>Arctostaphylos patula</u> <u>Ceanothus velutinus</u> <u>Purshia tridentata</u>	Greenleaf manzanita Tobacco brush Bitterbrush
Lesser vegetation - grasses, forbs, mosses	<u>Antennaria corymbosa</u> <u>Antennaria geyeri</u> <u>Apocynum androsaemifolium</u> <u>Arabis rectissima</u> <u>Carex rossii</u> <u>Chimaphila umbellata</u> <u>Collinsia parviflora</u> <u>Cryptantha affinis</u> <u>Epilobium angustifolium</u> <u>Fragaria chiloensis</u> <u>Gayophytum nuttallii</u> <u>Lomatium triternatum</u> <u>Lupinus caudatus</u> <u>Phacelia heterophylla</u> <u>Pyrola picta</u> <u>Sitanion hystrix</u> <u>Stipa occidentalis</u> <u>Viola purpurea</u>	Flattop pussy's-toes Pinewoods everlasting Spreading dogbane Bristly-leaved rockcress Ross sedge Western prince's-pine Littleflower collinsia Slender cryptantha Fireweed Sand strawberry Nuttall's gayophytum Nine-leaf lomatium Tailcup lupine Varileaf phacelia Whitevein pyrola Bottlebrush squirreltail Western needlegrass Purple-tinged violet	<u>Achillea millefolium</u> <u>Antennaria corymbosa</u> <u>Antennaria geyeri</u> <u>Apocynum androsaemifolium</u> <u>Arabis rectissima</u> <u>Carex rossii</u> <u>Chimaphila umbellata</u> <u>Collinsia parviflora</u> <u>Cryptantha affinis</u> <u>Epilobium angustifolium</u> <u>Eriophyllum lanatum</u> <u>Festuca idahoensis</u> <u>Fragaria chiloensis</u> <u>Gayophytum nuttallii</u> <u>Hieracium cynoglossoides</u> <u>Lomatium triternatum</u> <u>Lupinus caudatus</u> <u>Madia minima</u> <u>Microsteris gracilis</u> <u>Paeonia brownii</u> <u>Phacelia heterophylla</u> <u>Pyrola picta</u> <u>Senecio integerrimus</u> <u>Sitanion hystrix</u> <u>Stipa occidentalis</u> <u>Viola purpurea</u>	Western yarrow Flattop pussy's-toes Pinewoods everlasting Spreading dogbane Bristly-leaved rockcress Ross sedge Western prince's-pine Littleflower collinsia Slender cryptantha Fireweed Common woolly sunflower Idaho fescue Sand strawberry Nuttall's gayophytum Houndstongue hawkweed Nine-leaf lomatium Tailcup lupine Least tarweed Pink microsteris Western peony Varileaf phacelia Whitevein pyrola Western groundsel Bottlebrush squirreltail Western needlegrass Purple-tinged violet
(Lodgepole pine)				
Tall-growing trees			<u>Pinus contorta</u>	Lodgepole pine
Low shrubs			<u>Purshia tridentata</u> <u>Ribes cereum</u>	Bitterbrush Wax currant
Lesser vegetation - grasses, forbs, mosses			<u>Carex rossii</u> <u>Fragaria chiloensis</u> <u>Sitanion hystrix</u> <u>Stipa thurberiana</u>	Ross sedge Sand strawberry Bottlebrush squirreltail Thurber needlegrass
Habitat conditions: Moist to wet/well-drained to impeded				
(Lodgepole pine)				
Tall-growing trees			<u>Pinus contorta</u>	Lodgepole pine
Low shrubs			<u>Arctostaphylos uva-ursi</u> <u>Purshia tridentata</u> <u>Ribes viscosissimum</u> <u>Vaccinium uliginosum</u>	Kinnikinnik Bitterbrush Sticky currant Big huckleberry
Lesser vegetation - grasses, forbs, mosses			<u>Achillea millefolium</u> <u>Antennaria corymbosa</u> <u>Aster</u> spp. <u>Carex rossii</u> <u>Danthonia californica</u> <u>Deschampsia elongata</u> <u>Festuca idahoensis</u> <u>Fragaria chiloensis</u> <u>Fragaria virginiana</u> <u>Juncus</u> spp. <u>Koeleria cristata</u> <u>Muhlenbergia filiformis</u> <u>Penstemon</u> spp. <u>Sitanion hystrix</u> <u>Stipa thurberiana</u> <u>Trifolium longipes</u>	Western yarrow Flattop pussy's-toes Aster Ross sedge California danthonia Slender hairgrass Idaho fescue Sand strawberry Virginia strawberry Rushes Prairie junegrass Pullup muhly Penstemon Bottlebrush squirreltail Thurber needlegrass Long-stalked clover

Table 3130-51.2 Ecological Characteristics of Selected Plant Species Common to the Intermountain Sagebrush

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir <i>Abies concolor</i> (Gord. & Glend.) Lindl. 3132, 3133, 3134, 3135	Common in conifer forest, 5,500-10,000 ft	Large evergreen tree, about 40 ft, conical crown	Cone, 3-5 in, pollinates in spring	Seeds eaten by songbirds; browsed by deer; nesting and roosting cover for birds	Young trees are easily killed by fire; older trees with thicker bark are more fire-resistant
Grand fir <i>Abies grandis</i> Lindl. 3135	Stream bottoms, valleys, mountain slopes, best on deep, rich, alluvial soils	Evergreen tree, up to 300 ft high	Cone, 40-190 seeds per cone, seed crops poor-fair each year, Sept.-Oct.	Same as <i>A. concolor</i>	Lowland trees less resistant to fire than upland trees; provide nesting and roosting cover for birds
Subalpine fir <i>Abies lasiocarpa</i> (Hook.) Nutt. 3132, 3133, 3134	Common tree of spruce-fir forest, 8,000-12,000 ft, sun	Medium to large tree, to about 40 ft, narrow crown shrub-like at timberline	Dark purple cone, 3-4 in, pollinates in spring	Seeds eaten by songbirds, beaver, squirrel; browsed by deer and bighorn sheep; nesting cover for songbirds	
Rocky Mountain maple <i>Acer glabrum</i> Torr. 3131, 3133, 3134	Moist soils along streams, 7,000-9,000 ft, sun and shade	Shrub or small tree, deciduous to 33 ft	Samara, May-June	Seeds eaten by quail, turkey, bear, beaver, rabbit, squirrel, fox, deer	
Bigtooth maple <i>Acer grandidentatum</i> Nutt. 3132, 3133, 3134	Moist soil along streams and canyons, 4,700-7,000 ft, sun or shade	Deciduous tree, up to 50 ft, with spreading crown	Samara, Apr.	Same as <i>A. glabrum</i>	
Yarrow <i>Achillea</i> spp. L. 3132, 3133, 3134	Conifer forest, 5,500-11,500 ft	Perennial forb, to 1.5 ft	Flattened achene, June-Sept.	Plant eaten by rabbit and bighorn sheep	
Western yarrow <i>Achillea millefolium</i> L. 3131, 3135	Common, variable, not fully understood	Perennial herb, aromatic, stems 1-3 ft high, leaves slender	Achenes, without pappus	Sage-scented leaves are eaten by a few wildlife species	
Mountain dandelion <i>Agoseris</i> spp. Raf. 3132, 3133, 3134	Meadows, open coniferous forest, 6,500-10,000 ft, sun	Perennial herb, 8-24 in	Achenes, summer-fall	Seeds eaten by sage grouse	
Annual agoseris <i>Agoseris heterophylla</i> Jeps. 3131	Dry, open places in foothills and lowlands, widely distributed	Annual herb, scapous with scapes slender, 3-8 in high	Achenes, .08-.17 in long with beak about 2.5 times as long as body	Sage grouse eat leaves and flower clusters	
Thickspike wheatgrass <i>Agropyron dasystachyum</i> (Hook.) Scribn. 3131, 3132, 3133, 3134	Dry plains and hillsides	Grass, perennial, rhizomatous	Grain, summer-fall	Plant eaten by rabbit, antelope, deer	Widespread; soil binder
Western wheatgrass <i>Agropyron smithii</i> Rydb. 3132, 3133, 3134	Dry hills, sandy bottomlands, forest openings	Perennial grass, 12-24 in	Achene, May-Oct.	Plant eaten by rabbit, antelope, deer, bighorn sheep	Valuable range grass; good soil binder
Bluebunch wheatgrass <i>Agropyron spicatum</i> (Pursh) Scribn. & Smith 3131, 3132, 3133, 3134, 3135	Dry rocky slopes, open woodland, canyons, sun	Perennial grass, 15-40 in, rhizomatous	Grain, July-Sept.	Plant eaten by rabbit, deer, antelope	Considered one of the most valuable native range species
Pickleweed <i>Allenrolfea occidentalis</i> (Wats.) Ktze. 3132, 3133, 3134	Highly alkaline flats and sinks, salt marshes, floodplains	Shrub, 1-5 ft	Berrylike, May-Nov.		

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Onion <u>Allium acuminatum</u> Hook. 3132, 3133, 3134	Dry plains, hills, 2,000-7,000 ft	Erect herb, to 11 in	Capsule, also underground bulb		
White alder <u>Alnus rhombifolia</u> Nutt. 3131	Streambanks	Deciduous tree, up to 80 ft, diameters up to 3 ft	Mature female catkins oblong, about 1 in long, summer, nutlets small, flatish, winged	Value low in propor- tion to abundance; seeds eaten by a few songbirds	Dense thickets can provide effective cover
Serviceberry <u>Amelanchier alnifolia</u> Nutt. 3131, 3132, 3133, 3134, 3135	Banks, slopes, mountains, 5,000- 10,000 ft, sun	Shrub or small tree, 3-12 ft	Pome, summer- early fall	Fruit eaten by song- birds and bears; browsed by deer	
Utah serviceberry <u>Amelanchier utahensis</u> Koehne 3131	Valleys and hill- sides, sagebrush desert to mon- tane open forest, dry rocky slopes	Shrub or small tree, up to 16 ft high, decidu- ous	Berrylike pome, .25-.33 in diam- eter, dullish red, orange or yellow	Juicy, sweet fruit important to song- birds, squirrels, chipmunks, bears; deer feed on foli- age and twigs	
Pearly everlasting <u>Anaphalis margaritacea</u> (L.) B. & H. 3135	Widespread, vari- able, woods	Perennial herb, stem simple, 8-32 in high, rhizomatous	Achene		
Pussy's-toes <u>Antennaria</u> spp. Gaertn. 3131, 3132, 3133, 3134	Rocky or gravelly soil, moist to dry, up to 12,500 ft	Perennial forb, to 18 in	Achene, summer- fall	Plant eaten by grouse, rabbit, deer	
Flat-top pussy's-toes <u>Antennaria corymbosa</u> E. Nels. 3131, 3135	Meadows and moist open woods	Mat-forming per- ennial herb, loosely caespitose, from woody root- stocks, stems 4-9 in high	Achenes	Tender rosettes of leaves eaten by sev- eral birds and mam- mals	
Low pussy's-toes <u>Antennaria dimorpha</u> (Nutt.) T. & G. 3131	Open, arid areas in foothills and lowlands	Low perennial herb, seldom 9 in high, matted	Achenes, late spring	Same as <u>A. corymbosa</u>	
Pinewoods everlasting <u>Antennaria geyeri</u> Gray 3135	Open ponderosa pine woods	Perennial herb, stems tufted from a woody base, 3-8 in high	Achenes, some- what woolly, pubescent with a broad callus	Same as <u>A. corymbosa</u>	
Woodrush everlasting <u>Antennaria luzuloides</u> T. & G. 3135	Open, not too dry places from foot- hills to mid- elevations in mountains	Perennial herb, stems tufted, from a short woody root- stock, erect or a little decumbent, 8-32 in high	Achene	Same as <u>A. corymbosa</u>	
Littleleaf pussy's-toes <u>Antennaria parvifolia</u> Nutt. 3131	Lowlands to moun- tains	Mat-forming peren- nial herb	Achenes	Same as <u>A. corymbosa</u>	
Rosy pussy's-toes <u>Antennaria rosea</u> Greene 3131, 3135	Dry mountain slopes at low elevations	Stems and short leafy shoots from matted woody root- stocks, slender, 6-7.5 in high	Achene, late spring	Same as <u>A. corymbosa</u>	
Spreading dogbane <u>Apocynum androsaemifolium</u> L. 3135	Generally on rather dry soils, in foothills and valleys	Perennial herb, stems 8-20 in high, freely branched	Pair of narrow many-seeded fol- licles, seeds with a long coma	Quail may eat seeds	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Holboell rockcress <i>Arabis holboellii</i> Horrem. 3131	Dry ground, sagebrush plains and Ponderosa pine forest	Biennial of often perennial herb with a woody base, stems .5-2 ft high	Silique, 1-3 in long	Some foliage eaten by big game mammals	
Bristly-leaved rockcress <i>Arabis rectissima</i> Greene 3135	Base of mountains	Biennial herb, stems simple or branched from base, erect, 2-16 in high	Silique, 2-3 in long	Same as <i>A. holboellii</i>	
Pine-mat manzanita <i>Arctostaphylos nevadensis</i> Gray 3135	Wooded hills, mid to high elevations	Evergreen shrub, branching from base, often creeping and rooting, 20-43 in long, smaller stems ascending, stiff, 4-12 in high	Berrylike nutlet, stony, light red, .2-.33 in diameter	Small fruits relished by gamebirds, songbirds, small mammals; plants browsed by deer	Excellent ground cover; provides cover for wildlife
Greenleaf manzanita <i>Arctostaphylos patula</i> Greene 3132, 3133, 3134, 3135	Coniferous forest, 7,000-8,500 ft, sun	Low shrub, 3 ft	Several-seeded, round fruit, May-June	Fruit eaten by songbirds and gamebirds; browsed by deer	Very fire-resistant; forms thickets
Kinnikkinnik <i>Arctostaphylos uva-ursi</i> (L.) Spreng. 3135	Widespread, generally in sandy or gravelly sites	Evergreen shrub, stems long and creeping, small ascending branches, 4-16 in high	Berrylike, bright red, smooth, .28-.38 in diameter	Fruit eaten by bear and gamebirds; leathery foliage is browsed extensively by deer	Excellent ground cover, especially for dry banks
Dense-flowered sandwort <i>Arenaria congesta</i> Nutt. 3131	Sagebrush desert	Perennial herb, stems loosely branched and woody, green leaves clustered at tips of old persistent branches, flowering stem, erect 4-12 in high	Capsule, seeds plump, .02-.06 in		
Heartleaf arnica <i>Arnica cordifolia</i> Hook. 3135	Widespread, common in woods, from foothills to higher elevations	Perennial herb, stems from elongated rootstocks, slender, 1-2 ft high	Achenes, sparsely and minutely glandular-puberulent, pappus white	Good elk forage during summer but sparsely distributed, also eaten by pika and ground squirrels	
Orange arnica <i>Arnica fulgens</i> Pursh 3131	Open places from foothills to moderate elevations, moist slopes and meadows	Perennial herb, stems from short rootstocks, 8-14 in high	Achene, generally densely short-haired	Same as <i>A. cordifolia</i>	
Red three-awn <i>Aristida longiseta</i> Steud. 3131, 3132, 3133, 3134	Arid sandy and rocky hills and plateaus, forest openings, 5,000-8,500 ft, sun	Perennial bunchgrass, 4-14 in	Long-awned grain, May-Nov.	Fruit eaten by rabbits and deer	Absent in Nevada
Sagebrush <i>Artemisia</i> spp. L. 3132, 3133, 3134	Throughout the sagebrush desert, 2,500-10,000 ft	Herb or shrub, 12-40 in	Achene	Browsed by grouse, rabbits, deer	Furnishes essential cover for many small animals
Low sagebrush <i>Artemisia arbuscula</i> Nutt. 3131, 3132, 3133, 3134	Dry slopes and ridges, 4,000-9,500 ft, sun	Low shrub, 4-18 in	Achene, summer-fall	Browsed by rabbits, grouse, antelope, deer	
Stiff sagebrush <i>Artemisia rigida</i> (Gray) Nutt. 3131, 3135	Dry, rocky places in plains and foothills	Abundantly branched shrub, 8-16 in high, aromatic	Achenes	Browsed by rabbits, deer, grouse	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sagebrush <i>Artemisia spinescens</i> DC. 3131, 3132, 3133, 3134	Semi-alkaline basins and valleys, 2,000-6,000 ft	Small shrub, 4-16 in	Achene	Browsed by grouse, rabbits, antelope, deer	
Big sagebrush <i>Artemisia tridentata</i> Nutt. 3132, 3133, 3134	Plains, mesas, rocky slopes, in pinyon pine, 5,000-8,000 ft	Shrub, 1-7 ft	Achene, July-Oct.	Browsed by rabbits, deer, grouse	Good growth indicates deep, fertile nonsaline soil
Three-tip sagebrush <i>Artemisia tripartita</i> Rydg. 3131	Dry plains and hills but usually on moister sites than big sagebrush	Aromatic shrub, .5-2 ft high, leaves persistent	Achene	Same as <i>A. tridentata</i>	Same as <i>A. tridentata</i>
Aster <i>Aster</i> spp. L. 3135	Different species growing on a variety of site conditions, to alpine regions	Perennial herbs, usually with a rootstock, leaves alternate	Achene	Relatively little importance to wildlife	
Crag aster <i>Aster scopulorum</i> Gray 3131	Dry, open places often with sagebrush	Perennial herb, stems from a stout branching woody base, 3-5 in high	Achenes	Important summer forage for ungulates	
Milk-vetch <i>Astragalus</i> spp. L. 3132, 3133, 3134, 3135	Hillsides, open woods, arid slopes, 2,000-10,000 ft	Mostly low herbaceous perennials to 6 in	Pods, dehiscent or indehiscent	Seeds eaten by quail; plant eaten by antelope	
Timber poison vetch <i>Astragalus convallarius</i> Greene 3131	Dry soil, grassland to sagebrush desert	Herb dying back to rootcrown each year, stems taller than 8 in, rush-like erect to ascending	Pods, 1-celled	Seeds eaten by gamebirds and rodents; big game forage to a limited extent	May be poisonous to livestock; not known if poisonous to wildlife
Threadstalk milk-vetch <i>Astragalus filipes</i> Torr. ex Gray 3131	Sagebrush plains and foothills, dry regions	Perennial herb, stems clustered, erect, 1-2 ft high	Pods, .5-1 in long	Same as <i>A. convallarius</i>	Many <i>Astragalus</i> spp. are poisonous to livestock
Specklepod loco <i>Astragalus lentiginosus</i> Dougl. ex Hook. 3131	Desert flats to subalpine slopes	Perennial herb, stems clustered, erect to decumbent 4-12 in high	Pods, .5-1 in long, leathery or thinly fleshy	Same as <i>A. filipes</i>	Same as <i>A. filipes</i>
Starved milk-vetch <i>Astragalus miser</i> Dougl. ex Hook. 3131	Grassland, foothills to alpine meadows and dry ridges	Perennial herb, stems slender, wiry, somewhat spreading, 2-8 in high	Pods, .4-.8 in long	Same as <i>A. filipes</i>	Same as <i>A. filipes</i>
Pursh's milk-vetch <i>Astragalus purshii</i> Dougl. ex Hook. 3131	Prairies and sagebrush desert, lower mountains	Perennial herb, stems clustered, 2-4 in high, prostrate	Pods, 1 in long	Same as <i>A. filipes</i>	Same as <i>A. filipes</i>
Spalding's milk-vetch <i>Astragalus spaldingii</i> Gray 3131	Grassland and sagebrush desert, xerophytic areas	Perennial herb, .5-1.5 ft high, stems slender from a freely branched woody base	Pods, short	Same as <i>A. filipes</i>	Same as <i>A. filipes</i>
Narrowleaf milk-vetch <i>Astragalus stenophyllus</i> T. & G. 3131	Prairies, open stoney soil, mountain crests	Perennial, with woody caudex, decumbent stems	Pod	Same as <i>A. filipes</i>	Same as <i>A. filipes</i>
Four-wing saltbush <i>Atriplex canescens</i> Pursh 3132, 3133, 3134	Moderately alkaline slopes to 7,000 ft	Shrub, 3-6 ft	Small winged fruit	Seeds eaten by quail and rabbits; plant eaten by deer and bighorn sheep	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Shadscale <u>Atriplex confertifolia</u> Torr. & Frem. 3131, 3132, 3133, 3134	Alkaline mesas and plains in sagebrush and creosote desert 2,500-6,000 ft	Shrub, 1-3 ft	Flat winged fruit	Seeds eaten by quail and songbirds; plant eaten by rabbit and bighorn sheep	
Big saltbush <u>Atriplex lentiformis</u> (Torr.) Wats. 3132, 3133, 3134	Alkaline soils below 7,000 ft	Erect shrub, 3-9 ft	Ovate flattened fruit	Fruit eaten by waterfowl and quail; browsed by rabbit, deer, antelope	Halophyte occurring with <u>Sarcobatus</u> spp.
Gardner saltbush <u>Atriplex nuttallii</u> Wats. 3131, 3132, 3133, 3134	Alkaline soils, 4,000-5,000 ft	Low shrub, 8-20 in, freely branched, erect or ascending	Lanceolate fruit	Same as <u>A. lentiformis</u>	
Spiny hop-sage <u>Atriplex spinosa</u> (Hook.) Moq. 3131	Sagebrush deserts, often in alkaline soils	Shrubs up to 5 ft high, spiny	Utricle, compressed and winged laterally	Seeds eaten by several kinds of birds and small mammals; twigs and foliage eaten by browsers	
Carey's balsamroot <u>Balsamorhiza careyana</u> Gray 3131	Dry plains east of Cascade Mts.	Perennial herb, large leaves, .5-1 ft high	Achene	Seeds eaten by grouse; deer eat plant during fall, winter, spring	
Hooker balsamroot <u>Balsamorhiza hookeri</u> Nutt. 3131	Irregularly distributed east of Cascade Mts.	Perennial herb, carrotlike, taproot, reduced cauline leaves	Disk achene	Same as <u>B. careyana</u>	
Arrowleaf balsamroot <u>Balsamorhiza sagittata</u> (Pursh) Nutt. 3131, 3132, 3133, 3134, 3135	Widespread in lowlands to mid-elevation in mountains, open hillsides and basins	Perennial herb, to 1.5 ft, leaves large	Achene	Same as <u>B. careyana</u>	
Serrated balsamroot <u>Balsamorhiza serrata</u> Nels. & Macbr. 3131	Dry, rocky knolls and outcrops	Perennial herb, leaves variable on same plant	Achene, 4-angled	Same as <u>B. careyana</u>	
Five-hook bassia <u>Bassia hyssopifolia</u> (Pall.) Ktze. 3131, 3132, 3133, 3134	Alkaline soils	Prostrate branching annual	Seed free from pericarp	Seeds eaten by quail	Introduced
Oregon-grape <u>Berberis repens</u> Lindl. 3132, 3133, 3134	Coniferous forest, 5,000-8,500 ft	Spreading, low shrub, 1 ft	Round black berry, Apr.-June	Browsed by rabbits and deer	Forms excellent ground cover to check erosion
Water-parsnip <u>Berula erecta</u> (Huds.) Cov. 3132, 3133, 3134	Marshes, streams, seeping banks, edges of ponds, lakes, 3,500-9,000 ft	Erect perennial forb, 8-28 in	Caryopsis, summer-fall		
Blue grama <u>Bouteloua gracilis</u> (HBK.) Steud. 3132, 3133, 3134	Open rocky slopes, plains, forest openings, meadows, 4,000-8,000 ft	Tufted perennial grass, 10-30 in	Grain, July-Nov.	Plant eaten by turkey, rabbits, deer	Excellent range grass; adapted to drought and heavy grazing
Douglas' brodiaea <u>Brodiaea douglasii</u> Wats. 3131	Grassland and sagebrush desert to ponderosa pine woodlands	Perennial, scabrous herb with deep-seated corm, leaves 1-5, linear	Capsule		Easily cultivated; bulb used as food by gophers, gamebirds in other areas

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
California brome <u>Bromus carinatus</u> H. & A. 3131, 3135	Dry open ground	Annual or short-lived perennial grass, 2-3.5 ft high	Caryopsis, awns .28-.4 in long	Good-sized seeds are eaten by a number of birds and rodents; leaves eaten by ungulates	
Mountain brome <u>Bromus marginatus</u> Nees 3132, 3133, 3134	Woodlands and forest openings, above 5,500 ft	Perennial grass, 16-40 in	Grain, Aug.-Nov.	Plant eaten by deer and antelope	Good forage grass
Cheat <u>Bromus tectorum</u> L. 3131	Common in waste or disturbed areas, especially overgrazed areas throughout the province	Annual grass, culms .5-3.5 ft high	Caryopsis, lemmas narrow, awns rough	Same as <u>B. carinatus</u>	Perhaps the most common of all grasses in this area
Bluejoint reedgrass <u>Calamagrostis canadensis</u> (Michx.) Beauv. 3132, 3133, 3134	Marshes, wet soil, open forests, 5,000-11,000 ft	Erect perennial grass, 20-45 in	Grain, summer-fall		
Plains reedgrass <u>Calamagrostis montanensis</u> Schribn. 3131	Grassland, sagebrush benches into lower mountains, heavy soils	Perennial grass, culms 6-14 in high	Caryopsis, awn sharply bent		
Pinegrass <u>Calamagrostis rubescens</u> Buckl. 3135	Mostly in open conifer woods	Perennial grass, culms from horizontal rootstocks, slender, 2-3.5 ft high	Caryopsis, lemmas shorter than glumes	Browsed by deer	Plants are mostly palatable and nutritious but seldom abundant
Green-banded mariposa lily <u>Calochortus macrocarpus</u> Dougl. 3131, 3135	Arid regions	Perennial herb, 1-2.5 ft tall	Capsule, 3-angled	Quail eat some seeds	
Big-pod mariposa lily <u>Calochortus nitidus</u> Dougl. 3131	Dried swales and prairies, open slopes at mid-elevations	Perennial herb, 1-2 ft high	Capsule, winged	Same as <u>C. macrocarpus</u>	
Mariposa lily <u>Calochortus nuttallii</u> T. & G. 3132, 3133, 3134	Dry soil, 5,000-9,000 ft	Erect perennial herb, to 16 in	Flat seeds, with reticulate coats		
Bluebell <u>Campanula rotundifolia</u> L. 3132, 3133, 3134	Hills, valleys, slopes, 5,000-13,000 ft	Perennial forb, to 3 ft	Trilocular capsule		
Hoary cress <u>Cardaria draba</u> (L.) Desv. 3132, 3133, 3134	Fields, roadsides, disturbed areas, 3,500-8,500 ft	Small perennial shrub, 2-16 in, spreading from roots	Ovoid smooth seed		Considered a weed
Sedge <u>Carex</u> spp. L. 3131, 3132, 3133, 3134	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grass-like erect herb, 2-4 ft	Achenes, in spikes, spring	Plant eaten by game-birds, bear, rabbits, squirrel, fox, deer	
Elk sedge <u>Carex geyeri</u> Boott 3135	Woodland, open slopes, dry meadows, foothills to mid-mountain	Perennial sedge, clustered, erect, from tough, woody rootstocks, 4-18 in high	Achene, perigynium, 2-keeled, .2-.24 in long, beakless	Seeds eaten by many kinds of birds	Provides cover for most species

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Ross sedge <i>Carex rossii</i> Boott 3131, 3135	Widespread, meadows and prairies from low elevation to near timberline, dry to fairly moist sites	Sedge, more or less densely caespitose from long rootstocks, erect or spreading, 4-12 in high	Achene, perigynium, ascending, .13-.17 in long	Same as <i>C. geyeri</i>	Provides cover for most species
Paintbrush <i>Castilleja chromosa</i> A. Nels. 3132, 3133, 3134	Dry plains, mesas, brushy slopes, 3,000-9,000 ft	Herbaceous perennial, to 16 in	Ovoid seeds	Seeds eaten by songbirds; plant eaten by deer	
Scarlet paintbrush <i>Castilleja miniata</i> Hook. 3132, 3133, 3134	Moist soils along streams below 11,000 ft	Perennial forb, 16-32 in	Capsule, summer-fall	Plant eaten by deer	
Buckbrush <i>Ceanothus fendleri</i> Gray 3132, 3133, 3134	Foothills, mountains, common in pine forests, 5,000-10,000 ft, sun and shade	Shrub, to 3 ft, forming low thickets	Capsule, 3-celled, Apr.-Oct.	Browsed by deer	
Tobacco brush <i>Ceanothus velutinus</i> Dougl. ex Hook. 3132, 3133, 3134, 3135	Open wooded slopes, 3,500-10,000 ft	Shrub, 3-6 ft	Capsule, summer-fall	Same as <i>C. fendleri</i>	Provides cover; plentiful in burned or cleared areas
Netleaf hackberry <i>Celtis reticulata</i> Torr. 3131, 3132, 3133, 3134	Streams, canyons, washes, moist soil, 2,500-6,000 ft	Deciduous large shrub to small tree, to 30 ft, spreading crown	Drupe, 1-seeded	Fruit eaten by gamebirds and fox; browsed by deer	
Common hornwort <i>Ceratophyllum demersum</i> L. 3132, 3133, 3134	Ponds, lakes, slow streams, 3,000-7,500 ft	Subsurface pond weed	Achene, summer-fall	Seeds eaten by waterfowl	Aggressive competitor; does not need roots to survive
Curlleaf mountain-mahogany <i>Cercocarpus ledifolius</i> Nutt. 3131, 3132, 3133, 3134	Generally in pine woods, 5,000-9,000 ft, dry	Evergreen tree or shrub, to 20 ft	Hairy achene, spring-summer	Browsed by deer	
Mountain-mahogany <i>Cercocarpus montanus</i> Raf. 3132, 3133, 3134	Drier slopes, rocky hillsides, 3,000-8,000 ft	Shrub, to 9 ft	Achene	Browsed by antelope and deer	
False yarrow <i>Chaenactis douglasii</i> (Hook.) H. & A. 3131	Widespread and variable, arid regions	Biennial or sometimes perennial herb, rather stout, branched from base, 8-24 in high	Achenes, .28-.38 in long, densely pubescent	Seeds eaten by some gamebirds	
Western prince's-pine <i>Chimaphila umbellata</i> (L.) Bart. 3135	Woods, mostly under conifers, moderate elevations	Evergreen herb, perennial, stems from shallow rootstocks, erect or decumbent, 8-12 in high	Capsule, erect, 5-celled	Browsed occasionally by ungulates	
Hairy goldaster <i>Chrysopsis villosa</i> (Pursh) Nutt. ex DC. 3132, 3133, 3134	Dry soils, 4,000-10,000 ft	Perennial forb, to 20 in	Achene		
Rabbit brush <i>Chrysothamnus nauseosus</i> (Pal.) Britt. 3132, 3133, 3134	Dry plains and hills, 5,000-9,000 ft	Shrub, 1.5-6.5 ft	Achene, summer-fall	Browsed by rabbits, deer, antelope	Provides useful cover in otherwise open areas

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Whitestem gray rabbit brush <u>Chrysothamnus nauseosus</u> var. <u>albicaulis</u> (Nutt.) Rydb. 3131	Common and wide-spread in arid regions	Branched shrub, 1.5-6.5 ft, alternate, sessile leaves	Achene, summer-fall, pappus of many capillary bristles	Seed heads and foliage are eaten by wildlife, especially rabbits and ungulates	Provides useful cover in otherwise open areas
Rabbit brush <u>Chrysothamnus viscidiflorus</u> (Hook.) Nutt. 3131, 3132, 3133, 3134	Dry mesas and slopes, 5,000-9,000 ft	Small shrub, to 20 in	Achene, pappus light brown, fall	Browsed by rabbits and deer	Provides valuable cover in open areas
Alpine circaea <u>Circaea alpina</u> L. 3131	Cool, damp woods at higher elevations	Perennial herb, slender stems arising from tuberous rhizome, 4-20 in high, juicy	Pear-shaped capsule, .08 in, covered with short hooked hairs		
Common thistle <u>Cirsium vulgare</u> (Savi) Airy-Shaw 3131	Widespread	Biennial herb, stem robust, 3-5 ft high, leaves with numerous stout prickles	Achenes	Seeds eaten by some gamebirds; deer browse on plants during winter	Introduced weed; early invader of disturbed sites
Blackbrush <u>Coleogyne ramosissima</u> Torr. 3132, 3133, 3134	Dry slopes and mesas in creosote and sagebrush deserts, 3,000-5,000 ft	Shrub, 1.5-4.5 ft	Achene, 1-seeded		
Narrow-leaved collinsia <u>Collinsia linearis</u> Gray 3131	Dry open ground	Annual herb, slender stems, 4-20 ft high	Capsule		
Littleflower collinsia <u>Collinsia parviflora</u> Lindl. 3131, 3135	Widespread in areas that are moist in the spring	Slender annual, often decumbent or reclining, 4-16 in high	Capsule with many seeds		
Common comandra <u>Comandra umbellata</u> (L.) Nutt. 3131	Dry to moist, well-drained soils, lowland to subalpine, especially common in sagebrush	Parasitic perennial herb, leaves thick, stems simple or branched, 4-12 in high	Drupelike, .25-.33 in long		Parasitic on many conifers and angiosperms
Cliffrose <u>Cowania mexicana</u> D. Don 3132, 3133, 3134	Rocky hills and plateaus on limestone formations, 3,500-8,000 ft	Evergreen shrub, 3-6 ft	Hairy achene, late spring-fall	Browsed by deer	
Hawthorn <u>Crataegus</u> spp. L. 3131	Open hillsides, woods and thickets, often in disturbed areas	Shrub or small tree, spines	Small pome with 1-seeded nutlets	Small apple-like fruits are not used as much as might be expected; eaten by few species of songbirds	Favorite nesting site for many birds
Columbia hawthorn <u>Crataegus columbiana</u> Sarg. 3131	Often in disturbed areas, open hillsides	Shrub or small tree, up to 15 ft, spines 1-2.5 in long	Small pome with 1-seeded nutlets, dark red, ovoid, .33-.5 in long	Same as <u>Crataegus</u> spp.	Same as <u>Crataegus</u> spp.
Douglas hawthorn <u>Crataegus douglasii</u> Lindl. 3131	Woods and thickets	Small tree, up to 25 ft high, stout spines, .33-.8 in long	Small pome with 1-seeded nutlets, .25-.37 in long, nearly black	Same as <u>Crataegus</u> spp.	Same as <u>Crataegus</u> spp.
Hawksbeard <u>Crepis acuminata</u> Nutt. 3131, 3132, 3133, 3134	Dry soils to 10,500 ft	Perennial herb, to 28 in	Achene		

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Slender hawkbeard <i>Crepis atribarba</i> Heller 3131	Ponderosa pine and grassland areas at mid-elevations	Perennial herb, stems 1-several, 6-14 in high	Achene, greenish, deeply grooved		
Slender cryptantha <i>Cryptantha affinis</i> (Gray) Greene 3135	Foothills to mid-elevations in mountains, dry woods, plains	Annual herb, stems erect, slender, 4-14 in high	Nutlet, .06-.1 in long, dark brown and mottled, smooth and shiny	Seeds maybe eaten by some songbirds and gamebirds	
Obscure cryptantha <i>Cryptantha ambigua</i> (Gray) Greene 3131	Dry, open places from lowlands to mid-elevations in mountains	Annual herb, stem freely branched from base, 4-12 in high	Nutlet, 4, ovate, .06-.08 in long	Same as <i>C. affinis</i>	
California danthonia <i>Danthonia californica</i> Boland. 3135	Open, grassy meadows to rocky ridges, moist sites	Perennial grass, tufted 2-3 ft high, erect or ascending	Caryopsis	Preferred forage for ungulates	
Timber danthonia <i>Danthonia intermedia</i> Vasey 3135	Prairies or grassland to timbered areas, mountain meadows	Perennial grass, densely tufted, 6-12 in high	Caryopsis, awns flat and twisted	Same as <i>D. californica</i>	
Few-flowered wild oatgrass <i>Danthonia unispicata</i> (Thurb.) Munro ex Maccun 3135	Dry to occasionally moist prairies, foothills, open parks, ridges in montane forests	Perennial grass, 4-12 in high	Caryopsis	Same as <i>D. californica</i>	Of fair palatability but of secondary importance as a range grass as it is seldom abundant
Larkspur <i>Delphinium andersoni</i> Gray 3132, 3133, 3134	Sandy, volcanic soil, 5,000-7,500 ft	Erect branching herb, to 24 in	Black-winged seeds, follicle		
Larkspur <i>Delphinium occidentale</i> Wats. 3132, 3133, 3134	Meadows, thickets and open woods, 6,000-10,000 ft	Perennial forb, 2-6 ft	Follicle, summer-fall		
Slender hairgrass <i>Deschampsia elongata</i> (Hook.) Munro ex Benth. 3135	Generally moist banks and slopes or borders of streams or lakes, sometimes in woods	Perennial grass, slender, tufted, 8-32 in high	Caryopsis, awns straight, twice as long as glume	Minor browse for ungulates	
Pinnate tansy mustard <i>Descurainia pinnata</i> (Walt.) Britt. 3131	Dry ground, weedy, often near ditches	Annual herb, stems commonly branched, 8-24 in high	Siliques, .25-.4 in long, less than 20 seeds	Small seeds eaten, sometimes pod and all, by quail; plants eaten by other wildlife	
Common teasel <i>Dipsacus sylvestris</i> Huds. 3131	Frequently in waste ground in cultivated regions, moist, low places	Large, stout, biennial with prickly stem, 3-6 ft high, taproot	Achene		Introduced weed
Desert saltgrass <i>Distichlis stricta</i> Rydb. 3131, 3132, 3133, 3134	Moist, alkaline soils, to 6,000 ft	Perennial grass, 4-16 in	Grain, May-Oct.	Seeds eaten by waterfowl; cover for waterfowl	Creeping rootstocks produce dense sods and dense marsh growth
Vernal draba <i>Draba verna</i> L. 3131	Open grassy plains to sagebrush desert and lower mountains, common	Herbaceous annual, leaves all in a basal rosette, scape 2-6 in high	Silique, long and narrow		Introduced

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Spikerush <u>Eleocharis rostellata</u> Torr. 3132, 3133, 3134	Alkaline soils of marshes and seeps	Tufted perennial rush, 3-6 in	Achene, summer- fall	Seeds eaten by water- fowl; plant eaten by rabbit and muskrat	
Wild rye <u>Elymus</u> spp. L. 3132, 3133, 3134	Dry, open slopes and plains	Perennial grass, 3-12 in	Grain		
Wild rye <u>Elymus cinereus</u> Scribn. & Merr. 3131, 3132, 3133, 3134	Dry plains, slopes, hills, ravines, valleys, riverbanks, 4,500-10,000 ft	Tufted perennial grass, 2-6 ft	Grain, June-Oct.		
Yellow wild rye <u>Elymus flavescens</u> Scribn. & Smith 3131	Dunes and sandy slopes along rivers, open flats, ditches, roadbanks	Perennial grass, culms from long rootstocks, 1.5- 3 ft high	Caryopsis	May provide winter forage	Good soil binder; will stabilize shifting sand
Blue wild rye <u>Elymus glaucus</u> Buckl. 3131	Prairies, open woods, dry to moist hillsides, lowlands to mid- mountain	Perennial grass, culms 2-5 ft high	Caryopsis	Same as <u>E. flavescens</u>	Maybe good sand binder
Creeping wild rye <u>Elymus triticoides</u> Buckl. 3131	Dry to moist, often saline meadows, river flats, sand dunes, sagebrush desert to lower mountains, es- pecially alka- line soils	Perennial grass, culms from long rootstocks, 2-4 ft high	Caryopsis	Same as <u>E. flavescens</u>	
Joint-fir <u>Ephedra torreyana</u> Wats. 3132, 3133, 3134	Dry desert areas, 4,000-7,000 ft	Dieocious shrubs, to 4 ft	Seeds in bracts	Seeds eaten by quail; browsed by rabbit, antelope, deer	
Mormon tea <u>Ephedra viridis</u> Cov. 3132, 3133, 3134	Arid slopes, mesas, 3,500- 9,000 ft	Erect shrub, 1-3 ft	Naked seed, sum- mer	Same as <u>E. torreyana</u>	
Fireweed <u>Epilobium angustifolium</u> L. 3135	Lowlands to high mountains, old burns, clear cuts, open woods	Perennial herb, stems 3-10 ft high	Capsule, 4- valved, 2-3 in long, seeds with long coma	Valuable browse for ungulates; seeds eaten by small mam- mals	Potentially bad weeds; valuable honey plants for beekeepers
Small-flowered willowweed <u>Epilobium minutum</u> Lindl. 3131	Widespread, low- land to montane, mostly on gravel- ly, dry soil	Annual herb, stems 4-16 in high	Capsule, 1-1.5 in long, seeds smooth	Same as <u>E. angusti- folium</u>	
Autumn willowweed <u>Epilobium paniculatum</u> Nutt. 3131	Mostly on dry soil in open to wooded areas, often in ponder- osa pine wood- lands, common	Annual herb, tall, 1-8 ft high, usual- ly copiously branched	Capsule, seeds at least .04 in	Same as <u>E. angusti- folium</u>	Potentially bad weeds; valuable honey plants for beekeepers
Fleabane <u>Erigeron</u> spp. L. 3132, 3133, 3134	Forest edge, open ground, mountain mead- ows, above 3,000 ft	Perennial herb, 1-3 ft	Achene, summer- fall		

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Longleaf fleabane <i>Erigeron corymbosus</i> Nutt. 3131	Open, dry places, often with sagebrush, wide-spread	Perennial herb, .5-1.5 ft high, stems slender, mostly erect	Achene	Seeds eaten by grouse and songbirds	
Threadleaf fleabane <i>Erigeron filifolius</i> (Hook.) Nutt. 3131	Dry places in plains and foothills, often with sagebrush	Perennial herb, stems clustered on a woody branching base, 6-20 in high	Achene	Same as <i>E. corymbosus</i>	
Lineleaf fleabane <i>Erigeron linearis</i> (Hook.) Piper 3131	Dry, often rocky plains and foothills to moderate elevations in mountains	Perennial herb, usually under 10 in high, stems stout	Achene	Same as <i>E. corymbosus</i>	
Shaggy daisy <i>Erigeron pumilus</i> Nutt. 3131	Widespread east of Cascade Mts.	Perennial herb, stems clustered on a woody base, 4-12 in high, 1-many heads	Achene, with scant whitish pappus	Highly preferred summer forage for ungulates	
Wild buckwheat <i>Eriogonum</i> spp. Michx. 3132, 3133, 3134	Dry soils, 2,000-10,000 ft	Annual or perennial herb or shrub, to 40 in	Achene	Seeds eaten by quail, grouse, turkey; plant eaten by rabbit and deer	
Mat buckwheat <i>Eriogonum caespitosum</i> Nutt. 3131	Sagebrush flats to open, rocky mountain ridges, high dry slopes	Low, depressed, matted shrub, spreading branches, 2-8 in long	Achene	Seeds and other parts are moderately important; seeds eaten by blue grouse	Old leaves long persistent; grazing value slight
Northern buckwheat <i>Eriogonum compositum</i> Dougl. 3131	Dry slopes of Columbia River gorge through eastern Washington and Oregon, foothills into mountains	Perennial herb, stems woody, loosely branched, prostrate or decumbent, 3-12 in long	Achene	Same as <i>E. caespitosum</i>	Grazing value slight
Douglas buckwheat <i>Eriogonum douglasii</i> Benth. 3131	Sagebrush desert and hills to juniper and ponderosa pine forests, dry areas	Shrub, stems stout, densely branched, branches depressed and matted, rarely over 4 in high	Achene	Same as <i>E. caespitosum</i>	Same as <i>E. caespitosum</i>
Desert buckwheat <i>Eriogonum heracleoides</i> Nutt. 3131	Loamy to rocky soils from sagebrush desert to ponderosa pine forest and montane ridges up to 6,000 ft	Perennial herb, stem shrubby, loosely branched, prostrate or decumbent, 4-20 in long	Achene	Same as <i>E. caespitosum</i>	Same as <i>E. caespitosum</i>
Slenderbush eriogonum <i>Eriogonum microthecum</i> Nutt. 3131	Arid regions throughout province	Erect or decumbent bushy shrub, branched, 8-24 in high	Achene	Same as <i>E. caespitosum</i>	Same as <i>E. caespitosum</i>
Snowy eriogonum <i>Eriogonum niveum</i> Dougl. 3131	Dry hill, sagebrush desert to ponderosa pine forest	Shrub, woody stem, loosely branched, erect or spreading, 4-8 in high	Achene	Seeds eaten by blue grouse	Same as <i>E. caespitosum</i>
Cushion buckwheat <i>Eriogonum ovalifolium</i> Nutt. 3131, 3132, 3133, 3134	Dry soils, valleys, slopes, hills, 4,500-8,500 ft	Erect shrub, perennial, to 1.5 ft	Achene	Seeds eaten by grouse, quail, turkey; browsed by rabbit, deer, bighorn sheep	
Rock buckwheat <i>Eriogonum sphaerocephalum</i> Dougl. 3131	Sagebrush desert or juniper flats and scablands to ponderosa pine forest	Shrub, stems stout, copiously branched, erect or decumbent, 2-10 in high	Achene	Same as <i>E. caespitosum</i>	Same as <i>E. caespitosum</i>

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Desert buckwheat <i>Eriogonum strictum</i> Benth. 3131	Sagebrush desert to ponderosa pine forest, arid regions	Shrub, 1-2 ft high, stem erect or decumbent, often freely branched	Achene	Same as <i>E. caespitosum</i>	Same as <i>E. caespitosum</i>
Thyme buckwheat <i>Eriogonum thymoides</i> Benth. 3131	Sagebrush flats to low mountain ridges, arid regions	Shrub, profusely branched, spreading or decumbent or nearly erect, 3-18 in high	Achene	Same as <i>E. caespitosum</i>	Same as <i>E. caespitosum</i>
Sulfur buckwheat <i>Eriogonum umbellatum</i> Torr. 3131	Sagebrush desert to alpine rocky ridges, dry sites	Shrub, spreading or depressed 2-5 ft high	Achene	Same as <i>E. caespitosum</i>	Same as <i>E. caespitosum</i>
Common woolly sunflower <i>Eriophyllum lanatum</i> (Pursh) Forbes 3135	Dry, open places, lowlands to mid-elevations, wide-spread	Perennial herb, loosely clustered from slender rootstock, erect or decumbent, 8-40 in high	Achene, 4-angled, pappus of nerveless chaffy scales	Leaves and flowers eaten by grouse	
Filaree <i>Erodium cicutarium</i> (L.) L'Her. 3131	Valleys and foothills, dry open ground	Annual herb, small, erect, branched at base, 2-20 in long, early leaves in basal rosette	Capsule, awn-shaped seeds	Seeds eaten by many kinds of birds; foliage relished by various browsers	Introduced and widely established; valuable range plant
Winter-fat <i>Eurotia lanata</i> (Pursh) Moq. 3131, 3132, 3133, 3134	Slopes, plains in sagebrush and creosote deserts, 2,500-7,000 ft	Shrubs, 8-32 in	Bracts, villous		Valuable forage
Idaho fescue <i>Festuca idahoensis</i> Elmer 3131, 3132, 3133, 3134, 3135	Open woods, rocky slopes, 5,000-11,000 ft	Perennial bunchgrass, 12-40 in	Grain, July-Sept.	Seeds eaten by turkey and songbirds; plant eaten by mule deer	
Nuttall's fescue <i>Festuca microstachys</i> Nutt. 3131	Desert and woodland or foothill forests, often weedy	Annual grass, culms slender, erect 4-16 in high	Caryopsis, awn usually longer than body, lemmas oppressed-pubescent .4-.5 in long	Seeds eaten by birds and rodents; plant eaten by mule deer	
Western fescue <i>Festuca occidentalis</i> Walt. 3135	Streambanks, lake margins, moist woods to ponderosa pine and montane forests	Perennial grass, closely tufted, slender, 16-32 in high	Caryopsis, lemmas slightly scabrous	Same as <i>F. microstachys</i>	
Eight-flowered fescue <i>Festuca octoflora</i> Hook. 3131	Dry, open ground mainly east of Cascade Mts.	Annual grass, somewhat tufted, slender, 6-12 in high	Caryopsis, glabrous to scabrous	Same as <i>F. microstachys</i>	
Sand strawberry <i>Fragaria chiloensis</i> (L.) Duchesne 3135	Mostly on old dunes along coast, rarely found inland	Perennial, stoloniferous herb	Achenes borne on enlarged, fleshy, juicy receptacle	Upland gamebirds feed on tender leaves as well as fruit; berries eaten by birds and other wildlife	
Virginia strawberry <i>Fragaria virginiana</i> Duchesne 3135	Open woods and meadows to streambanks, plains, lower mountains	Perennial herb, stoloniferous	Achenes borne on enlarged, fleshy, juicy receptacle	Same as <i>F. chiloensis</i>	
Monument plant <i>Frasera speciosa</i> Dougl. ex Griseb. 3135	Open or wooded foothills and valleys to sub-alpine slopes	Perennial herb, stem stout, 1.5-6.5 ft high	Capsule, .75-1 in long, flattened		

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Northern bedstraw <u>Galium boreale</u> L. 3131	Common and wide-spread, moist thickets and open woods	Perennial herb, stems prostrate or ascending 10-24 in high	Dry capsule, short, hairy		
Nuttall's gayophytum <u>Gayophytum nuttallii</u> T. & G. 3135	Foothills to mid-elevations in mountains, arid sites	Annual herb, stems usually stoutish at base, freely branched	Capsule, 4-valved, seeds glabrous, about .2 in		
Hairstem groundsmoke <u>Gayophytum ramosissimum</u> Nutt. ex T. & G. 3131	Dry foothills and valleys to lower mountains, sandy areas	Annual herb, stem 8-20 in high, diffusely branched	Capsule, .08-.2 in long, seeds .2 in		
Geranium <u>Geranium</u> spp. L. 3132, 3133, 3134	Rich soils, 3,000-11,000 ft	Annual or perennial forb, 12-30 in	Capsule, 5-lobed, Apr.-Oct.	Seeds eaten by dove and quail; plant eaten by deer	
Sticky geranium <u>Geranium viscosissimum</u> F. & M. 3131	Meadows east of Cascade Mts.	Perennial herb, usually closely clustered, 12-20 in high	Capsule, several-many seeded	Seeds eaten by birds and rodents	
Largeleaf avens <u>Gem macrophyllum</u> Willd. 3131	Meadows, moist woods, stream-banks, from sea level to sub-alpine	Perennial herb, stems 1.5-3.5 ft high, basal leaves and petioles 5-10 in long	Achenes in a prominent receptacle	Seeds maybe eaten by gamebirds	
Small-flowered gilia <u>Gilia minutiflora</u> Benth. 3131	Dry, sandy plains at low elevations, often with sage-brush	Herb, leaves well-distributed along stem, 8-20 in high	Capsule, .17 in long, 3-seeded	Seeds eaten by a few species of upland gamebirds and rodents	
Spiny hop-sage <u>Grayia spinosa</u> Hook. 3131, 3132, 3133, 3134	Alkaline plains, slopes in creosote and sage-brush deserts, 2,500-7,000 ft	Shrub, 1-3 ft	Fruits in flattened bracts		
Broom snakeweed <u>Gutierrezia sarothrae</u> (Pursh) Britt. & Rusby 3131, 3132, 3133, 3134	Plains, slopes, in upper desert grasslands, oak woodlands, 3,000-7,000 ft	Shrub, 15-1 ft	Small achene, July-Nov.	Seeds eaten by quail; browsed by rabbits, antelope, deer	Invader of over-grazed ranges; poisonous in varying degrees to browsing and grazing animals
Halogeton <u>Halogeton glomeratus</u> Bieb. 3132, 3133, 3134	Widespread on alkaline, dry disturbed soils	Annual herb, 4-20 in	Berrylike with bracts, summer		Introduced; highly poisonous oxalic acid content
Goldenweed <u>Haplopappus lanceolatus</u> Hook. 3132, 3133, 3134	Meadows, alkaline soils, 4,000-6,000 ft	Shrub, .5-1.5 ft	Achene		Halophyte occurring with <u>Sarcobatus</u> spp.
Narrow-leaved haplopappus <u>Haplopappus stenophyllus</u> Gray 3131	Dry, rocky soils often with sage-brush, plains and foothills	Perennial herb, leafy branches from a loose mat	Achenes, Aug.-Sept.	Leaves may be eaten by gamebirds	
Cow parsnip <u>Heraclium lanatum</u> Michx. 3131	Streambanks or moist ground, lowland to mid-mountain, wide-spread	Perennial herb, single stemmed, 3-10 ft high	Dry schizocarp, short oil-tubes, conspicuous	Preferred ungulate browse; bears also forage on leaves	
Hermidium <u>Hermidium alipes</u> Wats. 3132, 3133, 3134	Dry slopes and flats, 4,000-6,500 ft	Erect herb, 9-20 in	Anthocarp		

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Spike fescue <i>Hesperochloa kingii</i> (Wats.) Rydb. 3132, 3133, 3134	Dry mountains, hills, 4,500- 10,500 ft	Perennial grass, 2-3 ft	Grain, summer- fall		
Houndstongue hawkweed <i>Hieracium</i> <i>cynoglossoides</i> Arv. - Touv. 3131, 3135	Dry woods	Perennial herb with many basal leaves, stems from a horizontal rootstalk, slend- er, 10-28 in high	Achene	Basal leaves eaten by several wildlife spe- cies	
Galleta grass <i>Hilaria jamesii</i> Torr. 3132, 3133, 3134	Dry sandy pla- teaus, open valleys, 3,000- 8,000 ft	Perennial grass, 25-50 in	Grain, May-Nov.		
Ocean spray <i>Holodiscus discolor</i> (Pursh) Maxim. 3135	Moist woods to dry open areas	Deciduous shrub, erect, 1.5-10 ft high	Follicles, 5 carpels, 1- seeded	Browsed by ungulates with heavy use on win- ter range	
Ocean spray <i>Holodiscus dumosus</i> (Nutt.) Heller 3132, 3133, 3134	Pine or spruce forest, often on cliffs, 5,500-10,000 ft, sun	Aromatic decidu- ous shrub, 3 ft	1-seeded foll- icle, June-Sept.		
Jagged chickweed <i>Holosteum umbellatum</i> L. 3131	Common weed	Annual herb, erect, branched at base, 4-10 in high	Many-seeded cap- sule, .2-.28 in		
Hutchinsia <i>Hutchinsia procumbens</i> R. Br. 3132, 3133, 3134	Moist alkaline soil, to 8,600 ft	Erect annual, 4-8 in	Wingless seed		Halophyte occurring with <i>Sarcobatus</i> spp.
Fendler waterleaf <i>Hydrophyllum fendleri</i> (Gray) Heller 3131	Thickets and moist open places, low- lands to mid- elevations	Perennial herb, erect or spreading stem, 1-2.5 ft high, leaves up to 12 in long	Capsule, 2- valved, 1-4 seeded		
Pingwing <i>Hymenoxys richardsonii</i> Hook. 3132, 3133, 3134	Dry soils, 5,000-9,000 ft	Annual or peren- nial herb, to 16 in	Solitary fruit- ing head		
Western iris <i>Iris missouriensis</i> Nutt. 3131	Common, sage- brush desert to ponderosa pine forest in wet meadows and streambanks, often where it becomes dry in mid-summer	Perennial herb, linear, basal leaves, stout stems, 1-2 ft high	Capsule	May provide nectar for hummingbirds	
Poverty weed <i>Iva axillaris</i> Pursh 3132, 3133, 3134	Alkaline plains, or saline marsh borders, 3,000- 7,500 ft	Herb to low shrub, 2-12 in	Achene		Halophyte occurring with <i>Sarcobatus</i> spp.
Rush <i>Juncus</i> spp. L. 3132, 3133, 3134, 3135	Salt marshes, moist soil	Tufted perennial rushes, to 3 ft	Capsule, summer- fall		
Dwarf juniper <i>Juniperus communis</i> L. 3132, 3133, 3134	Dry rocky or sandy slopes of mountains and forests, above 5,000 ft	Dense aromatic ever- green, usually prostrate shrub, 1-3 ft	Small round berrylike cone, spring	Fruit eaten by song- birds, quail, turkey, bear, deer, fox	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western juniper <u>Juniperus occidentalis</u> Hook. 3131, 3132, 3133, 3134	Dry foothills, mountainsides, 6,000-10,500 ft	Large shrub to medium tree, 12-30 ft, rarely 60 ft with massive erect trunk	Berry, blackish, .25-.33 in long, 2-5 seeded, good crops nearly every year, Sept	Berries eaten by birds and small mammals; mule deer feed on foliage of selected trees	Young trees easily killed by ground fires while older trees are moderately resistant due to thicker bark and higher crowns
Utah juniper <u>Juniperus osteosperma</u> (Torr.) Little 3131, 3132, 3133, 3134	Dry plains, hills, plateaus, often in pure stands or with pinyon, 3,000-7,500 ft, sun	Small evergreen tree, broad round crown, 15-40 ft	Berrylike brown cone, spring	Important food and cover for numerous species	
Rocky Mountain juniper <u>Juniperus scopulorum</u> Sarg. 3131, 3132, 3133, 3134	Inland valleys and lower mountains, exposed dry areas, calcareous or somewhat alkaline soils	Evergreen tree, narrow pointed open crown, 30-50 ft	Berry, 1-5 seeded, seeds 1-2 angled, heavy crops at 2-5 yr intervals, Nov.-Dec.	Berries eaten by birds and small mammals; important food and cover for numerous species	Wood durable, used chiefly for fence posts; fastest growing juniper
Summer cypress <u>Kochia americana</u> Wats. 3132, 3133, 3134	Dry open plains often on saline soil, 5,000-6,000 ft	Shrub, 4-16 in	Achene, summer-fall		
Prairie junegrass <u>Koeleria cristata</u> Pers. 3131, 3132, 3133, 3134, 3135	Sagebrush desert, prairies, open forest to subalpine ridges, mostly on sandy to rocky soils	Tufted or bunched perennial grass, 4-28 in	Caryosis, glumes and lemmas about equal, May-Oct.	Forage for mule deer	Good native forage; rarely locally abundant
Prickly lettuce <u>Lactuca serriola</u> L. 3131	Fields and waste places	Leafy stemmed herb, 1-5 ft high	Achene	Seeds are occasionally eaten; flowers eaten by some gamebirds	
Western stickseed <u>Lappula redowskii</u> (Hornem.) Greene 3131	Dry plains, weedy	Annual herb, stem 8-16 in high, branched from base, taproot	4 nutlets with marginal prickles		
Western larch <u>Larix occidentalis</u> Nutt. 3135	Foothills to mid-mountain, often where swampy	Deciduous, conifer tree, up to 250 ft high	Cones, about 1 in long, seeds .2-.5 in long	Grouse consume needles and buds; some birds eat seeds but use is not substantial	
Yellow-flowered peppergrass <u>Lepidium perfoliatum</u> L. 3131	Abundant on dry, waste or overgrazed land	Annual herb, freely branched, 4-16 in high	Silicle, seeds dark brown, 2 per pod	Wildlife use slight; seeds eaten by birds and rodents	
Shrubby phlox <u>Leptodactylon pungens</u> Torr. 3132, 3133, 3134	Dry, sandy, rocky soil, 4,000-12,000 ft	Low shrub to 16 in	Many-seeded locules		
Thread-stemmed linanthus <u>Linanthus pharnaceoides</u> (Benth.) Greene 3131	Generally in dry lowlands, occasional	Annual herb, slender stem, usually decumbent, 1-8 in high	Capsule, seeds 2-8 per locule	Seeds eaten by gamebirds	
Slender fringe cup <u>Lithophragma bulbifera</u> Rydb. 3131	Grassy hillsides and sagebrush desert to ponderosa pine and Douglas-fir forests	Perennial herb, .5-1.5 ft high	Capsule, 3-peaked, seeds about .02 in	Gamebirds may eat bulbs	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western gromwell <u>Lithospermum ruderale</u> Dougl. ex Lehm. 3131, 3135	Fairly dry places up to mid-eleva- tions	Perennial herb, taprooted, stems clustered, .5-2 ft high, stout	4 nutlets, smooth, .2-.25 in	Seeds eaten by some gamebirds	
Biscuit root <u>Lomatium</u> spp. Raf. 3132, 3133, 3134	Dry rocky areas, 4,000-10,000 ft	Coulescent peren- nial, to 24 in	Seed flattened dorsally		
Lace-leaved lomatium <u>Lomatium dissectum</u> (Nutt.) Math. & Const. 3131	Open, often rocky slopes, dry meadows, lowland to mid- mountain	Perennial herb, robust, 1.5-10 ft high	Dry schizocarp, .33-.75 in	Same as <u>L. ruderale</u>	
MacDougal lomatium <u>Lomatium</u> <u>macdougalii</u> (Nutt.) Coult. & Rose 3131	Dry, open slopes, valleys, plains to mid-mountain or higher	Perennial herb, large fleshy tap- root, 4-14 in high	Dry schizocarp, .2-.4 in, wings half as broad as body	Same as <u>L. ruderale</u>	
Bigseed lomatium <u>Lomatium macrocarpum</u> (Nutt.) Coult. & Rose 3131	Open, rocky hills and plains	Perennial herb, .5-1.5 ft high, large, fleshy taproot	Dry schizocarp, .4-.8 in	Same as <u>L. ruderale</u>	
Nineleaf lomatium <u>Lomatium triternatum</u> (Pursh) Coult. & Rose 3131, 3135	Open slopes, meadows, dry to fairly moist soils, lowland to mid-montane	Perennial herb, 1-2.5 ft high, fleshy taproot	Dry schizocarp, .38-.5 in long	Same as <u>L. ruderale</u>	
Lupine <u>Lupinus</u> spp. L. 3132, 3133, 3134, 3135	Dry slopes, mesas open forest, 100- 10,000 ft, sun	Annual or peren- nial forb with terminal clusters of flowers, 6-24 in	Flat pod, con- stricted between seeds, spring- fall	Seeds eaten by quail, turkey, deer	Some species poison- ous to livestock
Tailcup lupine <u>Lupinus caudatus</u> Kellogg 3131, 3132, 3133, 3134, 3135	Sagebrush des- ert to ponderosa pine forest, dry sites, 4,000- 9,600 ft	Low perennial herb, stems tufted on a somewhat woody base	Pod, silky, 1- 1.5 in long	Same as <u>Lupinus</u> spp.	Poisonous in vary- ing degrees to livestock and other browsing and graz- ing animals
Velvet lupine <u>Lupinus leucophyllus</u> Dougl. ex Lindl. 3131	Foothills, dry slopes	Perennial herb, stems erect, stout, often branched, 1-2.5 ft high	Pod, 1-1.5 in long	Seeds valuable to several upland game- birds	
Rock lupine <u>Lupinus saxosus</u> Howell 3131	Mostly on basaltic rimrock in sage- brush desert or light pine wood- lands, dry stony soils	Perennial herb, stems 4-12 in high, erect or spreading	Pod	Same as <u>L. leucophyllus</u>	This lupine is poisonous in vary- ing degrees to livestock and other browsing and grazing animals
Silky lupine <u>Lupinus sericeus</u> Pursh 3131	Sagebrush desert to lower montane forest	Perennial herb, stem erect, stout freely branching, 1-2.5 ft high	Pod, flattened, 1-1.5 in long	Same as <u>L. leucophyllus</u>	
Box thorn <u>Lycium cooperi</u> Gray 3132, 3133, 3134	Dry mesas, slopes below 5,000 ft	Thorny shrub, 3-6 ft	Ovoid, dry, many-seeded	Seeds eaten by dove and quail	
Hoary aster <u>Machaeranthera</u> <u>canescens</u> (Pursh) Gray 3131	Dry, open places generally in plains and foot- hills	Biennial or short- lived perennial, stem erect, 1-3 ft high	Achenes		

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Stinking tarweed <u>Madia glomerata</u> Hook. 3135	Widespread, dry open places from foothills and valleys to mid-elevations	Annual herb, very glandular and ill-scented, 1-2 ft high	Achenes	Dark seeds are eaten by many birds and rodents	
Least tarweed <u>Madia minima</u> Mol. 3135	Dry, open and-erosa pine woods and in prairies	Herb	Achenes, compressed, May-July	Same as <u>M. glomerata</u>	Have sticky, pungent leaves and stems
Blazing-star <u>Mentzelia laevicaulis</u> (Downl.) T. & G. 3131	Desert valleys and lower mountains, dry, open areas	Perennial herb, stout stem, 1.5-3.5 ft high	Capsule, seeds distinctly wing-margined		
False agoseris <u>Microseris troximoides</u> Gray 3131	Dry, open places in foothills and lowlands	Perennial herbs, basal leaves	Achene, .28-.33 in, pappus of 10-30 very slender scales, early summer	Flowers eaten by blue grouse	
Pink microsteris <u>Microsteris gracilis</u> (Hook.) Greene 3131, 3135	Moist places in foothills and lowlands	Annual herb to 1 ft high, stems usually erect	Capsule		
Pullup muhly <u>Muhlenbergia filiformis</u> (Thurb.) Rydb. 3135	Generally near springs or seepage, sometimes in fairly hot water, moist meadows	Annual herb, slender, clustered erect or decumbent, 3-14 in high	Caryopsis, lemma, .08 in long	Not specifically known in this province but browsed by ungulates and gamebirds in other regions	
Bristly mousetail <u>Myosurus aristatus</u> Benth. ex Hook. 3131	Wet places in sagebrush and grassland areas, vernal pools	Annual herb, low, 1-2 in high	Achene		
Holly-leaved water nymph <u>Najas marina</u> L. 3132, 3133, 3134	Ponds, lakes, marshes	Subsurface pond weed	Sheathed nutlet, summer-fall	Seeds eaten by water-fowl	
Prickly pear <u>Opuntia</u> spp. Mill. 3132, 3133, 3134	Variable from dry slopes to mesas, canyons	Generally low-growing to 6 ft with flattened or cylindrical joints	Juicy obovoid fruit	Fruit eaten by dove, quail, coyote, fox, rabbit, antelope	
Indian rice-grass <u>Oryzopsis hymenoides</u> (R. & S.) Ricker 3131, 3132, 3133, 3134	Grassland and desert plains and foothills, rocky or sandy soils	Caespitose, perennial grass, hollow culms, 1-2 ft high	Caryopsis	Seeds eaten by upland gamebirds, songbirds, small mammals; browsed by mule deer	Palatable and nutritious
Myrtle boxleaf <u>Pachystima myrsinites</u> (Pursh) Raf. 3132, 3133, 3134, 3135	Coniferous forest, 6,000-9,000 ft	Low inconspicuous ground cover	Capsule, 2-celled, May	Plant relished by deer	
Western peony <u>Paeonia brownii</u> Dougl. ex Hook. 3135	Sagebrush desert to ponderosa pine forest	Perennial herb, 8-20 in high, leaves large and fleshy	Leathery, many-seeded follicle		
Penstemon <u>Penstemon</u> spp. Mitch. 3132, 3133, 3134, 3135	Rocky canyons, sandy washes, 2,500-9,000 ft	Perennial forb to erect shrub to 3 ft	Capsule with numerous seeds	Seeds eaten by songbirds; plant eaten by antelope	
Stiffleaf penstemon <u>Penstemon aridus</u> Rydb. 3131	Common in mountains	Perennial herb, stems arising from woody caudex	Capsule, seeds not winged	Small irregular seeds are eaten primarily by western rodents	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Cusick's penstemon <i>Penstemon cusickii</i> Gray 3131	Sagebrush slopes and plains, especially on basalt	Perennial herb	Capsule	Same as <i>P. aridus</i>	Low in attractiveness to wildlife
Scabland penstemon <i>Penstemon deustus</i> Dougl. ex Lindl. 3131	Widespread in dry places	Perennial herb, distinctly shrubby at base	Capsule, seeds not winged	Same as <i>P. aridus</i>	Same as <i>P. aridus</i>
Matroot penstemon <i>Penstemon radicosus</i> A. Nels. 3131	Dry sites	Perennial shrub, stems arising from woody caudex	Capsule, seeds not winged	Same as <i>P. aridus</i>	Same as <i>P. aridus</i>
Varileaf phacelia <i>Phacelia heterophylla</i> Pursh 3135	Widespread	Biennial or short-lived perennial herb, taproot, stem single, over 1.75 ft high	Capsule	Seeds eaten by game-birds	
Reed canary-grass <i>Phalaris arundinacea</i> L. 3132, 3133, 3134	Washes, wet meadows, riverbanks, 4,000-9,000 ft	Erect perennial grass, 24-60 in	Grain, summer-fall		
Lewis mock orange <i>Philadelphus lewisii</i> Pursh 3131	Along water-courses and on cliffs, talus slopes and rocky hillsides of sagebrush or Douglas-fir forest	Erect to spreading deciduous shrub, 4-10 ft high	Woody capsule	Forage for ungulates	
Spreading phlox <i>Phlox diffusa</i> Benth. 3131	Mid to high elevations	Perennial herb, compact, tending to form mats	Capsule, 1-seed per locule	Nectar used by hummingbirds; browsed by mule deer	
Hood's phlox <i>Phlox hoodii</i> Rich. 3131, 3132, 3133, 3134	Dry rocky hills, valleys, plains, foothills	Perennial herb, forming dense cushions	Capsule, July	Plant eaten by deer and antelope; nectar used by hummingbirds	
Longleaf phlox <i>Phlox longifolia</i> Nutt. 3131, 3132, 3133, 3134	Dry, often rocky places from low to mid-elevations, 4,000-9,000 ft	Perennial herb	Capsule, 1-2-seeded, ovoid	Nectar used by hummingbirds; browsed by mule deer	
Reed <i>Phragmites communis</i> Trin. 3132, 3133, 3134	Wet places and alkaline sinks, below 5,000 ft	Tall perennial reed, to 12 ft	Grain, July-Dec.		
Oregon double bladderpod <i>Physaria oregana</i> Wats. 3131	Dry places	Perennial herb, several-stemmed, simple, rosulate basal leaves	Silique		
Engelmann spruce <i>Picea engelmannii</i> Parry ex Engelm. 3132, 3133, 3134	Conifer forest, 8,000-12,000 ft, sun	Evergreen tree with conical crown, drooping branches, 40-50 ft	Round cone, spring	Seeds eaten by game-birds, songbirds, rabbit, squirrel; browsed by deer	
Whitebark pine <i>Pinus albicaulis</i> Engelm. 3132, 3133, 3134	Subalpine to alpine, dry rocky soils near timberline, 8,000-10,000 ft	Crooked, contorted tree, 15-45 ft	Cone, spring	Seeds eaten by game-birds and squirrel; browsed by deer	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bristle-cone pine <i>Pinus aristata</i> Endlem. 3132, 3133, 3134	Exposed ridges mostly on limestone in spruce-fir forest to timberline, 9,500-12,000 ft	Gnarled bushy tree, to 45 ft, but stunted and shrubby at timberline	Cone, spring	Seeds eaten by gamebirds and squirrel; browsed by deer	
Lodgepole pine <i>Pinus contorta</i> Dougl. ex Loud. 3135	Dry, mountain slopes, often in pure stands in areas burned	Evergreen tree, 30-110 ft high	Cone, 1.5-2.5 in long, good crops 1-3 year intervals, Aug.-Sept.	Very important; seeds used by many birds and mammals; needles eaten by grouse and hoofed browsers; bark and wood eaten by porcupines and small rodents	Valuable cover for gamebirds, fur bearers, browsers
Colorado pinyon <i>Pinus edulis</i> Engelm. 3132, 3133, 3134	Pinyon-juniper woodland, 4,000-7,000 ft	Small evergreen bushy tree, compact spreading crown, 15-35 ft	Egg-shaped cone, pollinates in spring	Seeds eaten by pinyon jay, songbirds, fox, squirrel, gamebirds, deer, bear	
Limber pine <i>Pinus flexilis</i> James 3131, 3132, 3133, 3134	Near timberline or mostly semi-arid ranges	Evergreen tree, widely branched, drooping crown, 40-50 ft	Cone, seeds almost wingless	Same as <i>P. contorta</i>	Same as <i>P. contorta</i>
Singleleaf pinyon <i>Pinus monophylla</i> Torr. & Frem. 3131, 3132, 3133, 3134	Drier slopes, 4,000-8,000 ft	Evergreen tree, 15-30 ft	Cone, fall	Seeds eaten by songbirds, gamebirds, fox, squirrel, deer, bear	Seeds gathered extensively by humans for food
Ponderosa pine <i>Pinus ponderosa</i> Dougl. ex Loud. 3132, 3133, 3134, 3135	Chiefly upland where dry, often in open, pure stands	Large, evergreen tree, up to 220 ft	Cones, 3-5.5 in long, Aug.-Sept.	Same as <i>P. contorta</i>	Same as <i>P. contorta</i> ; mature trees very fire-resistant
Indian wheat <i>Plantago patagonica</i> Jacq. 3131	Common	Annual herb, woolly	Capsule, top deciduous, 2-seeded	Seeds eaten to a slight extent by many birds; leaves favored by rabbits; rodents eat seeds freely	
Bluegrass <i>Poa</i> spp. L. 3132, 3133, 3134	Open dry hills and mesas	Perennial grass, 10-40 in	Grain, summer-fall	Plant eaten by rabbit, deer, antelope	
Merrill's bluegrass <i>Poa ampla</i> Merr. 3131	Sagebrush areas, often where alkaline	Perennial grass, basal leaves about .04 in wide, upper leaves .04-.1 in	Caryopsis	Seeds are eaten by several kinds of songbirds and rodents; leaves grazed by rabbit and big game	Widely used as a constituent of pastures and as substitute for Kentucky bluegrass in lawns
Canada bluegrass <i>Poa compressa</i> L. 3131	Waste ground, roadsides and gardens to open woods and meadows, mostly where fairly moist	Perennial grass, rhizomatous, flattened culms, 8-18 in	Caryopsis	Same as <i>P. ampla</i>	Same as <i>P. ampla</i>
Cusick bluegrass <i>Poa cusickii</i> Vasey 3131	Sagebrush plains to alpine meadows and ridges	Perennial grass, 4-24 in high	Caryopsis	Same as <i>P. ampla</i>	Great value as range forage
Fendler bluegrass <i>Poa fendleriana</i> Vasey 3132, 3133, 3134	Mesas, rocky hills, open dry woodlands below 11,500 ft, sun	Perennial grass, 12-30 in	Grain, May-Sept.	Plant eaten by rabbit and deer	Important range grass
Wheeler bluegrass <i>Poa nervosa</i> (Hook.) Vasey 3135	Exposed ridges and talus slopes to open woods	Perennial grass, lower blades lax	Caryopsis	Same as <i>P. ampla</i>	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Nevada bluegrass <i>Poa nevadensis</i> Vasey ex Scribn. 3131, 3132, 3133, 3134	Low meadows, hill-sides, dry or wet soil, moister areas of sagebrush valleys to ponderosa pine or lower montane forest east of Cascade Mts., 5,000-9,000 ft	Perennial grass, non-rhizomatous, 20-40 in	Grain, summer-fall	Same as <i>P. ampla</i>	
Kentucky bluegrass <i>Poa pratensis</i> L. 3131, 3132, 3133, 3134	Open woods, meadows, disturbed soil, roadsides and waste areas to dry or moist prairies and woodlands, medium to high elevation	Perennial grass, rhizomatous, culms terete	Caryopsis	Same as <i>P. ampla</i>	Widespread; introduced; one of our best lawn grasses
Sandberg bluegrass <i>Poa sandbergii</i> Vasey 3131, 3132, 3133, 3134	Desert or dry exposed areas in lower mountains	Perennial grass, 2.5-3 ft high	Caryopsis	Same as <i>P. ampla</i>	Great value as range forage
Sandberg bluegrass <i>Poa secunda</i> Presl. 3132, 3133, 3134	Plains, dry woods, rocky slopes, moderate elevations	Perennial bunchgrass, to 12 in	Grain, May-July	Seeds eaten by game-birds and songbirds; plant eaten by rabbit and deer	Dominant grass on abused sagebrush grassland
Quaking aspen <i>Populus tremuloides</i> Michx. 3131, 3132, 3133, 3134	Not confined to streambanks and lake shores, widely distributed in coniferous forest above 5,000 ft	Deciduous tree, up to 100 ft high	Capsule, 2-carpellate, good seed years every 4-5 years, June	Buds and catkins are valuable in winter and spring for various kinds of grouse; bark, twigs, foliage eaten by rabbits and hoofed browsers; wood or bark relished by beaver and porcupines	Great aesthetic value in fall; sprouts from cut roots
Black cottonwood <i>Populus trichocarpa</i> T. & G. ex Hook. 3131	Along streambanks and lake-shores or moist regions, occasionally on better drained soils away from water	Deciduous tree, up to 60 ft high	Capsule, 2-carpellate, May-June	Same as <i>P. tremuloides</i>	
Pondweed <i>Potamogeton</i> spp. L. 3132, 3133, 3134	Shallow ponds, lakes, streams	Subsurface pond weed	Drupelets, achene, summer-fall	Seeds eaten by waterfowl, shore birds, muskrat	
Cinquefoil <i>Potentilla</i> spp. L. 3132, 3133, 3134	Open coniferous forest, mountain meadows above 6,000 ft	Perennial herb or shrub, 6-30 in	Achene, summer-fall	Seeds eaten by songbirds; plant eaten by rabbit, deer, bighorn sheep	
Beauty cinquefoil <i>Potentilla gracilis</i> Hook. 3131, 3135	Grassland and moist areas in deserts to sub-alpine meadows	Perennial herb, less than 15 in high	Achene	Little value; seeds eaten by upland game-birds, songbirds, small mammals	
Western choke-cherry <i>Prunus virginiana</i> L. 3131, 3132, 3133, 3134	Widespread, moist soils along streams, on hill-sides, 4,500-8,500 ft	Shrub or small tree, seldom over 15 ft	Cluster of drupes, Apr.-June	One of the most important foods; fruit eaten by birds, fur and game mammals, small mammals; hoofed browsers and rabbits feed extensively on twigs, foliage, bark of trees	Fruit sweet but astringent

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Douglas-fir <i>Pseudotsuga menziesii</i> (Mirb.) Franco 3132, 3133, 3134, 3135	Mixed coniferous forest, cold canyons, moist to dry places, sea level to near timberline, 5,000-11,000 ft, sun	Large evergreen tree, with open broadly conical crown	Cone, broadly winged seeds, heavy crops 5-7 year intervals, Sept.	Seeds eaten by squirrels and other rodents; foliage and twigs are important to several kinds of browsers; needles and cones are top-ranked winter food of blue grouse	
Lemon scurf pea <i>Psoralea lanceolata</i> Pursh 3131	Sandy soil, often with sagebrush	Perennial herb	Pod, 1-seeded		
Indigobush <i>Psoralea polydenius</i> Torr. 3132, 3133, 3134	Dry slopes, mesas, 2,500-6,000 ft	Small shrub, .5-6 ft	Ovoid pod		
Hop-tree <i>Ptelea trifoliata</i> L. 3132, 3133, 3134	Woods, slopes, canyons, 5,000-9,000 ft	Shrub to small tree, to 18 ft	Samara, indehiscent		
Bitterbrush <i>Purshia tridentata</i> (Pursh) DC. 3131, 3132, 3133, 3134, 3135	Sagebrush desert to ponderosa pine forests, open slopes, mesas, 4,000-9,000 ft	Shrub, to 9 ft, rigidly brushy, with deciduous leaves	Achene, 1-seeded, .25-.33 in long, Aug.	Important to wildlife; seeds eaten by western chipmunk, pocket mice, mantled ground squirrel; plant eaten by mule deer	Grazed by domestic stock; fair ornamental shrub; prevents soil erosion
Whitevein pyrola <i>Pyrola picta</i> Sm. 3135	Coniferous forest	Perennial herb, slender rhizome, rosette of deep green leaves, 3-10 in high	Dry capsule		Hard to grow
Gambel oak <i>Quercus gambelii</i> Nutt. 3132, 3133, 3134	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6-40 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel, rabbit, deer, bear	
Smooth sumac <i>Rhus glabra</i> L. 3131	Widespread	Rhizomatous and often weedy shrub, 3-10 ft high	Reddish drupe	Not preferred food but important winter sustenance for upland gamebirds and deer	Valued ornamental; acid or milky juice
Squawbush <i>Rhus trilobata</i> Nutt. 3132, 3133, 3134	Along streams, canyons, slopes in chaparral, 2,500-7,500 ft, sun	Aromatic deciduous shrub, 2-7 ft	Berrylike, Mar.-June	Browsed by deer	
Gooseberry <i>Ribes</i> spp. L. 3132, 3133, 3134	Moist woodland and forest, along streams, 4,000-11,500 ft	Shrub, 3-6 ft	Berry, summer	Fruit eaten by grouse, fox, coyote; browsed by deer	
Wax currant <i>Ribes cereum</i> Dougl. 3131, 3132, 3133, 3134, 3135	Grassland, sagebrush desert, pine forests, sometimes on cliffs, 5,500-11,000 ft, sun	Deciduous shrub, straggly, 3-6 ft	Berry, juicy, several-seeded, dull to bright red, May-July	Fruit eaten by gamebirds and squirrel; browsed by deer	
Alpine prickly currant <i>Ribes montigenum</i> McClathie 3132, 3133, 3134	Coniferous forest, 6,500-11,500 ft	Straggly shrub, 1-3 ft	Berry, June-Aug.	Fruit eaten by fox and squirrel; browsed by deer	
Gooseberry <i>Ribes velutinum</i> Greene 3132, 3133, 3134	Dry slopes, 2,500-8,500 ft	Shrub, 2-10 ft	Berry, summer	Fruit eaten by quail and squirrel; browsed by deer	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sticky currant <i>Ribes viscosissimum</i> Pursh 3135	Creek banks to moist or dry, open to heavily timbered slopes up to timber-line	Unarmed deciduous shrub	Berry, several-seeded, deep bluish-black	Fruit eaten by song-birds, chipmunks, squirrels	Berry unpalatable
New Mexican locust <i>Robinia neomexicana</i> Gray 3131, 3132, 3133, 3134	Canyons, mountains, forming almost pure thickets on north facing slopes, 4,000-8,500 ft, sun	Spiny shrub or small tree, to 25 ft	Pod, May-Aug.	Seeds eaten by quail, squirrel, deer	Effective in reducing erosion
Wild rose <i>Rosa</i> spp. L. 3132, 3133, 3134	Moist soils to dry slopes, 2,000-9,000 ft	Erect, sprawling, or climbing shrub, to 12 ft	Fleshy hip, achene	Fruit eaten by grouse, bear, rabbit, deer	
Veiny dock <i>Rumex venosus</i> Pursh 3131	Mainly on sand dunes or riverbanks, grassland, sagebrush desert to lower montane valleys	Perennial herb, 6-25 in high, strongly rhizomatous	Achene, 3-angled, brownish-nearly black	Seeds eaten by song-birds and upland gamebirds; browsed occasionally by mule deer	Of slight grazing value
Widgeon-grass <i>Ruppia maritima</i> L. 3132, 3133, 3134	Saline pools, marshes	Subsurface pond weed	Long nutlets, summer-fall	Seeds eaten by waterfowl and shore birds	
Samphire <i>Salicornia rubra</i> A. Nels. 3132, 3133, 3134	Along shores of alkaline lakes, ponds, marshes	Perennial or annual herb, 4-8 in	Achene, Sept.-Nov.	Seeds eaten by waterfowl	
Utah samphire <i>Salicornia utahensis</i> Tidestr. 3132, 3133, 3134	Edges of alkaline lakes, ponds, marshes, on islands	Perennial herb, 6-12 in	Achene	Same as <i>S. rubra</i>	
Willow <i>Salix</i> spp. L. 3131, 3132, 3133, 3134, 3135	Moist soil along streams, 3,500-9,500 ft, sun	Tree, 15-50 ft	Seed capsules, in catkins, Mar.	Seeds eaten by squirrel; browsed by beaver	Prevents erosion and invades burned forest areas
Russian thistle <i>Salsola kali</i> L. 3132, 3133, 3134	Mostly on disturbed and denuded soils	Annual herb, shrub-like, to 4 ft	Achene	Seeds eaten by quail; plant eaten by antelope and deer	Introduced
Elderberry <i>Sambucus</i> spp. L. 3132, 3133, 3134	Moist soil along streams, canyons, in coniferous forests, 1,000-10,000 ft, shade	Large shrub to small tree, 8-33 ft	Berry, June-Sept.	Fruit eaten by squirrel and fox	
Canadian elder <i>Sambucus cerulea</i> Raf. 3132, 3133, 3134	Moist soils in coniferous forest, 5,000-9,000 ft	Many-stemmed shrub, to 20 ft	Globose berry, June-Sept.	Fruit eaten by grouse and deer	
Red elderberry <i>Sambucus racemosa</i> L. 3132, 3133, 3134	Moist soils in coniferous forest, 6,000-10,000 ft	Shrub, 2-12 ft	Berry, Aug.-Oct.	Same as <i>S. cerulea</i>	
Greasewood <i>Sarcobatus vermiculatus</i> (Hook.) Torr. 3131, 3132, 3133, 3134	Flat areas, saline soil, below 6,500 ft	Deciduous shrub, up to 9 ft high, spiny and freely branched	Perianth becomes enlarged, winged achene, summer-fall	Seeds eaten by quail; browsed by rabbit and antelope	Common dominant on saline soil

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Alkalai bulrush <i>Scirpus olneyi</i> Gray 3132, 3133, 3134	Wet alkaline and marshy soils	Rush, 1.5-6 ft	Spike of achenes, summer-fall	Seeds eaten by waterfowl, shore birds, quail; plant eaten by muskrat	
Salt-marsh bulrush <i>Scirpus paludosus</i> L. 3132, 3133, 3134	Marshes, salt flats, immediately around lakes and along streams	Erect rush, 1-3.5 ft	Spike of achenes, year round	Seeds eaten by waterfowl, shore birds, quail, songbirds; plant eaten by muskrat	
American great bulrush <i>Scirpus validus</i> Vahl 3131	Marshes and muddy shores at lower elevations, tolerant of alkali	Perennial herb, culms 3-10 ft high	Achenes	One of the more important and most commonly used foods of ducks and certain shore birds; stems and underground parts eaten by muskrat and geese	Furnish important cover, both nesting and protective, for waterfowl, muskrats, otters, raccoon, other animals
Wormleaf stonecrop <i>Sedum stenopetalum</i> Pursh 3135	Sagebrush desert to ponderosa pine forest or subalpine ridges or rock slides	Perennial herb, leaves often persistent on old stems, .6-.9 in wide	Follicle	Small use by pika	
Western groundsel <i>Senecio integerrimus</i> Nutt. 3131, 3135	Open places from valleys to near timberline	Perennial herb, fibrous roots, very short, erect short-lived crown	Achene, 5-10-nerved, Aug.-Sept.		
Groundsel <i>Senecio serra</i> Hook. 3132, 3133, 3134	Meadows, moist soils along streams, 8,500-10,500 ft	Perennial herb, 2-4 ft	Achene, summer-fall		
Douglas silene <i>Silene douglasii</i> Hook. 3132, 3133, 3134	Dry flats or slopes, 5,000-9,500 ft	Perennial forb, 4-16 in	Capsule, summer-fall		
Bottlebrush squirreltail <i>Sitanion hystrix</i> (Nutt.) J. G. Smith 3131, 3132, 3133, 3134, 3135	Desert plains and prairies, subalpine meadows	Perennial grass, tufted, erect, 6-28 in	Stiffly awned grain, year-round, depending on habitat		Seldom abundant; fair palatability early in season but long spikes nuisance to humans and a minor hazard to grazing animals
Globe mallow <i>Sphaeralcea ambigua</i> Gray 3132, 3133, 3134	Dry rocky slopes, canyons, below 4,000 ft	Perennial forb or erect shrub, 1.5-3 ft	Pubescent seeds		
Globe mallow <i>Sphaeralcea grossularifolia</i> (H. & A.) Rydb. 3132, 3133, 3134	Dry plateaus in volcanic soils	Perennial forb or shrub, 2-3 ft	Indehiscent, 1-seeded		
Shinyleaf spiraea <i>Spiraea betulifolia</i> Pall. 3131, 3135	Wet places to open hillsides from sea level to 10,000 ft	Deciduous shrub	Follicle, 2-several seeded	Little value but browsed by white-tailed deer	
Alkalai sacaton <i>Sporobolus airoides</i> Torr. 3132, 3133, 3134	Sandy plateaus and washes, heavy-soiled bottomlands, often alkaline to 6,500 ft	Tightly tufted perennial grass, 25-50 in	Grain, June-Nov.		Good range grass on alkaline soil
Sand dropseed <i>Sporobolus cryptandrus</i> (Torr.) Gray 3131, 3132, 3133, 3134	Exposed sites on sandy soil, sagebrush desert, grassland into foothills	Perennial grass, generally caespitose, rhizomatous, with solid culms, 15-50 in	Grain, July-Nov.	Seeds eaten by ground feeding birds, including turkey, and deer	

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Columbian needlegrass <u>Stipa columbiana</u> Macoun 3131, 3132, 3133, 3134	Grassland, sagebrush desert to subalpine forest and ridges, 5,000-8,000 ft	Perennial grass, caespitose, 12-30 in	Grain, summer-fall	Plant eaten by deer and bighorn sheep	Fairly abundant, palatable much of the year; sharp callus sometimes injurious to live-stock
Needle-and-thread <u>Stipa comata</u> Trin. & Rupr. 3131, 3132, 3133, 3134	Sandy soils of dry hills, open woodlands, mesas, 3,500-8,500 ft	Tufted perennial grass, 14-30 in, caespitose	Long awned grain, May-Aug.	Important food for songbirds and rodents; plant eaten by deer	Injurious to live-stock
Letterman needlegrass <u>Stipa lettermanii</u> Vasey 3132, 3133, 3134	Open woodlands, forests above 5,500 ft	Tufted perennial grass, 12-24 in	Grain, Aug.-Nov.	Plant eaten by deer	
Western needlegrass <u>Stipa occidentalis</u> Thurb. ex Wats. 3131, 3135	Grassland and sagebrush desert to subalpine forests and ridges	Caespitose, perennial grass	Caryopsis	Seeds eaten by songbirds and rodents; plant eaten by deer	Same as <u>S. columbiana</u>
Thurber needlegrass <u>Stipa thurberiana</u> Piper 3131, 3132, 3133, 3134, 3135	Dry open woodlands, 5,000-8,000 ft, sun	Grass, 6-20 in	Achene, June-July	Same as <u>S. columbiana</u>	Same as <u>S. columbiana</u>
Seepweed <u>Suaeda</u> spp. Forsk. 3132, 3133, 3134	Alkaline or saline soils, 4,000-9,000 ft	Annual or perennial forb or halfshrub, 8-20 in	Achene, summer-fall	Seeds eaten by waterfowl	
Sea blite <u>Suaeda nigra</u> (Raf.) Macbr. 3132, 3133, 3134	Saline soil	Erect perennial, 8-30 in	Black seeds		Halophyte occurring with <u>Sarcobatus</u> spp.
Snowberry <u>Symphoricarpos</u> spp. Duham. 3131, 3132, 3133, 3134	Damp places to dry, stony slopes, 3,200-10,500 ft	Low shrub, to 9 ft	Nutlets	Seeds eaten by grouse, songbirds, bear; browsed by deer	
Common snowberry <u>Symphoricarpos albus</u> (L.) Blake 3131	Widespread species of thickets, woods, open slopes, from lowland to mid-elevations	Erect shrub, 3-6.5 ft high	Nutlets, .17-.2 in	Fruit eaten by gamebirds and songbirds; foliage and twigs eaten extensively by deer	Useful as nesting cover and protective shelter
Snowberry <u>Symphoricarpos oreophilus</u> Gray 3132, 3133, 3134	Slopes and along streams in mountains, coniferous forests, 5,500-9,000 ft	Erect or trailing shrub, 1-6 ft	Berry, Apr.-Aug.	Browsed by deer	
Round-leaved snowberry <u>Symphoricarpos rotundifolius</u> Gray 3131	Dry, open woods	Deciduous shrub, erect, bushy, 2-4 ft high	Berrylike nutlets obtuse at both ends, .28-.38 in, fall	Same as <u>S. albus</u>	Same as <u>S. albus</u>
Dandelion <u>Taraxacum officinale</u> Weber 3131	Widespread	Taprooted, perennial herb, erect, solitary head and rosulate leaves	Achene	Seeds eaten by songbirds and rodents	Introduced weedy species
Gray horsebrush <u>Tetradymia canescens</u> DC. 3131, 3132, 3133, 3134	Dry open ground in rocky, sandy sometimes saline soil, 6,000-7,000 ft	Shrub, 4-36 in, bushy	Achene, summer		Widespread

continued

Table 3130-51.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
White felt-thorn <i>Tetradymia comosa</i> Gray 3132, 3133, 3134	Dry soils below 5,000 ft	Shrub, 2-4 ft	Achene, summer- fall		
Bald-leaved felt-thorn <i>Tetradymia glabrata</i> Gray 3132, 3133, 3134	Dry open areas, 2,000-7,000 ft	Shrub, 1-3 ft	Achene, summer		
Meadow-rue <i>Thalictrum fendleri</i> Engelm. 3132, 3133, 3134	Pine forests, mountain mead- ows, 5,000- 9,500 ft	Perennial herb, 1-2 ft	Achene, spring- fall		
Thelypody <i>Thelypodium sagittatum</i> (Nutt.) Endl. 3132, 3133, 3134	Meadows, plains	Small shrub, 12- 32 in	Long pod		Halophyte occurring with <i>Sarcobatus</i> spp.
Pennycress <i>Thlaspi arvense</i> L. 3131	Common, lower mountains	Annual herb, 4-16 in high	Siliques	Seeds eaten by grouse	Introduced weed
Clover <i>Trifolium gymnocarpon</i> Nutt. 3131	Mostly dry soil of sagebrush desert to ponder- osa pine forests	Perennial herb, seldom over 6 in high	Globose to elong- ated pod, 1- to several-seeded	Seeds eaten by game- birds slightly	
Long-stalked clover <i>Trifolium longipes</i> Nutt. 3135	Lower montane valleys and meadows to sub- alpine slopes	Perennial herb, pubescent, less than 20 in high	Pod globose to elongate, 1- several seeded	Seeds eaten slightly by gamebirds; deer forage value good	
Big-headed clover <i>Trifolium macrocephalum</i> (Pursh) Foiret 3131	Rocky places in sagebrush desert to ponderosa pine woodlands	Perennial herb	Globose to elongated pod, 1-several seeded	Seeds eaten by game- birds slightly	
Arrowgrass <i>Triglochin</i> spp. L. 3132, 3133, 3134	Salt marshes, alkaline marshes	Grasslike peren- nial, to 3 ft	Capsule, summer- fall	Seeds eaten by water- fowl	
Narrow-leaved cat-tail <i>Typha angustifolia</i> L. 3132, 3133, 3134	Marshes, shallow water, along streams	Slender-leaved, erect, to 5 ft	Tight terminal spike, summer- fall	Seeds eaten by water- fowl and shore birds; cover for waterfowl and shore birds	
Common cat-tail <i>Typha latifolia</i> L. 3132, 3133, 3134	Marshes, shallow water, along streams	Tall perennial herb with extensive rhizomes, erect, simple, cylindric, pithy stems, leaves sheathing, rather spongy, 3-10 ft high	Tight terminal spike, dry seed, eventually de- hiscent, bouyant by elongate slender hairs, summer-fall	Same as <i>T. angustifolia</i>	Provides cover for waterfowl; plants tend to form ex- tensive, almost pure stands in marshy areas; is an important refuge for many animals
Bigsting nettle <i>Urtica dioica</i> L. 3131	Moist areas from sagebrush desert to deep woods	Rhizomatous, per- ennial herb, 3-10 ft high	Achene	Young plants browsed by ungulates	Stinging hairs; juice watery
Common bladderpod <i>Utricularia vulgaris</i> L. 3132, 3133, 3134	Deep or shallow quiet water	Non-emergent pond weed	Capsule, summer- fall		
Big huckleberry <i>Vaccinium uliginosum</i> L. 3135	Bogs and swampy areas	Deciduous shrub, over 1.5 ft high	Berry mostly dark blue- blackish, .25- .33 in	Important; berries eaten by grouse, song- birds, black bear, chipmunks, deer, rab- bits	Nice ornamental

continued

Table 3130-51.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Violet <i>Viola</i> spp. L. 3132, 3133, 3134	Open conifer forest, mountain meadows, above 7,000 ft	Perennial herb, 3-8 in	Capsule, spring-summer	Seeds eaten by quail; plant eaten by rabbit	Some species introduced
Beckwith's violet <i>Viola beckwithii</i> T. & G. 3131, 3132, 3133, 3134	Dry gravelly soil, sagebrush hills, ponderosa pine woodlands	Low forb, to 3 in, perennial	Ovoid with shiny seed capsule, 3-valved, explosively dehiscent	Seeds eaten by dove and grouse; tuberous roots relished by some gamebirds	Ornamental
Purple-tinged violet <i>Viola purpurea</i> Kellogg 3135	Lowland, dry areas to high montane, especially on open ridges or slopes	Perennial herb	Capsule, 3-valved explosively dehiscent	Same as <i>V. beckwithii</i>	Choice ornamental
Mulsears wyethia <i>Wyethia amplexicaulis</i> Nutt. 3132, 3133, 3134	Open foothills at moderate elevations	Perennial forb, to 2 ft	Achene	Seeds eaten by grouse	
Foothill deathcamas <i>Zigadenus paniculatus</i> (Nutt.) Wats. 3131, 3132, 3133, 3134	Sagebrush desert to ponderosa pine or lodgepole pine forests, dry areas, 4,000-6,000 ft	Perennial herb with tunicated bulbs, stems simple, leafy at base, to 24 in	Capsule, 3-celled with many seeds	Browsed by deer	One of the most virulent stock-poisoning plants

52 PROVINCE 3140 Mexican Highlands Shrub Steppe

MEXICAN HIGHLANDS SHRUB STEPPE

The Mexican Highland Shrub Steppe Province, as delineated by Bailey (1976), is confined to southeast Arizona and extreme southwest New Mexico. Here, gravel plains, mesas, bajadas, and mountains separated by high, broad, alluvial-filled valleys are characteristic terrain features. Some of these intermountain valleys, such as the Animas, Playas, and Sulphur Spring valleys, are enclosed basins. Other areas are drained by the now deeply-incised Gila, San Pedro, Yaqui, and Santa Cruz rivers and their tributaries. Almost all of the province is above 3500 feet elevation; most is above 4000 feet. Annual precipitation ranges from about 8 inches in some of the lower valley locations to over 30 inches on some of the higher mountain summits. Over 50 percent of this rainfall occurs from late July through early September; rainfall during the months of December through March is of secondary importance. Freezing temperatures, while usually of short duration, are frequent and occur every year. Frosts above 5500 feet may be severe.

For general information on succession and climax communities, refer to section 51.

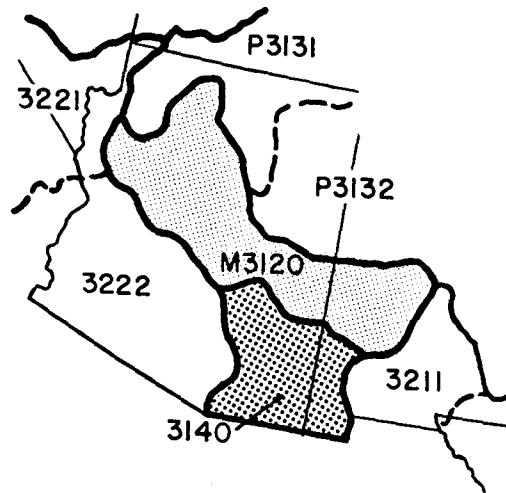
Several biotic communities are contained within this area, which corresponds roughly to the Apachian Biotic Province of Dice (1943). The semidesert grassland of Chihuahuan origin is the most extensive of these communities, followed in order of extent by Chihuahuan desertscrub, Sonoran desertscrub, Madrean evergreen woodland, montane conifer forest, riparian deciduous forest, plains grassland, and interior chaparral.

Semidesert Grassland

The semidesert grassland consists of a diverse grass—shrub association where grasses are comingled with various more or less woody shrubs including a number of uniquely semidesert, dry-tropic species such as soap tree yucca, bear grass, mesquite, and grassland species of cholla and other cacti. It is a peculiarly southwestern grassland that adjoins and largely surrounds the Chihuahuan Desert, being positioned elevationally between the lower desert and the evergreen woodland, chaparral, or plains grassland above.

The semidesert grassland is transitional in the sense of being positioned geographically between plains grassland and Chihuahuan desertscrub and shares many of the floral and faunal components of both; it is nonetheless a distinct and separate biotic community. Geographically and evolutionarily centered for a distinct and diverse flora and fauna, the grassland is, at least potentially, a perennial grass—scrub dominated community with tobosa-grass and black grama being the most diagnostic grass dominants. Black grama is generally found on upland sites, whereas tobosa-grass is most frequent in swales and bottomlands on heavy soils. Reproduction of many of the grasses of this community is principally from rootstock rather than seed. Two shrubs, burroweed and snakeweed, have replaced the grasses over large areas following severe overgrazing.

The original lower elevational range of semidesert grassland in the southwest was probably around 3500 feet, but because of grazing and suppression of fire, large areas up to 4600 feet are mostly desertscrub today. The upper elevational limits of semidesert grassland are



Location of province
within the United States



Detail of province



Province boundary



Section boundary



State boundary

Figure 52.1 Province 3140, Mexican Highlands Shrub Steppe

usually between 5100 and 5500 feet (occasionally to 6200 feet). Within the Chihuahuan Desert, the grassland occupies the numerous "bolsons" (enclosed drainages) as "mogotes" of tobosa-grass.

Annual precipitation averages 9 to 17 inches with over 50 percent of this occurring during April to September; perennial grass production is dependent upon moisture received during this period (Cable and Martin 1975).

Chihuahuan Desertscrub

The Chihuahuan desertscrub occurs frequently as a uniform and monotonous stand of creosote bush, or as a mixture of creosote bush, tarbush, and white-thorn, with broad, low, buried trees (shrubs) of mesquite (Shreve 1942 a,b,c). Other important shrubs are ocotillo, mariola, allthorn, and little coldenia. Stem and leaf succulents (e.g., *Opuntia*, *Yucca*, *Agave*) are common, and cacti, while frequent, are not conspicuous. The short trees, so characteristic of the Sonoran Desert, are essentially lacking. Columnar cacti are absent.

The desertscrub occupies extensive areas below 4600 feet elevation and reaches its peak development in bajadas, gravelly plains, and on low hills. Limestone, a common substrate within the Chihuahuan Desert, is commonly vegetated with sandpaper bush. The contact with semidesert grassland is complex with many reversions, and is frequently dependent on edaphic conditions and/or grazing history.

Average annual precipitation is 8 to 12 inches with 60 percent or more of the total falling during June through September. Some of the remaining precipitation falls as snow, and freezing temperatures are common during winter months.

Sonoran Desertscrub

The Sonoran desertscrub covers extensive areas below 3500 feet elevation in and adjacent to the valleys of the Gila and San Pedro rivers in the northwest portions of this province. These lower elevations are subject neither to the frequency nor to the severity of freezes found elsewhere in the province. Also, the precipitation pattern is more bimodal and October through March rainfall can be expected to provide 50 percent or more of the mean annual total of 10 to 12 inches.

At the lowest elevations, creosote bush often occurs in pure stands. At the higher elevations and throughout most of the Sonoran desertscrub in this province, creosote bush is found in association with blue and foothill paloverde, coffeeberry and saguaros, which occur as dominants. Crucifixion thorn, or canotia, is an important plant in these parts of the Sonoran Desert where it replaces paloverde in the foothills and similar habitats. Saltbushes associated with mesquite and the now prevalent, introduced, saltcedar, occupy floodplains of the two major rivers where these lands are not under cultivation.

Madrean Evergreen Woodlands

The Madrean evergreen woodlands are oak-dominated. The best examples developed in this province are found on the foothills and lower slopes of the larger mountains

such as the Chiricahua, Huachuca, Patagonia, Pajarito, Santa Rita, Bavoquivaris, Animas, Santa Catalina, Galiuro, Pinaleno, Peloncillo, and Burro mountains. The elevational range of woodlands in these areas is generally between 4200 and 7200 feet (lower along drainageways).

This community may be composed wholly of evergreen oaks, or may be a varied mixture of oaks, junipers (alligator and one-seeded) and Mexican pinyon. Arizona cypress is a tall tree isolated in relict stands within canyons. Much of the oak woodland of southeastern Arizona and adjacent New Mexico is an oak-dominated community of one or more of four species: Emory oak, Arizona white oak, gray oak, and Mexican blue oak.

The higher elevations of this community may be characterized by several oaks in various associations with Chihuahuan pine, Apache pine, Mexican pinyon pine, and ponderosa pine. In addition to the oaks mentioned above, silverleaf oak and netleaf oak are characteristic dominants at higher elevations and the Arizona madrone may be scattered throughout drainages.

Precipitation is in the bimodal pattern; the annual total is ordinarily between 12 and 24 inches.

Southern Rocky Mountain Montane Conifer Forest

The southern Rocky Mountain montane conifer forest, in southeastern Arizona and southwestern New Mexico, caps the larger mountains above 7200 feet, extending downward in canyons and drainages. These mountains include the Chiricahua, Huachuca, Santa Rita, Rincon, Santa Catalina, Galiuro, Pinaleno, Animas, and Burro mountains. Annual precipitation averages 25 to 30 inches, rarely lower than 18 inches or higher than 33 inches. These are some of the driest forests in North America.

In contrast to the widely developed communities on flat and rolling plateaus and mesas farther north, montane forest communities in this area are characterized by steep gradients. The lower part of the forest, below about 8500 feet, consists primarily of ponderosa pine. At midforest elevations, Douglas-fir, white fir, and ponderosa pine variously intermingle on all but north-facing slopes. Firs are dominant on north-facing slopes above 7500 feet, and above 8500 feet they become increasingly prevalent on all slope exposures. White pine frequently occupies high southern exposures and ridges.

The principal trees, in addition to ponderosa pine, Douglas-fir, white fir, and Mexican white pine (*Pinus strobiformis*), are Gambel oak, silverleaf oak, Arizona madrone, New Mexican locust, bigtooth maple, and trembling aspen. Principal grasses are mountain muhly, pine dropseed, Arizona fescue, blue grama, and deergrass. Shrubs are numerous and important and include buckbrush, Arizona rose, ocean spray, and snowberry; bracken fern is an abundant understory forest species.

Interior Chaparral

The interior chaparral of dense, low, evergreen sclerophyll shrubs (chaparral), although not extensive, is present at mid-elevations in the Catalina, Galiuro,

Pinaleno, Swisshelm, Peloncillo, Burro, Mule, Big Hatchet, Florida, and other mountains, usually between 4500 and 6500 feet (occasionally higher). These disjunctive communities are usually on limestone or granitic substrates and are dominated by shrub live oak, mountain-mahogany, manzanitas, sumacs, and buckthorns.

Plains Grassland

The plains grassland occurs as wide expanses of short-grass plains above 5100 feet in the Animas, San Rafael, and Sonoita-Elgin valleys. A southwestward extension of the Great Plains, the plains grassland in this province was, and in part remains, a shortgrass plains dominated by blue, hairy, side-oats, and other grama species between 5000 and 7000 feet elevations. These communities are maintained under 11 to 18 inches of annual precipitation. Shrubs are not prevalent or codominant, being usually absent or nearly so, thus distinguishing this community from semidesert grassland.

Riparian Deciduous Forest and Woodland

The riparian deciduous forest and woodland principally occurs in canyons and drainageways of the larger mountains, and along river bottoms where perennial or nearly perennial streamflows still remain. Their distinctive life-forms and their riparian habitat distinguish these communities from the evergreen woodlands and the montane forests from which they course, fingerlike, through woodland and chaparral to the grasslands or deserts below. Often the canopy is widely open, as in a woodland aspect, but occasionally the taller species (sometimes reaching heights of 50 to 100 feet) form a high-canopied gallery forest with an almost closed cover.

The composition and form of the riparian forest changes with elevation. Above 3500 feet in high semidesert grassland, evergreen woodland, and the coniferous forest, a mixed broadleaf community is usually present and may contain riparian trees such as Arizona alder, cottonwood, cherries, maples, Arizona sycamore, Arizona walnut, and velvet ash. Lower, on finer clay and sand substrates, cottonwoods and willows almost exclusively dominate these forest habitats.

MEXICAN HIGHLANDS SHRUB STEPPE (RIPARIAN COMMUNITIES)

The various riparian communities in Province 3140 may be represented as formations of forest, woodland, scrubland, or marshland. They occur in, or adjacent to, drainageways and/or floodplains or other hydric situations (i.e., springs, etc.), often resulting as fingerlike ribbons of riparian communities passing through other, distinctly terrestrial, communities (Lowe 1964). The importance of these riparian communities to wildlife and outdoor recreation is greatly disproportionate to the limited acreages occupied.

In Province 3140, riparian communities above 3500 feet are temperate and contain mixed broadleaf and cottonwood—willow forest and woodland communities.

Below this elevation, subtropical scrublands of saltcedar and/or seepwillow and mesquite bosques may also be found. A few marshlands occur throughout.

Although these communities are often distinct, they are also often highly integrated or occur as intermittent stands within another community. Further, many associate plant species are common to more than one community. Riparian species lists have therefore been compiled at the climatic levels of division; i.e., temperate and subtropic. Species common to both climatic levels are presented in both lists. Descriptions and distinctions of the major formation-classes are presented in the following discussion.

Temperate Riparian

Mixed broadleaf riparian forest — The mixed broadleaf riparian forest is comprised of tall (50 to 100 feet) winter-deciduous broadleaf trees and is principally restricted to streamways and drainageways above 3500 feet elevation (Brown and Lowe 1974; Brown and Hausler 1977), such as in Arivaipa Canyon, Ash Creek, Eagle Creek, etc. Where streamflows are seasonally intermittent, these forests are present only where surface runoff occurs, from November through March (Zimmerman 1969; Hibbert et al. 1974) and in warm-temperate climates where the advent of the spring growing season can be expected prior to April 15 (Brown and Hausler 1977).

Arboreal plant species include Arizona sycamore, velvet ash, box-elder, bigtooth maple, Arizona walnut, mulberry, Arizona cypress, cottonwood, and several willows. Characteristic understory species include bracken fern, scarlet sumac, poison ivy, and canyon grape.

Cottonwood—willow forests and woodlands — The cottonwood—willow forests and woodlands are generally confined to riparian environments below 4000 feet elevation on clay or other fine soils and rock deposits where streamflows are perennial or nearly so (Brown and Lowe 1974). The understory of these communities may be either open and parklike or a tangle of riparian trees and shrubs.

These once extensive forests have been greatly diminished over the past 100 years due to diversion, interruption, and elimination of streamflow (Davis 1973). Interrupted cottonwood—willow woodlands and some forests are still present in Province 3140 along the San Carlos, San Pedro, and Gila rivers, and adjacent to springs. These communities are largely maintained through periodic winter-spring flooding. Stabilized water flows result in decadent stands in which the dominant species are lacking in reproduction. Cottonwood regenerates principally from seed, unlike sycamore and other broadleaf riparian species that reproduce by sprouting and clones (Horton et al. 1960).

Subtropical Riparian

Mesquite—saltcedar woodlands and scrublands — The mesquite—saltcedar woodlands and scrublands are largely restricted to below 4000 feet elevation.

These winter-deciduous communities attain maximum development on the alluvium of old dissected floodplains laid down between the intersection of major watercourses and their large tributaries (Brown and Hausler 1977). Woodlands of mesquite once covered vast areas of such floodplains along the Gila and San Pedro rivers and some excellent examples are still to be found there. As with cottonwood—willow, these woodlands have suffered greatly from a variety of man-related causes including water diversion, flood control, agricultural clearing programs, and most importantly, dropping water tables.

In the past, these communities were almost completely dominated by velvet mesquite with individuals commonly attaining great size (Brandt 1951). Today the deciduous saltcedar may now share or dominate local situations (Bowser 1957; Robinson 1965; Turner 1974).

Historically, the understory in mature mesquite bosques was relatively open with annual and perennial grasses and forbs forming the ground cover. Today, introduced annual forbs such as filaree, mustards, and grasses are frequently encountered as understory species. Vines such as canyon grape and others are often still common in some areas. Individual cottonwoods, velvet ash, and Gooding willow may be interspersed in more mesic sites within the bosque (Brown and Hausler 1977).

Where intermittent flooding and/or slowly receding summer surface flow occurs, the introduced saltcedar tends to replace mesquite and other native riparian species. This is particularly true after clearing or burning and when ground water is close to the surface and water storage facilities and agricultural tracts are present upstream. The aggressive ability of saltcedar to outcompete native riparian species after summer flooding has been well-demonstrated by Turner (1974) and Warren and Turner (1975). As in areas of former cottonwood—willow and marshland, this adventive now often exclusively constitutes a disclimax community at the expense of native plant and animal diversity (Phillips et al. 1964; Ohmart 1973).

Marshlands — The marshlands are principally composed of emergents which normally have their basal portions annually, periodically, or continually submerged. Not normally included as marshland constituents are trees, woody shrubs, or nonhalophytic grasses. Both fresh and brackish water environments are included in this wetland formation. Communities range from the more xeric and alkali communities of saltgrass and alkali bulrush to the hydric freshwater communities of rushes, sedges, bulrushes, and cat-tail. Marshland communities, however, are generally not well-represented within Province 3140.

These communities, occurring beside streams that periodically overflow their banks, have disappeared in many areas as a result of water diversions and ground water pumping. Many of these remaining marshland communities depend on stored and/or recycled agricultural and waste waters. Examples are San Simon Cienega, the Arizona Game and Fish Department's waterfowl management area near Wilcox Playa, and

small areas on, or adjacent to, the San Pedro and Gila rivers.

Table 3140-52.1 Selected Plant Species Common to the Mexican Highlands Shrub Steppe

Growth form	Plant associations	
	Habitat: Semidesert Grassland	
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u>	Cat-claw
	<u>Agave deserti</u>	Desert agave
	<u>Celtis reticulata</u>	Netleaf hackberry
	<u>Fouquieria splendens</u>	Ocotillo
	<u>Juniperus monosperma</u>	One-seeded juniper
	<u>Prosopis juliflora</u>	Mesquite
	<u>Sapindus drummondii</u>	Western soapberry
	<u>Yucca baccata</u>	Spanish dagger
	<u>Yucca elata</u>	Soaptree yucca
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u>	White-thorn
	<u>Agave palmeri</u>	Palmer agave
	<u>Agave parryi</u>	Parry agave
	<u>Agave shottii</u>	Shott agave
	<u>Artemisia filifolia</u>	Sand sagebrush
	<u>Calliandra eriophylla</u>	False mesquite
	<u>Condalia ericoides</u>	Javelina bush
	<u>Condalia lycioides</u>	White crucillo
	<u>Condalia spathulata</u>	Mexican crucillo
	<u>Ephedra antisiphilitica</u>	Joint-fir
	<u>Ephedra trifurca</u>	Mormon tea
	<u>Ferocactus wislizenii</u>	Barrel cactus
	<u>Gossypium thurberi</u>	Desert cotton
	<u>Gutierrezia lucida</u>	Yellow-green matchweed
	<u>Gutierrezia sarothrae</u>	Snakeweed
	<u>Haplopappus tenuisectus</u>	Burroweed
	<u>Hoffmanseggia</u> spp.	Rat potato
	<u>Lycium</u> spp.	Wolfberry
	<u>Mimosa biuncifera</u>	Wait-a-minute bush
	<u>Nolina texana</u>	Bear grass
	<u>Opuntia chlorotica</u>	Pancake pear cactus
	<u>Opuntia imbricata</u>	Tree cholla
	<u>Opuntia leptocaulis</u>	Desert Christmas cactus
	<u>Opuntia phaeacantha</u>	Prickly pear
	<u>Opuntia spinosior</u>	Cane cholla
	<u>Rhus choriohylla</u>	Mearns sumac
	<u>Sphaeralcea</u> spp.	Globe mallow
	<u>Yucca torreyi</u>	Spanish bayonet
Grasses and forbs	<u>Andropogon barbinodis</u>	Cane beardgrass
	<u>Aristida</u> spp.	Three-awn
	<u>Bouteloua</u>	
	<u>chondrosioides</u>	Sprucetop grama
	<u>Bouteloua curtipendula</u>	Side-oats grama
	<u>Bouteloua eriopoda</u>	Black grama
	<u>Bouteloua filiformis</u>	Slender grama
	<u>Bouteloua gracilis</u>	Blue grama
	<u>Bouteloua hirsuta</u>	Hairy grama
	<u>Bouteloua rothrockii</u>	Rothrock grama
	<u>Croton</u> spp.	Dove weed
	<u>Croton texensis</u>	Dove weed
	<u>Eragrostis intermedia</u>	Plains lovegrass
	<u>Eragrostis lehmanniana</u>	Lehmann lovegrass
	<u>Heteropogon contortus</u>	Tanglehead
	<u>Hilaria belangeri</u>	Curly mesquite
	<u>Hilaria mutica</u>	Tobosa-grass
	<u>Lycurus phleoides</u>	Wolftail
	<u>Muhlenbergia</u> spp.	Muhly
	<u>Muhlenbergia porteri</u>	Bush muhly
	<u>Panicum obtusum</u>	Vine mesquite
	<u>Sitanion hystrix</u>	Squirreltail
	<u>Solanum elaeagnifolium</u>	Nightshade
	<u>Sporobolus</u> spp.	Dropseed
	<u>Sporobolus wrightii</u>	Sacaton
	<u>Trichachne californica</u>	California cottontop
	<u>Tridens puchellus</u>	Fluffgrass
	<u>Zinnia grandiflora</u>	Desert zinnia
	<u>Zinnia pumila</u>	Desert zinnia

continued

Table 3140-52.1 (Continued)

Growth form	Plant associations	
	Habitat: Chihuahuan Desertscrub	
Medium trees, 20-40 ft	<u>Prosopis juliflora</u>	Mesquite
Low trees and tall shrubs, 10-20 ft	<u>Fouquieria splendens</u> <u>Yucca baccata</u>	Ocotillo Spanish dagger
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u> <u>Acacia vernicosa</u> <u>Agave palmeri</u> <u>Cassia wislizeni</u> <u>Condalia spathulata</u> <u>Coryphantha vivipara</u> <u>Ferocactus wislizenii</u> <u>Flourensia cernua</u> <u>Koeberlinia spinosa</u> <u>Larrea divaricata</u> <u>Lippia wrightii</u> <u>Mammillaria</u> spp. <u>Mortonia scabrella</u> <u>Opuntia leptocaulis</u> <u>Opuntia phaeacantha</u> <u>Opuntia spinosior</u> <u>Opuntia stanleyi</u> <u>Opuntia violacea</u> <u>Parthenium incanum</u> <u>Yucca</u> spp.	White-thorn White-thorn Palmer agave Shrubby senna Squawbush Pincushion cactus Barrel cactus Tarbush Crucifixion thorn Creosote bush Wright lippia Fish-hook cactus Scurfy mortonia Desert Christmas cactus Prickly pear Cane cholla Devil cholla Purple prickly pear Mariola Yucca
Grasses and forbs	<u>Aristida purpurea</u> <u>Bouteloua eriopoda</u> <u>Coldenia canescens</u> <u>Muhlenbergia porteri</u> <u>Tridens puchellus</u> <u>Zinnia pumila</u>	Purple three-awn Black grama Little coldenia Bush muhly Fluffgrass Desert zinnia
	Habitat: Sonoran Desertscrub--Arizona Upland Association	
Medium trees, 20-40 ft	<u>Celtis reticulata</u> <u>Cercidium floridum</u> <u>Cereus giganteus</u> <u>Chilopsis linearis</u> <u>Olneya tesota</u> <u>Prosopis juliflora</u>	Netleaf hackberry Blue paloverde Saguaro Desert-willow Ironwood Mesquite
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Canotia holacantha</u> <u>Cercidium microphyllum</u> <u>Cereus thurberi</u> <u>Fouquieria splendens</u>	Cat-claw Crucifixion thorn Yellow paloverde Organpipe cactus Ocotillo
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u> <u>Ambrosia deltoidea</u> <u>Celtis pallida</u> <u>Dodonaea viscosa</u> <u>Echinocereus</u> spp. <u>Encelia farinosa</u> <u>Eriogonum wrightii</u> <u>Ferocactus wislizenii</u> <u>Holacantha emoryi</u> <u>Krameria grayi</u> <u>Krameria parvifolia</u> <u>Larrea divaricata</u> <u>Lycium</u> spp. <u>Mammillaria microcarpa</u> <u>Opuntia fulgida</u> <u>Opuntia leptocaulis</u> <u>Opuntia phaeacantha</u> <u>Opuntia spinosior</u> <u>Simmondsia chinensis</u>	White-thorn Triangle bur sage Spiny hackberry Hopbush Hedgehog cactus Brittle bush Deer buckwheat Barrel cactus Crucifixion thorn White ratany Ratany Creosote bush Wolfberry Fish-hook cactus Jumping cholla Desert Christmas cactus Prickly pear Cane cholla Jojoba
Grasses	<u>Bouteloua rothrockii</u> <u>Muhlenbergia porteri</u> <u>Tridens puchellus</u>	Rothrock grama Bush muhly Fluffgrass

continued

Table 3140-52.1 (Continued)

Growth form	Plant associations	
	Habitat: Madrean Evergreen Woodland	
Tall trees, over 40 ft	<u>Juniperus deppeana</u> <u>Pinus latifolia</u> <u>Pinus leiophylla</u> <u>Pinus ponderosa</u> <u>Quercus arizonica</u> <u>Quercus emoryi</u> <u>Quercus grisea</u>	Alligator juniper Apache pine Chihuahua pine Ponderosa pine Arizona white oak Emory oak Gray oak
Medium trees, 20-40 ft	<u>Arbutus arizonica</u> <u>Cupressus arizonica</u> <u>Pinus cembroides</u> <u>Quercus emoryi</u> <u>Quercus hypoleucoides</u> <u>Quercus oblongifolia</u> <u>Quercus reticulata</u>	Arizona madrone Arizona cypress Mexican pinyon Emory oak Silverleaf oak Mexican blue oak Netleaf oak
Low trees and tall shrubs, 10-20 ft	<u>Eysenhardtia polystachya</u> <u>Juniperus monosperma</u>	Kidneywood One-seeded juniper
Low to medium shrubs and cacti, under 6 ft	<u>Agave palmeri</u> <u>Agave parryi</u> <u>Arctostaphylos pungens</u> <u>Echinocereus pectinatus</u> <u>Erythrina flabelliformis</u> <u>Mammillaria gummifera</u> <u>Mimosa biuncifera</u>	Palmer agave Parry agave Pointleaf manzanita Rainbow cactus Coral bean Cream cactus Wait-a-minute bush
Grasses and forbs	<u>Andropogon barbinodis</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Elyonurus barbiculmus</u> <u>Lycurus phleoides</u> <u>Muhlenbergia emersleyi</u> <u>Oxalis</u> spp.	Cane bluestem Side-oats grama Blue grama Woolspike balsamscale Wolftail Bullgrass Wood-sorrel
	Habitat: Montane Conifer Forest--Southern Rocky Mountain Fasciation	
Tall trees, over 40 ft	<u>Abies concolor</u> <u>Acer grandidentatum</u> <u>Alnus oblongifolia</u> <u>Pinus leiophylla</u> <u>Pinus ponderosa</u> <u>Pinus reflexa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u> <u>Quercus gambelii</u>	White fir Bigtooth maple Arizona alder Chihuahua pine Ponderosa pine White pine Trembling aspen Douglas-fir Gambel oak
Medium trees, 20-40 ft	<u>Arbutus arizonica</u> <u>Quercus hypoleucoides</u> <u>Quercus reticulata</u>	Arizona madrone Silverleaf oak Netleaf oak
Low trees and tall shrubs, 10-20 ft	<u>Rhamnus californica</u> <u>Robinia neomexicana</u>	Coffeeberry New Mexican locust
Low to medium shrubs, under 10 ft	<u>Arctostaphylos pringlei</u> <u>Ceanothus fendleri</u> <u>Ceanothus integerrimus</u> <u>Holodiscus dumosus</u> <u>Rhus glabra</u> <u>Ribes pinetorum</u> <u>Rosa arizonica</u> <u>Senecio</u> spp. <u>Symphoricarpos oreophilus</u>	Manzanita Buckbrush Deer brush Ocean spray Scarlet sumac Orange gooseberry Arizona rose Groundsel Snowberry
Grasses and forbs	<u>Achillea lanulosa</u> <u>Astragalus humistratus</u> <u>Blepharoneuron tricholepis</u> <u>Bouteloua gracilis</u> <u>Castilleja</u> spp. <u>Erigeron divergens</u> <u>Festuca arizonica</u>	Yarrow Milk-vetch Pine dropseed Blue grama Indian paintbrush Fleabane Arizona fescue

continued

Table 3140-52.1 (Continued)

Growth form	Plant associations	
	<u>Montane Conifer Forest (Continued)</u>	
Grasses and forbs (Continued)	<u>Hymenoxys quinquesquemata</u> <u>Lathyrus graminifolius</u> <u>Lotus oroboides</u> <u>Lupinus</u> spp. <u>Muhlenbergia montana</u> <u>Muhlenbergia rigens</u> <u>Muhlenbergia virescens</u> <u>Pachystima myrsinites</u> <u>Pteridium aquilinum</u> <u>Viola canadensis</u>	Pingwing Peavine Deer vetch Lupine Mountain muhly Deergrass Screwleaf muhly Myrtle boxleaf Bracken fern Canada violet
	<u>Habitat: Interior Chaparral</u>	
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus betuloides</u> <u>Cercocarpus breviflorus</u> <u>Juniperus monosperma</u> <u>Quercus emoryi</u> <u>Rhus ovata</u>	Birchleaf mountain-mahogany Hairy mountain-mahogany One-seeded juniper Emory oak Sugar sumac
Low to medium shrubs, under 10 ft	<u>Amorpha californica</u> <u>Arctostaphylos pringlei</u> <u>Arctostaphylos pungens</u> <u>Berberis haemotocarpa</u> <u>Brickellia californica</u> <u>Ceanothus greggii</u> <u>Ceanothus integerrimus</u> <u>Cowania mexicana</u> <u>Eriodictyon angustifolium</u> <u>Fallugia paradoxa</u> <u>Fremontia californica</u> <u>Garrya flavescens</u> <u>Garrya wrightii</u> <u>Haplopappus laricifolius</u> <u>Mimosa biuncifera</u> <u>Quercus turbinella</u> <u>Rhamnus californica</u> <u>Rhamnus crocea</u> <u>Rhus trilobata</u> <u>Sophora</u> spp.	Mock locust Manzanita Pointleaf manzanita Barberry California brickellia California lilac Deer brush Cliffrose Yerba santa Apache plume Flannel bush Silk-tassel Silk-tassel Turpentine-brush Wait-a-minute bush Shrub live oak California buckthorn Hollyleaf buckthorn Squawbush Sophora
Grasses	<u>Andropogon barbinodis</u> <u>Aristida longiseta</u> <u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Eragrostis intermedia</u> <u>Lycurus phleoides</u> <u>Muhlenbergia porteri</u>	Cane beardgrass Red three-awn Side-oats grama Black grama Blue grama Plains lovegrass Wolf tail Bush muhly
	<u>Habitat: Plains Grassland</u>	
Medium trees, 20-40 ft	<u>Rhus lanceolata</u>	Prairie sumac
Low to medium shrubs, under 10 ft	<u>Artemisia filifolia</u> <u>Atriplex canescens</u> <u>Echinocereus</u> spp. <u>Eurotia lanata</u> <u>Opuntia fragilis</u> <u>Opuntia polycantha</u> <u>Quercus havardii</u> <u>Yucca glauca</u>	Sand sagebrush Four-wing saltbush Hedgehog cactus Winter fat Little prickly pear Plains prickly pear Havard oak Small soapweed
Grasses and forbs	<u>Agropyron smithii</u> <u>Andropogon gerardii</u> <u>Andropogon scoparius</u> <u>Argemone intermedia</u> <u>Aster</u> spp. <u>Astragalus bisulcatus</u> <u>Astragalus pectinatus</u> <u>Bahia oppositifolia</u>	Western wheatgrass Big bluestem Little bluestem Prickle poppy Aster White locoweed Narrowleaf poison vetch Plains bahia

continued

Table 3140-52.1 (Continued)

Growth form	Plant associations	
	<u>Plains Grassland (Continued)</u>	
Grasses and forbs (Continued)	<u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Bouteloua hirsuta</u> <u>Buchloe dactyloides</u> <u>Chenopodium album</u> <u>Chenopodium leptophyllum</u> <u>Chrysopsis villosa</u> <u>Cleome serrulata</u> <u>Cryptantha</u> spp. <u>Eragrostis intermedia</u> <u>Eriogonum microthecum</u> <u>Franseria discolor</u> <u>Grindelia squarrosa</u> <u>Gutierrezia</u> spp. <u>Helianthus petiolaris</u> <u>Hilaria jamesii</u> <u>Koeleria cristata</u> <u>Lepidium densiflorum</u> <u>Liatris punctata</u> <u>Lycurcus phleoides</u> <u>Lygodesmia juncea</u> <u>Mentzelia</u> spp. <u>Muhlenbergia</u> spp. <u>Oenothera pallida</u> <u>Oryzopsis hymenoides</u> <u>Oxytropis</u> spp. <u>Panicum virgatum</u> <u>Petalostemum</u> spp. <u>Poa arida</u> <u>Polygala</u> spp. <u>Psoralea tenuiflora</u> <u>Salsola</u> spp. <u>Senecio</u> spp. <u>Sorghastrum nutans</u> <u>Sphaeralcea</u> spp. <u>Sporobolus airoides</u>	Side-oats grama Blue grama Hairy grama Buffalo grass Lamb's-quarters Slimleaf goosefoot Hairy goldaster Rocky Mountain beepant Hidden flower Plains lovegrass Slenderbush eriogonum Skeletonleaf bur sage Curlycup gumweed Snakeweed Prairie sunflower Galleta grass Mountain junegrass Prairie pepperweed Blazing-star Wolf tail Rush skeltonplant Stickleaf Muhly Pale evening-primrose Indian rice-grass Crazyweed Switchgrass Prairie clover Plains bluegrass Milkwort Slender scurf pea Russian thistle Groundsel Indian-grass Globe mallow Alkalai scaton
	<u>Habitat: Riparian Deciduous Forest and Woodland</u>	
Tall trees, over 40 ft	<u>Alnus oblongifolia</u> <u>Juniperus deppeana</u> <u>Platanus wrightii</u> <u>Populus angustifolia</u> <u>Populus fremontii</u> <u>Quercus arizonica</u> <u>Quercus gambelii</u>	Arizona alder Alligator juniper Arizona sycamore Narrowleaf cottonwood Fremont cottonwood Arizona white oak Gambel oak
Medium trees, 20-40 ft	<u>Acer glabrum</u> <u>Acer grandidentatum</u> <u>Acer negundo</u> <u>Fraxinus velutina</u> <u>Juglans major</u> <u>Prosopis juliflora</u> <u>Prunus</u> spp. <u>Quercus emoryi</u> <u>Salix</u> spp. <u>Sambucus</u> spp.	Rocky Mountain maple Bigtooth maple Box-elder Velvet ash Arizona walnut Mesquite Wild cherry Emory oak Willow Elderberry
Low trees and tall shrubs, 10-20 ft	<u>Morus microphylla</u> <u>Quercus palmeri</u> <u>Sapindus drummondii</u> <u>Tamarix pentandra</u>	Texas mulberry Palmer oak Western soapberry Tamarisk
Low to medium shrubs, under 10 ft	<u>Baccharis glutinosa</u> <u>Jamesia americana</u> <u>Rhus glabra</u> <u>Rubus</u> spp.	Seepwillow Cliffbush Scarlet sumac Raspberry
Lesser vegeta- tion	<u>Carex</u> spp. <u>Eleocharis</u> spp. <u>Juncus</u> spp. <u>Parthenocissus inserta</u> <u>Pteridium aquilinum</u>	Sedge Spikerush Rush Virginia creeper Bracken fern

continued

Table 3140-52.1 (Concluded)

Growth form	Plant associations
<u>Riparian Deciduous Forest and Woodland (Continued)</u>	
Lesser vegetation	Rorippa spp.
(Continued)	Typha spp.
	Vitis arizonica
	Watercress
	Cat-tail
	Canyon grape

Table 3140-52.1 [R] Selected Plant Species Common to the Mexican Highlands Shrub Steppe in Riparian Habitats

Growth form	Plant associations
<u>Temperate Riparian</u>	
Tall trees, over 40 ft	Juniperus deppeana Platanus wrightii Populus fremontii Quercus arizonica Quercus gambelii
	Alligator juniper Arizona sycamore Fremont cottonwood Arizona white oak Gambel oak
Medium trees, 20-40 ft	Acer grandidentatum Fraxinus velutina Juglans major Prosopis juliflora Prunus spp. Quercus emoryi Salix spp. Sambucus spp.
	Bigtooth maple Velvet ash Arizona walnut Mesquite Wild cherry Emory oak Willow Elderberry
Low trees and tall shrubs, 10-20 ft	Morus microphylla Quercus palmeri Sapindus drummondii Tamarix pentandra
	Texas mulberry Palmer oak Western soapberry Tamarisk
Low to medium shrubs, under 10 ft	Baccharis glutinosa Rhus glabra Rubus spp.
	Seepwillow Scarlet sumac Raspberry
Lesser vegetation	Carex spp. Eleocharis spp. Juncus spp. Pteridium aquilinum Rhus radicans Rorippa spp. Typha spp. Vitis arizonica
	Sedge Spikerush Rush Bracken fern Poison ivy Watercress Cat-tail Canyon grape
<u>Subtropical Riparian</u>	
Tall trees, over 40 ft	Populus fremontii Salix gooddingii
	Fremont cottonwood Goodding willow
Medium trees, 20-40 ft	Chilopsis linearis Fraxinus velutina Prosopis juliflora Salix taxifolia
	Desert-willow Velvet ash Mesquite Yellow willow
Low trees and tall shrubs, 10-20 ft	Acacia greggii Celtis reticulata Tamarix pentandra
	Cat-claw Netleaf hackberry Saltcedar
Low to medium shrubs, under 10 ft	Allenrolfea occidentalis Baccharis spp. Baccharis glutinosa Condalia lycioides Juncus spp. Scirpus spp. Scirpus paludosus Typha spp.
	Iodinebush Baccharis Seepwillow Gray-thorn Rush Bulrush Salt-marsh bulrush Cat-tail

continued

Table 3140-52.1 [R] (Concluded)

Growth form	Plant associations
<u>Subtropical Riparian (Continued)</u>	
Lesser vegetation	Carex spp. Cruciferae spp. Cucurbita palmata Cynodon dactylon Distichlis spicata Erodium cicutarium Lotus rigidus Rorippa spp. Sarcostemma spp. Suaeda torreyana Vitis arizonica
	Sedge Mustard Coyote-melon Bermuda grass Saltgrass Filaree Deer vetch Watercress Climbing milkweed Inkweed Canyon grape

Table 3140-52.2 Ecological Characteristics of Selected Plant Species Common to the Mexican Highlands Shrub Steppe

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir (balsam fir) <i>Abies concolor</i> Hoopes	Common in conifer forests, 5,500-10,000 ft	Large evergreen tree, 80-150 ft, conical	Cone, 3-5 in, pollinates in spring	Seeds eaten by song-birds; browsed by deer	
White-thorn (mescal acacia) <i>Acacia constricta</i> Benth.	Washes, slopes, mesas, 2,000-5,000 ft, sun	Spreading shrub, 2-10 ft	Glabrous pods splitting when ripe, spring	Seeds eaten by dove, quail, rabbit	Common along washes; a weed on rangelands
Cat-claw (devil's claw, una degato) <i>Acacia greggii</i> Gray	Washes, mesas, to 5,000 ft	Large shrub to small tree, to 25 ft	Pod, 2.5-5 in	Seeds eaten by dove and quail; roosting tree for quail	Often abundant
White-thorn (acacia) <i>Acacia vernicosa</i> Standl.	Rocky hills, mesas on limestone soils, 3,500-5,000 ft	Shrub with spreading branches, 2-6 ft	Hard pod, Apr.-Nov.		Similar to <i>A. constricta</i>
Rocky mountain maple <i>Acer glabrum</i> Torr.	Moist soils along streams, 7,000-9,000 ft, sun and shade	Shrub or small tree, deciduous, to 33 ft	Samara, May-June	Seeds eaten by quail, turkey, bear, beaver, rabbit, squirrel, fox; browsed by deer	
Bigtooth maple <i>Acer grandidentatum</i> Nutt.	Moist soil along streams and canyons, 4,700-7,000 ft, sun and shade	Deciduous tree, up to 50 ft, with spreading crown	Samara, Apr.	Same as <i>A. glabrum</i>	
Box-elder <i>Acer negundo</i> L.	Moist soil along streams, 4,000-8,000 ft, sun and shade	Deciduous tree, up to 50 ft, broad rounded crown	Paired samara, Apr.	Same as <i>A. glabrum</i>	
Yarrow <i>Achillea lanulosa</i> Nutt.	Common in pine forest, 5,500-11,500 ft, sun	Perennial herb with creeping rootstocks 10-20 in	1-seeded June-Sept.	Plant eaten by rabbits and sheep	
Desert agave <i>Agave deserti</i> Engelm.	Rocky gravelly slopes in desert mountains, 500-3,500 ft	Succulent shrub 6-27 in diameter leaves spiny margined, flower stalks 6.5-18 ft	Brown, cylindrical 1.5-2 in June	Dried stems used as nesting sites for woodpeckers	
Palmer agave (mescal century plant) <i>Agave palmeri</i> Engelm.	Locally common in rocky foothills and mountains grasslands, 3,500-6,500 ft, sun	Leaf cluster 1.5-2 in	Capsule, many seeded, June-July		
Parry agave (mescal) <i>Agave parryi</i> Engelm.	Common in mountains 4,500-8,000 ft, sun	Numerous crowded leaves forming a rounded cluster 2-3 ft diameter	Capsule		May spread by underground sprouts
Shott agave (amole) <i>Agave shottii</i> Engelm.	Abundant on dry rocky mountain slopes, desert grasslands, lower oak woodlands, 3,300-6,500 ft	Succulent shrub 12-16 in diameter	Capsule		Forming mats spreading vegetatively, valuable in erosion control
Western wheatgrass <i>Agropyron smithii</i> Rydb.	Dry hills, sandy bottomlands, forest openings	Perennial grass 12-24 in	Achene, May-Oct.	Plant eaten by rabbits, antelope, deer, bighorn sheep	Valuable range grass; good soil binder
Arizona alder <i>Alnus oblongifolia</i> Torr.	Moist soil along streams, canyons, 5,000-7,000 ft, sun	Tree up to 60 ft, round open crown	Cone with nutlets, Mar.	Seeds eaten by song-birds; browsed by deer and rabbits	Checks erosion
Triangle bur sage (Bur sage) <i>Ambrosia deltoidea</i> Cav.	Alluvial plains, rocky slopes, bajadas, sun	Shrub, .5-2.5 ft	Flattened, spiny fruiting heads		

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mock locust (stinking willow) <i>Amorpha californica</i> Nutt.	Along streams, 5,000-6,500 ft	Shrub, 4-10 ft	Pod, summer		
Cane beardgrass, cane bluestem <i>Andropogon barbinodis</i> Lag.	Dry rocky or sandy slopes, plains and roadsides, below 6,000 ft, sun	Tufted perennial grass, 30-70 in	Grain, June-Nov.	Seeds eaten by turkey; plant eaten by antelope and deer	Good range plant; drought-resistant
Big bluestem (bluejoint turkeyfoot) <i>Andropogon gerardii</i> Vitm.	Dry prairies, canyon bottoms, bluffs, rocky slopes, pine forest, below 7,500 ft	Erect perennial grass, 3-6 ft	Grain, July-Oct.	Same as <i>A. barbinodis</i>	Good forage species; widespread
Little bluestem <i>Andropogon scoparius</i> Michx.	Prairies, open woods, dry hills, fields, mountain meadows, pine forests	Densely tufted erect perennial grass, 20-60 in	Long-awned grain, July-Oct.	Same as <i>A. barbinodis</i>	
Arizona madrone (madrono) <i>Arbutus arizonica</i> Buckl.	Mountains in oak woodland, 4,000-8,000 ft, sun	Evergreen tree, 20-50 ft, compact crown	Berrylike, fleshy drupe, Apr.-Sept.	Fruit eaten by songbirds and gamebirds; browsed by deer	
Manzanita <i>Arctostaphylos pringlei</i> Parry	Dry slopes, often with cypress, 4,000-6,500 ft, sun	Shrub, 6 ft	Several seeded berry, Apr.-June	Same as <i>A. arizonica</i>	
Pointleaf manzanita <i>Arctostaphylos pungens</i> HBK.	Dry slopes, 3,500-8,000 ft, sun	Shrub, 3-5 ft	Several seeded berry, Feb.-May	Same as <i>A. arizonica</i>	Common plant of open chaparral; forms thickets
Prickle poppy (chicalote) <i>Argemone intermedia</i> Sweet	Dry soils in fields and roadsides, 1,500-5,000 ft	Erect annual to 3 ft	Dehiscent capsule	Seeds eaten by dove and songbirds	
Three-awn <i>Aristida</i> spp. L.	Dry open slopes, woodlands	Tufted perennial grass	Grain, July-Nov.	Plant eaten by jack-rabbits	Mature seeds may be injurious to livestock
Red three-awn (three-awn) <i>Aristida longiseta</i> Steud.	Arid, sandy and rocky hills, plateaus, forest openings, 5,000-8,500 ft, sun	Perennial bunchgrass, 4-14 in	Long-awned grains, May	Plant eaten by rabbit and deer	
Purple three-awn <i>Aristida purpurea</i> Nutt.	Dry, rocky or sandy hills and plains, roadsides up to 5,000 ft, occasionally 7,000 ft	Erect perennial grass 1-2 ft	Grain, Mar.-Sept.	Same as <i>A. longiseta</i>	
Sand sagebrush <i>Artemisia filifolia</i> Torr.	Loose sandy soil 4,000-6,000 ft	Undershrub, 12-40 in	Achene	Browsed by rabbit, antelope, deer	Valuable browse plant in winter and early spring
Aster <i>Aster</i> spp. L.	Dry to wet alluvial soils and roadsides, 100-8,000 ft	Perennial herb to biennial shrub, to 3 ft	Hairy or glabrous achene	Plant eaten by rabbit and deer	
White locoweed (milk-vetch) <i>Astragalus bisulcatus</i> (Hook.) Gray	Dry alkaline meadows and hills, 3,000-8,000 ft	Small forb, to 3 ft	Pod	Seeds eaten by quail, turkey; plant eaten by antelope	
Milk-vetch <i>Astragalus humistratus</i> Gray	Pinyon forest, pine woods, 5,000-9,000 ft	Forb, 1-2 ft prostrate stem hugging ground	Leathery dehiscent or indehiscent pod, May-Sept.	Same as <i>A. bisulcatus</i>	

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Narrowleaf poison vetch <i>Astragalus pectinatus</i> D. Don	Dry plains and foot-hills, 3,000-6,500 ft	Erect forb, to 20 in	Oblong pod	Seeds eaten by quail and turkey; plant eaten by antelope	
Four-wing saltbush (wingscale, chamiso) <i>Atriplex canescens</i> Pursh	Moderately alkaline slopes, to 7,000 ft	Shrub, 3-6 ft	Small winged fruit	Seeds eaten by quail; browsed by rabbit, deer, sheep	
Seepwillow <i>Baccharis glutinosa</i> Pers.	Moist soil along streams, to 5,500 ft, sun	Willow-like deciduous shrub, to 7 ft	Achene, Mar.-Dec.		Often forming thickets
Plains bahia <i>Bahia oppositifolia</i> (Nutt.) DC.	Alkaline soils, dry plains, 3,000-7,500 ft	Low perennial forb, to 8 in	Glandular achene		
Barberry (red mahonia) <i>Berberis haematocarpa</i> Woot.	Dry rocky soils, 4,500-5,000 ft, sun	Shrub, to 6 ft	Berry, summer	Browsed by rabbits and deer	
Pine dropseed (hairy dropseed) <i>Blepharoneuron tricholepis</i> (Torr.) Nash	Rocky slopes, dry open forest, 4,500-9,500 ft, sun	Erect, densely tufted perennial grass, 8-24 in	Grain, July-Nov.	Plant eaten by deer	Good forage species
Sprucetop grama <i>Bouteloua chondrosioides</i> HBK.	Dry rocky slopes, rolling desert grasslands, 2,500-6,000 ft	Tufted erect perennial grass, 12-24 in	Grain, Aug.-Nov.	Seeds eaten by turkey; plant eaten by rabbit, deer, bighorn sheep, antelope	Highly favored range species
Side-oats grama <i>Bouteloua curtipendula</i> Michx.	Rocky slopes, woodlands, forest openings, plains, to 7,000 ft, sun	Erect, tufted perennial grass, 14-40 in	Grain, May-Nov.	Seeds eaten by turkey; plant eaten by rabbits, elk, deer, antelope	Good range grass; fast-growing, highly palatable
Black grama <i>Bouteloua eriopoda</i> Torr.	Dry, sandy plateaus, rocky slopes, 3,500-6,000 ft, sun	Low, tufted perennial grass, 8-35 in	Long-awned grain, July-Nov.	Seeds eaten by turkey; plant eaten by rabbits, deer, antelope	Drought-adapted climax species; easily over grazed
Slender grama <i>Bouteloua filiformis</i> (Fourn.) Griffiths	Dry rocky slopes below 5,000 ft	Slender erect perennial grass, 12-18 in	Grain, July-Nov.	Same as <i>B. chondrosioides</i>	Able to persist on badly abused ranges
Blue grama <i>Bouteloua gracilis</i> HBK.	Open rocky slopes, plains, forest openings, meadows, 4,000-8,000 ft	Tufted perennial grass, 10-30 in	Grain, July-Nov.	Seeds eaten by turkey; plant eaten by rabbits and deer	Excellent range grass; adapted to drought and heavy grazing
Hairy grama <i>Bouteloua hirsuta</i> Lag.	Rocky slopes, dry sandy mesas, plains and rocky hills, 1,000-6,000 ft	Erect perennial grass, 10-30 in	Hairy grain, July-Nov.	Same as <i>B. gracilis</i>	
Rothrock grama <i>Bouteloua rothrockii</i> Vasey	Dry sandy soils, mesas, canyons, slopes, below 6,000 ft	Erect perennial grass, 10-24 in	Grain, Aug.-Nov.	Same as <i>B. eriopoda</i>	Important range grass; moderate palatability
California brickellia <i>Brickellia californica</i> Gray	Washes, dry rocky slopes, below 8,000 ft, sun	Shrub, 1.5-3 ft	Achene, fall	Seeds eaten by game-birds	
Buffalo grass <i>Buchloe dactyloides</i> Nutt.	Dry plains	Low spreading perennial grass, 2-5 in	Grain	Seeds eaten by snow goose; plant eaten by deer and antelope	Rare in Arizona, otherwise east of Rockies
False mesquite (fairy duster, huajillo, hairy-leaved calliandra) <i>Calliandra eriophylla</i> Benth.	Desert slopes, mesas, 2,000-5,000 ft	Low rounded bushy shrub, 1-3 ft	Hairy pods, spring	Seeds eaten by dove; plant eaten by deer	Valuable browse and erosion control

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Crucifixion thorn <i>Canotia holacantha</i> Torr.	Dry slopes and mesas, 2,000-5,000 ft	Large shrub or small tree with dense spine-tipped branches, 10-15 ft	Woody capsule May-Aug.		
Sedge <i>Carex</i> spp. L.	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grasslike erect herb, 2-4 ft	Achenes in spikes, spring	Seeds eaten by game-birds, bear, rabbits, squirrel, fox, deer	
Shrubby senna <i>Cassia wislizeni</i> Gray	Rocky hills, 4,000-5,000 ft	Shrub, 3-9 ft	Linear pod		
Indian paintbrush <i>Castilleja</i> spp. Mutis ex L. f.	Arid slopes to moist coniferous forest, 2,000-10,000 ft	Annual, perennial forb, 6-20 in	Many-seeded capsule, Mar.-Nov.	Seeds eaten by song-birds; plant eaten by deer	
Buckbrush (deer-brier) <i>Ceanothus fendleri</i> Gray	Foothills, mountains, common in pine forests, 5,000-10,000 ft, sun and shade	Shrub to 3 ft forming low thickets	3-celled capsule, Apr.-Oct.	Browsed by deer	
California lilac (desert ceanothus) <i>Ceanothus greggii</i> Gray	Dry slopes, 3,500-7,500 ft	Shrub 3-6 ft	Capsule, summer	Same as <i>C. fendleri</i>	
Deer brush <i>Ceanothus integerrimus</i> (Hook.) Arn.	Chaparral and open coniferous forest, 3,500-7,000 ft, sun and shade	Loosely branched deciduous shrub, 3-8 ft	Round 3-celled capsule, May-Oct.	Same as <i>C. fendleri</i>	
Spiny hackberry (desert hackberry) <i>Celtis pallida</i> Torr.	Foothills and mesas, 1,500-3,500 ft	Spiny, densely branched deciduous shrub, 3-10 ft	Oval one-seeded drupe, spring	Fruit eaten by dove, quail, deer	Often forms thickets; ornamental plant
Netleaf hackberry (cumero, paloblanco, western hackberry) <i>Celtis reticulata</i> Torr.	Streams, canyons, washes, moist soil, 2,500-6,000 ft	Deciduous large shrub to small tree, to 30 ft, spreading crown	One-seeded drupe	Fruit eaten by game-birds, fox, deer	
Blue paloverde (border paloverde) <i>Cercidium floridum</i> Benth.	Desert washes and valley, to 4,000 ft, sun	Small tree to 30 ft	Flattened pods, Mar.-May	Seeds eaten by birds, mammals	
Yellow paloverde, (littleleaf paloverde, littleleaf horse bean, foothill paloverde) <i>Cercidium microphyllum</i> (Torr.) Rose & Johnst.	Foothills, desert slopes, 500-4,000 ft	Small tree to 25 ft, spreading crown	Cylindric pod, Mar.-May	Seeds eaten by many mammals and birds	
Birchleaf mountain-mahogany <i>Cercocarpus betuloides</i> Nutt.	Mountains, 3,000-8,000 ft	Shrub to small tree, to 20 ft	Hairy achene, summer-fall	Browsed by deer and antelope	Absent in New Mexico
Hairy mountain-mahogany (Wright mountain-mahogany) <i>Cercocarpus breviflorus</i> Gray	Dry slopes, mountainsides, 5,000-8,000 ft	Evergreen shrub or tree, to 15 ft or more	Hairy achene, summer-fall	Same as <i>C. betuloides</i>	Absent west of Arizona
Saguaro (giant cactus) <i>Cereus giganteus</i> Engelm.	Rocky or gravelly soils of foothills, canyons, bajadas, washes, 600-3,600 ft	Columnar tree 9-50 ft	Ovoid to ellipsoid juicy fruits, many small seeds	Fruit eaten by many birds and mammals, Nesting sites-many birds	Absent in New Mexico

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Organpipe cactus (pitahaya) <i>Cereus thurberi</i> Engelm.	Rocky or sandy hills, mesas, valleys, 1,000-3,500 ft	Large cactus, columnar branches, 9-20 ft	Fleshy, many small seeds		Only in Arizona
Lamb's-quarters (goosefoot) <i>Chenopodium album</i> L.	Fields, wastelands, disturbed soils	Erect forb to 10 ft	Black seeds achene or utricle	Seeds eaten by dove, quail and songbirds	Introduced; widespread
Slimleaf goosefoot <i>Chenopodium leptophyllum</i> (Moq.) Wats.	Sandy or rocky soil, 5,000-7,000 ft	Erect forb to 20 in	Shiny seeds achene or utricle, Aug.-Sept.	Seeds eaten by dove, quail, songbirds	
Desert-willow (desert catalpa) <i>Chilopsis linearis</i> Cav.	Mostly along washes, in foothills and deserts	Large shrub to small tree, to 30 ft	Long narrow pod		Good soil binder
Hairy goldaster <i>Chrysopsis villosa</i> (Pursh.) DC.	Dry soils, 4,000-10,000 ft	Perennial forb, to 20 in	Achene		
Rocky Mountain beeplant <i>Cleome serrulata</i> Pursh.	Sandy soil of plains, draws, roadsides, waste areas, 3,500-8,500 ft	Erect forb to 3 ft	Achene	Seeds eaten by dove and small mammals	
Little coldenia <i>Coldenia canescens</i> DC.	Dry, sunny mesas slopes, on rocky calcareous soil, below 3,500 ft	Low spreading forb less than 2 in	Depressed globose nutlet		
Javelina bush <i>Condalia ericoides</i> M.C. Johnston	Dry plains, mesas at lower elevations	Shrub to 5 ft	1-seeded drupe, summer	Fruit eaten by dove, pigeons, fox	
White crucillo (grayleaf abrojo, lotebush, gray-thorn) <i>Condalia lycioides</i> Gray	Mesas, slopes, in desert and desert grassland, 1,500-4,500 ft	Straggly shrub, 3-9 ft	Thin skin 1-seeded drupe	Fruit eaten by Gambel's quail, pigeon, dove, fox	Common; often forms thickets
Mexican crucillo, squawbush, (spiny abrojo) <i>Condalia spathulata</i> Gray	Sandy, gravelly, well-drained soil mesas and slopes of deserts and desert grasslands, 2,500-4,500 ft	Compactly and densely branched shrub, 3-5 ft	Black or purplish drupe, bitter	Fruit eaten by dove and fox	
Pincushion cactus <i>Coryphantha vivipara</i> (Nutt.) Britt. & Rose	Plains, hills, 1,000-5,400 ft	Depressed-globose to ovoid or cylindrical cactus, to 1 ft, usually formed in clumps	Green, ellipsoid, fleshy		
Cliffrose <i>Cowania mexicana</i> D. Don	Rocky hills and plateaus on limestone formations, 3,500-8,000 ft	Evergreen shrub, 3-6 ft	Hairy achene, late spring-fall	Browsed by deer	
Dove weed <i>Croton</i> spp. L.	Canyon bottoms, dry stream beds, 20-7,000 ft	Herbs or shrubs	One 3-seeded capsule	Seeds eaten by quail and turkey; plant eaten by deer	
Dove weed (Texas croton) <i>Croton texensis</i> Klotzsch	Roadsides, fields, dry stream beds	Annual shrub, to 12 in	1-3 seeded capsule, with large oily seeds	Same as <i>Croton</i> spp.	
Hidden flower (cryptantha) <i>Cryptantha</i> spp. Lehm.	Dry plains and soils, 2,500-9,000 ft	Annual or perennial forb, to 20 in	Nutlet	Seeds eaten by songbirds	

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Arizona cypress (rough-bark Arizona cypress, smooth cypress, smooth Arizona cypress) <u>Cupressus arizonica</u> Greene	Canyons, mountains, oak woodlands	Medium-sized trees, 30 ft	Short-stalked round cone		Very scattered and localized, probably relic
Hopbush <u>Dodonaea viscosa</u> Jacq.	Dry, rocky, slopes and canyons, often on limestone, 2,000- 5,000 ft	Shrub to 12 ft	Dry fruit with broad wings, Feb.-Oct.		Increases on over- grazed ranges; un- palatable to live- stock
Hedgehog cactus <u>Echinocereus</u> spp. Engelm.	Rocky hillsides to sandy plains, 2,500-8,000 ft	Stems solitary or clumped, 2 ft	Globular or ellipsoid		
Rainbow cactus <u>Echinocereus pectinatus</u> Scheid.	Limestone hills, 3,500-5,200 ft	Columnar, 4-6 in	Spiny, green fleshy		
Spikerush <u>Elegcharis</u> spp. R. Br.	Moist soil along streams or in forests, 150- 3,000 ft	Upright herb, leaf- less, 1-3 ft	Achenes in spike- lets, spring	Seeds eaten by game- birds; plants eaten by rabbit and muskrat	
Woolspike balsamscale <u>Elyonurus barbiculmus</u> Hack.	Dry, rocky slopes and plains; des- ert grasslands, juniper-oak wood- lands	Perennial grass, 16-32 in	Grain, July- Nov.		Good forage grass
Brittle bush (incienso) <u>Encelia farinosa</u> Gray	Dry rocky slopes and mesas, to 3,000 ft	Low branching shrub, 1.5-3 ft	Achene, Nov.-May		Common to locally abundant
Joint-fir (clapweed, popote, vine ephedra) <u>Ephedra</u> <u>antisyphilitica</u> C.A. Mey.	Gravelly, rocky soil on plains, hills, arroyos, ravines, canyons	Erect or spread- ing shrub, to 3 ft	Cones	Seeds eaten by quail; browsed by rabbit and deer	
Mormon tea (Mexican tea, long leaf joint-fir, popotilla, teposote, canatilla) <u>Ephedra trifurca</u> Torr.	Mesas, plains and sandy hills of deserts and desert grasslands, to 5,000 ft	Small shrubby bush, to 2 ft	Cones	Seeds eaten by quail; browsed by rabbit, deer, sheep	
Plains lovegrass <u>Eragrostis intermedia</u> Hitchc.	Sandy or rocky slopes and plains, 3,500-6,000 ft	Tufted erect perennial grass, 22-35 in	Grain, July-Nov.		Used to reseed rangeland; good soil binder
Lehmann lovegrass <u>Eragrostis lehmanniana</u> Nees.	Semi-arid ranges, open prairies and slopes	Tufted perennial grass, 20-28 in	Grain, July-Nov.		Introduced; well- established
Fleabane (wild daisy) <u>Erigeron divergens</u> (Torr.) Gray	Dry slopes, mesas, to open pine woods	Forb, 6-30 in	Achene, Feb.-Oct.		
Yerba santa <u>Eriodictyon</u> <u>angustifolium</u> Nutt.	Dry slopes, 2,000- 7,000 ft	Shrub, to 6.5 ft	Capsule, summer- fall	Browsed by deer	
Slenderbush eriogonum <u>Eriogonum microthecum</u> Nutt.	Dry plains, slopes, 4,500-8,000 ft	Perennial forb, to 2 ft	Achene	Seeds eaten by birds and songbirds; plant eaten by rabbit and deer	
Deer buckwheat <u>Eriogonum wrightii</u> Torr.	Arid lands, 3,000- 7,000 ft	Herb or shrub, to 2.5 ft	Achene, June- Oct.	Same as <u>E. microthecum</u>	Common throughout desert

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Coral bean (southwestern coral bean, western coral bean, chilicote, Indian bean) <u>Erythrina flabelliformis</u> Kearn.	Warm, dry, rocky slopes, canyons and foothills, 3,000-5,500 ft	Shrub or small tree, to 15 ft	Several-seeded pod		
Winter-fat <u>Eurotia lanata</u> Pursh.	Slopes, plains in sagebrush and creosote deserts, 2,500-7,000 ft	Shrubs, 8-32 in	Bracts, villous		Valuable forage
Kidneywood (varadulce) <u>Eysenhardtia polystachya</u> Ortega	Bushy areas with highly calcareous soil	Shrub 6-10 ft	Legume, summer-fall		
Apache plume <u>Fallugia paradoxa</u> Endl.	Dry rocky slopes, 4,000-5,500 ft	Shrub, 1-5 ft	Achene, summer		
Barrel cactus <u>Ferocactus wislizenii</u> (Engelm.) Britt. & Rose	Rocky, gravelly or sandy soils of hills, canyons, washes, alluvial fans, 1,000-5,600 ft	Barrel to columnar, 2-10 ft	Fleshy, many-seeded, yellow, July-Sept.	Fruit important to many mammals	
Arizona fescue <u>Festuca arizonica</u> Vasey	Forest, mountain meadows, 6,000-10,000 ft	Densely tufted perennial grass, 18-36 in	Grain, June-Sept.	Seeds eaten by turkey and songbirds; plant eaten by deer	
Tarbrush (blackbrush, hojase) <u>Flourensia cernua</u> DC.	Mesas, slopes on limestone soils, 3,500-5,000 ft	Low shrub, to 3 ft	Achene		
Ocotillo (coachwhip, candelwood) <u>Fouquieria splendens</u> Engelm.	Dry slopes, mesas, to 5,000 ft	Thorny, deciduous shrub with tall, unbranched whip-like stems, 6-27 ft	3-celled capsule, splitting when ripe, April-June	Browsed by bighorn sheep	
Skeletonleaf bur sage <u>Franseria discolor</u> Nutt.	Dry plains, hills, fields, wastelands, 5,000-8,000 ft	Perennial forb, to 16 in	Burr-like achene, Apr.-Oct.		
Velvet ash <u>Fraxinus velutina</u> Torr.	Moist soils of stream banks, washes, canyons, 2,500-7,000 ft, sun	Small to medium tree, round crown, to 40 ft	Long-winged samara, Mar.-May	Seeds eaten by game-birds, songbirds, squirrel; browsed by deer and nest-squirrel	
Flannel bush (California fremont) <u>Fremontia californica</u> Torr.	Dry north facing slopes, canyons, 3,500-6,000 ft	Shrub, 4-12 ft	Capsule, summer		
Silk-tassel <u>Garrya flavescens</u> Wats.	Dry slopes, 3,000-8,000 ft	Evergreen shrub, to 6 ft	Berry-like, spring	Fruit eaten by turkey and deer	
Silk-tassel <u>Garrya wrightii</u> Torr.	Dry slopes, 3,000-8,000 ft, sun	Large evergreen shrub, 6-10 ft	Berry, Mar.-Aug.	Same as <u>G. flavescens</u>	
Desert cotton (thurberia algodoncillo) <u>Gossypium thurberi</u> Tod.	Rocky, gravelly mountain slopes and canyons, in desert and desert grasslands, 2,500-4,500 ft	Shrub, 3-6 ft	Capsule with woolly seeds		
Curlycup gumweed <u>Grindelia squarrosa</u> (Pursh.) Dunal	Prairies, plains, roadsides, fields, 4,500-5,000 ft	Perennial forb, to 3 ft	Achene		

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Snakeweed <u>Gutierrezia</u> spp. Lag.	Dry soils, 3,000-10,000 ft	Herbaceous perennial, to 28 in	Achene	Seeds eaten by quail; plant eaten by rabbit, antelope, deer	
Yellow-green matchweed (snakeweed) <u>Gutierrezia lucida</u> Greene	Alluvial plains, slopes, hill-sides, of desert grassland, oak woodland and pinyon-juniper, 1,000-7,000 ft	Halfshrub with woody stem, 1-3 ft	Achene, June-Oct.	Seeds eaten by quail; browsed by rabbit	
Snakeweed (broom snakeweed) <u>Gutierrezia sarothrae</u> (Pursh.) Britt. & Rusby	Plains, slopes in upper desert, desert grasslands, oak woodlands, 3,000-7,000 ft	Shrub, .5-1 ft	Small achene, July-Nov.	Seeds eaten by quail; browsed by rabbit, antelope, deer	Invader of over-grazed ranges
Turpentine-brush <u>Haplopappus</u> <u>taricifolius</u> Gray	Mesas, slopes, canyons, 3,000-6,000 ft	Shrub, 1-3 ft	Cylindric achene, Aug.-Nov.		
Burroweed <u>Haplopappus tenuisectus</u> Greene	Alluvial plains, slopes in desert and desert grasslands, 2,000-5,500 ft	Round shrub 1-2 ft	Cylindric achene		Invader of depleted ranges; poisonous to livestock when consumed in large quantities
Prairie sunflower <u>Helianthus petiolaris</u> Nutt.	Plains, hills, roadsides, 3,500-8,000 ft	Erect forb to 3 ft	Achene	Seeds eaten by dove and quail; plant eaten by deer	
Tanglehead <u>Heteropogon contortus</u> L.	Open dry rocky or sandy plains and slopes, below 5,000 ft	Tufted erect perennial grass, 8-35 in	Long-awned grain, Mar.-June		Important range grass
Curly mesquite <u>Hilaria belangeri</u> Steud.	Dry sandy plains, hillsides and rocky slopes, 1,500-6,000 ft	Tufted perennial grass, 10-15 in	Grain, Apr.-Nov.		Can form large colony via stolons; holds under heavy grazing
Galleta grass <u>Hilaria jamesii</u> Torr.	Dry sandy plateaus, open valleys, 3,000-8,000 ft	Perennial grass, 25-50 in	Grain, May-Nov.		
Tobosa-grass <u>Hilaria mutica</u> Buckl.	Dry exposed sandy or rocky slopes and plains, 2,000-6,000 ft	Perennial grass, 12-30 in	Grain, June-Nov.		
Rat potato (hog potato, camote-de-raton) <u>Hoffmanseggia</u> spp. Cav.	Gravelly washes, canyons to cultivated fields, 500-5,000 ft	Perennial herb or shrub with wand-like branches, 2-3 ft	Pods		Tubers are edible, hog feed; good soil binder
Crucifixion thorn (holocantha, corona de cristo) <u>Holacantha emoryi</u> Gray	Desert valleys on clay soil, sand dunes, 500-2,000 ft	Spiny shrub to small tree, to 12 ft	Drupelike carpels, June-July		Absent in New Mexico
Ocean sprav (foam bush, mountain spray, cream-bush) <u>Holodiscus dumosus</u> (Nutt.) Heller	Pine or spruce forests, often on cliffs, 5,500-10,000 ft, sun	Aromatic, deciduous shrub, 3 ft	1-seeded follicle, June-Sept.		
Pingwing (pinque) <u>Hymenoxys</u> <u>quinquesquamata</u> Rydb.	Lower woodlands, rocky open area, 5,000-7,000 ft	Forb, 10-25 in	Achene, Apr.-Sept.		Only in south-eastern Arizona

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Cliffbush <i>Jamesia americana</i> (Torr.) Gray	Moist canyons, along streams in coniferous forests, 7,500-9,500 ft, sun and shade	Deciduous shrub 1-6 ft	Dry beaked capsule, June-July		
Arizona walnut <i>Juglans major</i> (Torr.) Heller	Moist soil along streams, canyons 3,500-7,000 ft, sun	Tree, 50 ft, round crown	Round nut with hairy husk, spring	Seeds eaten by songbirds, squirrel, fox	
Rush <i>Juncus</i> spp. L.	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grass-like herbs, 2-4 ft	Capsule, spring	Forage	
Alligator juniper <i>Juniperus deppeana</i> Steud.	Moist soil along streams or scattered on hillside in oak woodland or ponderosa pine forest, 4,500-8,000 ft, sun	Tree 20-65 ft, round crown	Berrylike fleshy cone, pollinates in spring	Fruit eaten by deer, quail, turkey, bear, fox	
One-seeded juniper <i>Juniperus monosperma</i> (Engelm.) Sarg.	Dry hills, mesas, 3,000-7,000 ft, foothills, pinyon juniper woodland	Shrub to small evergreen tree, conical crown, 10-25 ft	1-seeded berrylike cone, matures in 1 year	Important food and cover for numerous species	Most common juniper in New Mexico
Crucifixion thorn <i>Koeberlinia spinosa</i> Zucc.	Sandy or gravelly mesas, 2,400-5,000 ft	Rounded shrub, 3-4.5 ft	Black berry, late summer	Browsed by rabbit	
Mountain junegrass (prairie junegrass) <i>Koeleria cristata</i> (L.) Pers.	Prairie, open woods, sandy soils, rocky slopes, below 9,000 ft	Tufted or bunched perennial grass, 14-28 in	Grain, May-Oct.	Plant eaten by deer	Good forage; rarely locally abundant
White ratany <i>Krameria grayi</i> Rose & Painter	Dry plains, mesas, 500-5,000 ft	Low branched shrub, 1-2 ft	Round, thick-walled, spiny, one-seeded, Apr.-Sept.		Absent in New Mexico; relished by livestock
Ratany <i>Krameria parvifolia</i> Benth.	Dry rocky slopes, gravelly plains, 500-5,000 ft	Shrub, 1-1.5 ft	Small burr with several spines, Apr.-Oct.		Relished by livestock
Creosote bush (greasewood) <i>Larrea divaricata</i> Cav.	Alluvial plains, foothills, slopes, to 4,000 ft	Shrub usually 3-6 ft	5-celled capsule, spiny, spring	Browsed by rabbit and small mammals	Most common and widely distributed shrub in desert
Peavine <i>Lathyrus graminifolius</i> (Wats.) White	Dry open woods to pine forests, 4,000-11,000 ft, sun	Perennial forb with erect or climbing stem, 8-24 in	2-valved pod	Seeds eaten by turkey	
Prairie pepperweed <i>Lepidium densiflorum</i> Schrud.	Plains, fields, roadsides, 3,500-9,500 ft	Annual forb, to 1.5 ft	Flattened silique	Seeds eaten by songbirds; plant eaten by deer	
Blazing-star (dotted gay-feather) <i>Liatris punctata</i> Hook.	Dry plains, hills, 3,500-8,000 ft	Perennial forb to 2.5 ft	Achene		
Wright lippia (white brush) <i>Lippia wrightii</i> Gray	Rocky or gravelly soils, 2,000-6,000 ft	Shrub, 3-4.5 ft	Nutlet		
Deer vetch <i>Lotus oroboides</i> (HBK.) Ottley	Pine woods, sometimes dry mesas, 5,000-8,000 ft, sun	Forb, 5-30 in, leafy stem	Narrow, several-seeded pod, Apr.-Sept.	Plant eaten by deer; seeds eaten by quail, dove, rabbit	

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Lupine <u>Lupinus</u> spp. L.	Dry slopes, mesas, open forest, 100-10,000 ft, sun	Annual or perennial forb with terminal clusters of flowers, 6-24 in	Flat pod, constricted between seeds, spring-fall	Seeds eaten by quail and turkey; plant eaten by deer	Some species poisonous to livestock
Wolfberry <u>Lycium</u> spp. L.	Plains, slopes, 1,000-7,000 ft	Spreading to erect, spiny shrub, 3-9 ft	Many-seeded berries	Fruit eaten by dove and quail	
Wolftail (Texas-timothy) <u>Lycurus phleoides</u> HBK.	Open rocky slopes, plains, below 8,000 ft	Tufted, erect perennial, 8-25 in	Awed grain, July-Nov.		Valuable range grass
Rush skeletonplant <u>Lygodesmia juncea</u> (Pursh) D. Don	Dry soils, 4,000-7,500 ft	Perennial forb, to 16 in	Achene		
Fish-hook cactus (mammillaria, pincushion cactus) <u>Mammillaria</u> spp. Haw.	Sandy, gravelly, dry soils, on hillsides and in valleys, 500-8,000 ft	Single or clumped cylindroid cacti, to 1 ft	Many-seeded, fleshy		
Cream cactus <u>Mammillaria gummifera</u> Engelm.	Rocky or gravelly limestone soils, 4,000-4,500 ft	Flobose to 4 in	Smooth berry, summer		
Fish-hook cactus <u>Mammillaria microcarpa</u> Engelm.	Sandy gravel of canyons, washes, alluvial fans and plains, 1,000-5,000 ft	Cylindroid cactus, 3-6 in	Smooth berry with small seeds, summer		Only in Arizona
Stickleaf (blazing-star) <u>Mentzelia</u> spp. L.	Dry sandy slopes and mesas, 1,000-8,500 ft	Low shrub to 3 ft	Oblong to linear capsule	Seeds eaten by quail	
Wait-a-minute bush (cat-claw, wait-a-bit) <u>Mimosa biuncifera</u> Benth.	Dry soil on mesas, rocky slopes, 3,000-6,000 ft	Spiny deciduous shrub, 2-6 ft	Many seeded legume, May-Aug.	Browsed by deer; cover for deer and rabbit	Often forms large, dense thickets; good soil binder
Scurfy mortonia (sandpaper bush) <u>Mortonia scabrella</u> Gray	Rocky or gravelly slopes and mesas, 3,000-5,000 ft	Small shrub, 1.5-3 ft	Short, cylindroidal capsule		
Texas mulberry <u>Morus microphylla</u> Buckl.	Moist soil along streams, washes, canyons, rocky slopes below cliffs, 2,000-6,000 ft, sun or shade	Large shrub or small tree, in dense clumps, up to 20 ft	Oblong cluster of berries, Apr.	Fruit eaten by songbirds, fox, squirrels	
Muhly <u>Muhlenbergia</u> spp. Schreb.	Dry, rocky slopes, ledges, forest openings	Perennial grass, up to 40 in	Grain	Seeds eaten by turkey; plant eaten by deer	
Bullgrass <u>Muhlenbergia emersleyi</u> Vasey	Rocky slopes, ledges, forest openings, drier soils below 6,500 ft	Erect perennial grass, 20-40 in	Grain, June-Nov.		Good soil binder on steep slopes
Mountain muhly <u>Muhlenbergia montana</u> Hitchc.	Rocky slopes, ledges, woodlands, forest openings, 4,500-9,500 ft	Tufted perennial grass, 6-26 in	Grain, Aug.-Oct.	Same as <u>Muhlenbergia</u> spp.	
Bush muhly <u>Muhlenbergia porteri</u> Scribn.	Dry mesas, rocky slopes, canyons, 2,000-6,000 ft	Erect perennial grass, 12-40 in	Grain, Aug.-Nov.		Highly palatable; largely grazed out

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Deergrass <i>Muhlenbergia rigens</i> (Benth.) Hitchc.	Gravelly or sandy canyon bottoms, washes, in moist soil, occasionally dry plateaus or meadows, 3,000-7,000 ft	Perennial grass, 2-5 ft	Grain, June-Oct.	Same as <i>Muhlenbergia</i> spp.	
Screwleaf muhly <i>Muhlenbergia virescens</i> Kunth	Rocky slopes, ridges, pine forests, 5,000-9,500 ft, shade	Densely tufted perennial grass, 6-24 in	Grain, May-July	Same as <i>Muhlenbergia</i> spp.	In Arizona and New Mexico only
Bear grass (sacahuista, sacahuiste) <i>Nolina texana</i> Wats.	Rolling rangelands and foothills	Woody stem leaves 5 ft long, perennial shrub	Three-lobed capsule		Causes hepatogenic photosensitization in livestock
Pale evening-primrose <i>Oenothera pallida</i> Lindl.	Valleys, mesas, 1,000-7,500 ft	Perennial forb, to 20 in	Membranous capsule, May-Sept.		
Ironwood (tesota palo fierro, palo-de-hierro) <i>Olneya tesota</i> Gray	Sandy washes, foothills, to 2,500 ft	Spiny evergreen tree, to 30 ft	Pod, May-June	Food and cover for numerous small species	Extremely hard, brittle and heavy wood
Pancake pear cactus (Santa Rita prickly pear, dollarjoint prickly pear) <i>Opuntia chlorotica</i> (Engelm.) Bigel.	Sandy or rocky soil, slopes, canyons, 2,000-5,000 ft.	Arborescent shrub, 2-6 ft	Ellipsoid, fleshy fruit, spring	Fruit eaten by dove, quail, coyote, fox, peccary	
Little prickly pear <i>Opuntia fragilis</i> Nutt.	Sandy to gravelly soils, 4,500-8,000 ft	Mat-forming plant, 2-4 in	Obovoid, dry fruit	Fruit eaten by numerous gamebirds and mammals, especially peccary	
Jumping cholla <i>Opuntia fulgida</i> Engelm.	Sandy soil of plains, mesas washes, hills	Small cactus tree, 3-15 ft	Fleshy, in chains, June-Aug.	Principal nesting site for cactus wren	Only in Arizona
Tree cholla (cane cholla) <i>Opuntia imbricata</i> Haw.	Gravelly or sandy soils of hills, plains, and grasslands, 4,000-6,000 ft	Small tree or thicket forming shrub, 3-10 ft	Obovoid, fleshy, all winter		
Desert Christmas cactus (tesajo, cholla) <i>Opuntia leptocaulis</i> DC.	Mesas, flats valleys, plains, washes in deserts	Bush or erect small shrub, 1-15 ft	Persistent obovoid, fleshy fruit, May-June		Usually growing within another
Prickly pear <i>Opuntia phaeacantha</i> Engelm.	Sandy soils of plains, washes, hills, deserts, grasslands, 1,500-7,000 ft	Variable clumps 2-20 ft diameter, 1-3 ft high	Obovoid, many-seeded, Apr.-June	Fruit eaten by gamebirds, numerous mammals, including peccary and coyotes	May be invader in overgrazed areas
Plains prickly pear <i>Opuntia polyacantha</i> Haw.	Sandy soils of plains, flats, washes and canyon sides, 4,000-6,000 ft	Clump-forming cactus, 3-6 in high	Dry, obovoid, spring	Fruit eaten by dove, quail, coyote, peccary, deer	
Cane cholla <i>Opuntia spinosior</i> (Engelm.) Toumey	Deep soils of valleys, plains, hill-sides, grasslands, chaparrals, woodlands, 2,000-6,500 ft	Small shrub or cactus trees, 3-8 ft	Persistent, fleshy, many-seeded, May-June		Characteristic of desert grassland
Devil cholla (Stanly cholla) <i>Opuntia stanlyi</i> Engelm.	Fine soils of valleys, 1,000-2,000 ft	Mat-forming cactus, to 1 ft high	Fleshy		

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Purple prickly pear <u>Opuntia violacea</u> Engelm.	Sandy-gravelly soils of plains, hills, washes, 3,500-5,500 ft	Sprawling shrub, 2-7 ft	Fleshy	Fruit eaten by dove, quail, coyote, fox, deer, peccary	
Indian rice-grass <u>Oryzopsis hymenoides</u> (R. & S.) Ricker	Open sandy plains, hills, woodlands at medium elevations	Densely tufted perennial grass, 12-24 in	Grain, May-Nov.	Seeds eaten by game-birds; plant eaten by deer	Excellent range grass in semi-arid areas
Wood-sorrel <u>Oxalis</u> spp. L.	Moist soils, 2,500-9,000 ft	Herbaceous, perennial forb with creeping rootstocks, to 1 ft	Dehiscent 5-celled capsule, spring-fall	Seeds eaten by game-birds; plant eaten by deer	Occasionally grown as an ornamental
Crazyweed (white loco) <u>Oxytropis</u> spp. DC.	Drier soils, 5,000-10,000 ft	Perennial forb, 6-20 in	Membranous pods with reniform seeds, summer		May be poisonous
Myrtle boxleaf (Oregon boxwood, mountain-lover) <u>Pachystima myrsinites</u> (Pursh.) Raf.	Coniferous forest, 6,000-9,000 ft	Low inconspicuous ground cover	2-celled capsule, May	Plant relished by deer	
Vine mesquite <u>Panicum obtusum</u> HBK.	Mudflats, heavy soiled lowlands, river banks, arroyos along ditches	Wiry, erect perennial grass 8-35 in	Grain, June-Oct.	Plant eaten by rabbit, deer, antelope	Good range plant and soil binder
Switchgrass <u>Panicum virgatum</u> L.	Sandy or rocky soils along moist canyons, water-courses, open woods, prairies, below 7,000 ft	Perennial grass, 14-40 in	Grain, June-Oct.	Plant eaten by rabbit, deer, antelope	
Mariola <u>Parthenium incanum</u> HBK.	Caliche soils, plains, slopes, 2,500-5,000 ft	Low shrub, 1-1.5 ft	Achene, June-Oct.		
Virginia creeper <u>Parthenocissus inserta</u> (Kern.)	On trees, growing in moist soil along streams, 3,000-7,000 ft, shade	Creeping vine	1-4 seeded berries, spring	Fruit eaten by songbirds, rabbit, fox	
Prairie clover <u>Petalostemum</u> spp. Michx.	Mesas and openings in pine forest, 3,000-7,000 ft	Forb to 1.5 ft	Small pod with 1-2 seeds		
Mexican ninyon <u>Pinus cembroides</u> Zucc.	Pinyon-juniper woodland, 5,000-7,500 ft	Small evergreen tree, 15-50 ft	Cones with oily nuts	Seeds eaten by band-tailed pigeons, songbirds, bear, rabbit, deer	
Apache pine <u>Pinus latifolia</u> Sarg.	Mountains along Mexican border, 5,000-8,500 ft, sun	Evergreen tree, 50-70 ft	Prickly scaled cone	Same as <u>P. cembroides</u>	Scattered in distribution
Chihuahua pine <u>Pinus leiophylla</u> Schiede & Deppe	Mountains, 5,000-7,800 ft	Tree 30-80 ft	Stalked, spreading cone	Same as <u>P. cembroides</u>	
Ponderosa pine <u>Pinus ponderosa</u> Laws.	Plateaus, mountain slopes in pure or mixed stands, 5,500-8,500 ft, sun	Large evergreen tree, 80-125 ft, straight trunk with narrow open	Cone	Food and nesting sites for tassel-eared squirrels	Most common forest tree in southwest
White pine <u>Pinus reflexa</u> Engelm.	Coniferous forest of mountains, 6,500-10,000 ft	Large tree, 60-100 ft	Cone	Seeds eaten by game-birds, bear, browsed by deer and squirrel	
Arizona sycamore <u>Platanus wrightii</u> Wats.	Moist soil along streams, canyons, 2,000-6,000 ft, sun	Tree, 40-80 ft, spreading open crown	Achene, Apr.-May	Seeds eaten by songbirds and squirrels; nesting site for songbirds and squirrels	

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Plains bluegrass <u>Poa arida</u> Vasey	Prairies, plains, alkaline meadows, to 10,000 ft	Tufted perennial grass, 10-25 in	Grain, July-Nov.		
Milkwort <u>Polygala</u> spp. R. Br.	Dry rocky soils, 1,500-7,500 ft	Low shrub, to 3 ft	2-celled thin, flat capsule	Browsed by deer	
Narrowleaf cottonwood <u>Populus angustifolia</u> James	Moist soils along streams, 5,000-7,000 ft, sun	Tree to 50 ft, narrow crown	Seed capsule, spring	Seeds eaten by gamebirds; browsed by rabbit, squirrel; nesting site for squirrel and songbirds	Suitable for erosion control
Fremont cottonwood <u>Populus fremontii</u> Wats.	Moist soils along streams, 150-5,000 ft, sun	Large tree, 50-100 ft, with broad, flat open crown	Seed capsule, in catkins	Seeds eaten by gamebirds; browsed by rabbit; nesting site for songbirds and raptors	
Trembling aspen (quaking aspen, golden aspen, trembling poplar) <u>Populus tremuloides</u> Michx.	Widely distributed in coniferous forest above 6,500 ft	Tree, slender crown, 20-80 ft	Cottony capsules, early spring	Seeds eaten by gamebirds and songbirds; browsed by rabbit, squirrel, deer	Great aesthetic value in fall; sprouts from cut roots
Mesquite (velvet mesquite, honey mesquite) <u>Prosopis juliflora</u> (Sw.) DC.	Sandy alluvial soils, washes, to 5,500 ft	Spiny spreading shrub, to three 20-50 ft	Pod, Sept.-Oct.	Important for food and cover for numerous species	Resprouts from cut stumps
Wild cherry <u>Prunus</u> spp. L.	Moist soil along streams, pine forests, 4,500-9,000 ft	Shrub to small tree, 10-40 ft	1-seeded drupe, Mar.-May	Fruit eaten by numerous birds and animals	
Douglas-fir <u>Pseudotsuga menziesii</u> (Mirb.) Franco	Mixed coniferous forests, cold canyons, 5,200-10,000 ft, sun	Large tree, 100-190 ft, with open broadly conical crown	Cones	Browsed by rabbit; seeds eaten by deer and squirrel	
Slender scurf pea (slimflower scurf pea) <u>Psoralea tenuiflora</u> Pursh.	Plains, hills, 4,000-7,000 ft	Erect perennial forb, to 24 in	Ovoid, 1-seeded pod, May-Sept.		
Bracken fern <u>Pteridium aquilinum</u> (L.) Kuhn	Moist soil, along streams, pine woods, aspen groves, 5,000-8,000 ft, shade	Small ground cover fern, 1-3 ft		Plant eaten by porcupine	Poisonous when eaten in large quantities
Arizona white oak <u>Quercus arizonica</u> Sarg.	Moist soil along streams, canyons, oak woodland foothills, mountains, 5,000-7,600 ft, sun	Tree with irregular spreading crown, 30-60 ft	Nut (Acorn), spring	Food and cover for many birds and mammals	
Emory oak <u>Quercus emoryi</u> Torr.	Moist soil along streams, canyon, oak woodland foothills, mountains, 4,000-7,000 ft, sun	Tree, with spreading crown, 20-50 ft	Nut (acorn), spring	Seeds eaten by gamebirds, bear, fox; browsed by squirrel, rabbit, deer; nest cover: songbirds and squirrel	
Gambel oak <u>Quercus gambelii</u> Nutt.	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6-70 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel, bear; browsed by rabbit and deer	
Gray oak <u>Quercus grisea</u> Liebm.	Dry rocky hillside, 4,500-8,000 ft	Shrub to tree, 65 ft, evergreen	Nut (acorn), spring	Same as <u>Q. gambelii</u>	

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Havard oak (shinnery oak) <u>Quercus havardii</u> Rydb.	Deep sand, south-west great plains, northeastern Arizona and south-eastern Utah	Spreading shrub to small tree, to 15 ft, usually much less	Nut (acorn), summer-fall	Seeds eaten by game-birds, songbirds, squirrel; browsed by rabbit and deer	Only young foliage may be browsed, tannin levels toxic in older leaves
Silverleaf oak (white-leaf oak) <u>Quercus hypoleucoides</u> A. Camus	Mountain slopes, canyons of oak woodlands, 5,000-7,000 ft, sun	Small evergreen tree with round spreading crown, 15-30 ft, sometimes clumping shrub, 6 ft	Nut (acorn), spring	Seeds eaten by song-birds, gamebirds, bear, squirrel; browsed by deer	
Mexican blue oak <u>Quercus oblongifolia</u> Torr.	Foothills, mountains, canyons, 4,500-6,000 ft	Small evergreen tree, to 25 ft	Nut (acorn), spring	Same as <u>Q. hypoleucoides</u>	
Palmer oak <u>Quercus palmeri</u> Engelm.	Moist soil along streams of canyons and mountainsides, 3,500-7,000 ft, sun and shade	Shrub to small tree, 6-25 ft	Nut (acorn), spring	Seeds eaten by game-birds, songbirds, squirrel; browsed by deer; nesting site for squirrel	
Netleaf oak <u>Quercus reticulata</u> Humb. & Bonpl.	Uncommon in mountains, canyons, and oak woodlands, 4,000-8,000 ft, sun	Evergreen shrub to tree with rounded crown, 6-40 ft	Nut (acorn), in clusters, spring	Same as <u>Q. hypoleucoides</u>	
Shrub live oak (scrub oak, California scrub oak, turbinella oak) <u>Quercus turbinella</u> Greene	Dry slopes, hill-sides, canyons, 3,000-8,000 ft	Evergreen shrub to 7 ft	Nut (acorn), late summer to fall	Important for numerous species for food and cover	Often abundant
Coffeeberry (California buckthorn) <u>Rhamnus californica</u> Esch.	Common in canyons, along streams, chaparral, open coniferous forest, 3,500-7,000 ft, sun and shade	Evergreen shrub to small tree, 6-20 ft	Berrylike fruit, May-July	Fruit eaten by game-birds; browsed by deer, squirrel, bear	
Hollyleaf buckthorn (buckthorn, red berry buckthorn) <u>Rhamnus crocea</u> Nutt.	Mountains, chaparral, lower pine forests, dry washes, canyons, 3,000-7,000 ft, sun and shade	Spreading evergreen shrub to small tree, 3-15 ft	Berrylike pome, Mar.-May	Fruit eaten by game-birds and bear; browsed by deer	
Mearns sumac <u>Rhus choriophylla</u> (Woot) Standl.	Rocky slopes, 4,000-6,000 ft	Shrub to 7 ft	Small 1-seeded drupe, July-Sept.	Fruit eaten by pigeons, quail, turkey; browsed by deer and rabbit	
Scarlet sumac (smooth sumac) <u>Rhus glabra</u> L.	Rich moist soil, along streams, canyons, ravines, 5,000-7,000 ft, sun and shade	Tall shrub to small tree, to 8 ft, usually forming thickets	One-seeded drupe, June-Aug.	Fruit eaten by quail; browsed by rabbit and deer	
Prairie sumac <u>Rhus lanceolata</u> (Gray) Britt.	On limestone and in calcareous soils	Shrub or small tree, to 30 ft	In red terminal clusters, Aug.-Oct.		
Sugar sumac (sugar bush, mountain-laurel) <u>Rhus ovata</u> Wats.	Mountain slopes, canyons, in moist soils, 3,000-5,000 ft	Evergreen tree or shrub, to 15 ft	Cluster of berries, late spring		
Squawbush <u>Rhus trilobata</u> Nutt.	Along streams, in canyons, on slopes in chaparral, 2,500-7,500 ft, sun	Aromatic deciduous shrub, 2-7 ft	Berrylike, Mar.-June	Browsed by deer	
Orange gooseberry <u>Ribes pinetorum</u> Greene	Rocky slopes, along streams, 7,000-10,000 ft, in coniferous forests, sun and shade	Spiny, sometimes trailing deciduous shrub, 1-3 ft	Several-seeded round berry, Apr.-Sept.	Fruit eaten by game-birds and squirrel; browsed by deer	Alternate host for white pine blister rust

continued

Table 3140-52.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
New Mexican locust <i>Robinia neomexicana</i> Gray	Canyons, mountains, forming almost pure thickets on north facing slopes, 4,000-8,500 ft, sun	Spiny shrub or small tree, to 25 ft	Pod, May-Aug.	Seeds eaten by quail and squirrel; browsed by deer	Effective in reducing erosion
Watercress <i>Rorippa</i> , spp. Scop.	Moist soil along streams or in streams, 1,500-9,500 ft, shade	Small prostrate forb, 6-18 in	Globose capsule, spring		
Arizona rose <i>Rosa arizonica</i> Rydb.	Along streams in pine forests, partial shade, 4,000-9,000 ft	Deciduous shrub, 1-3 ft	Berrylike pome, May-July	Fruit eaten by game-birds and mammals	Most abundant and widespread rose in Arizona
Raspberry <i>Rubus</i> spp. L.	Rich moist soils along streams in coniferous forests, 5,000-11,000 ft	Trailing shrub to 5 ft, forming thickets	Fleshy fruit of 1-seeded drupelets, May-Sept.	Fruit eaten by quail, turkey, bear, squirrel	
Willow <i>Salix</i> spp. L.	Moist soil along streams, 3,500-9,500 ft, sun	Tree 15-50 ft	Seed capsules in catkins, March	Browsed by beaver; seeds eaten by squirrel	Prevents erosion and invades burned forest areas
Russian thistle <i>Salsola</i> spp. L.	Dry plains, along roads and on over-grazed ranges below 5,000 ft	Annual forb to 3 ft	Achene, black shiny seed, early spring	Seeds eaten by quail and songbirds; plant eaten by antelope and deer	
Elderberry <i>Sambucus</i> spp. L.	Moist soil along streams, canyons, in coniferous forests, 1,000-10,000 ft, shade	Large shrub, small tree, 8-33 ft	Berry, June-Aug.	Fruit eaten by squirrel and fox; plant eaten by deer	
Western soapberry (wild china-tree, cherioni, jaboncillo) <i>Sapindus drummondii</i> H. & A.	Stream banks, canyon sides in upper desert, desert grassland, oak woodland, 2,500-6,000 ft	Large spreading shrub to small tree, to 25 ft	1-seeded berry-like, remaining until spring		Fruit and foliage poisonous to wildlife
Groundsel <i>Senecio</i> spp. L.	Openings in pine woods, 1,000-10,500 ft, sun	Forb or shrub, 1-3 ft	Achene, July-Oct.		
Jojoba (goatnut) <i>Simmondsia chinensis</i> Link	Rocky or gravelly well drained slopes, 1,500-5,000 ft	Shrubs, 3-6 ft	Oily nut	Browsed by deer	Nuts commercially harvested for oil; absent in New Mexico
Squirreltail (bottle-brush squirreltail) <i>Sitanion hystrix</i> Nutt.	Desert slopes to subalpine meadows	Tufted, erect perennial grass, 6-28 in	Stiffly awned grain, year round depending on habitat		A preferred forage
Nightshade (white horse-nettle, silver horsenettle, bullnettle, trompillo) <i>Solanum elaeagnifolium</i> Cav.	Fields and roadsides, 1,000-5,500 ft	Herbaceous or slightly woody shrub, 1-3 ft	Small berry, May-Oct.	Fruit eaten by dove, quail, raccoon, skunk	
Sophora (silky sophora, mescal bean, fringeleaf sophora) <i>Sophora</i> spp. L.	Dry soils, hill-sides, 3,500-7,000 ft	Shrub, to 11 ft	Flat pod, Apr.-June		Ornamental; good soil binder; poisonous to livestock
Indian-grass <i>Sorghastrum nutans</i> Nash	Prairies, open woods, dry canyon bottoms and pine forest in arid	Perennial grass, 2-6 ft	Grain, July-Nov.		

continued

Table 3140-52.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Dropseed <u>Sporobolus</u> spp. R. Br.	Open slopes, hills, mesas, 5,000-7,000 ft	Tufted perennial grass, to 6 ft	Grain, spring-fall	Plant eaten by deer	
Sacaton <u>Sporobolus wrightii</u> Scribn.	River banks, sandy washes, plains and valley flats, 2,000-5,500 ft	Densely tufted perennial grass, 3-6 ft	Grain, July-Oct.		
Snowberry <u>Symphoricarpos oreophilus</u> Gray	Slopes and along streams in mountains, coniferous forests, 5,500-9,000 ft	Erect or trailing shrub, 1-6 ft	Berries, Apr.-Aug.	Browsed by deer	
Tamarisk <u>Tamarix pentandra</u> Pall.	Moist soil along streams, up to 5,000 ft	Large shrub, small tree, usually forming dense thickets, 10-25 ft	Capsules in spikes, Mar.-Aug.	Seeds eaten by dove; nesting cover for dove	Often grows in saline soil, usually considered undesirable except for erosion control
Arizona cottontop (California cottontop) <u>Trichachne californica</u> Benth.	Open, well drained soil, often on steep rocky slopes, below 6,000 ft	Erect perennial grass, 14-35 in	Grain, Aug.-Nov.	Plant eaten by rabbit, and bighorn sheep	Responds rapidly to precipitation; good forage
Fluffgrass <u>Tridens puchellus</u> Hitchc.	Dry rocky slopes, plains, below 6,000 ft	Low tufted perennial or annual grass, 6 in	Grain, Apr.-Nov.		Often abundant on overgrazed land
Cat-tail <u>Typha</u> spp. L.	Moist soil along streams, ditches, lakes, ponds, to 7,000 ft, sun and shade	Tall perennial herb with round stem, 3-8.5 ft	Fruit and flowers in long, terminal spikes, June-July	Fruit eaten by ducks and geese	
Canada violet <u>Viola canadensis</u> L.	Rich moist soils in coniferous forests, 6,000-11,500 ft	For 8-16 in	Capsule, Apr.-Sept.	Seeds eaten by dove, quail, turkey; plant eaten by rabbit	
Canyon grape <u>Vitis arizonica</u> Engelm.	Moist soil along streams, canyons, often climbing on trees, 2,000-7,000 ft, shade	Climbing or trailing woody vine	1-seeded berry, Apr.-July	Fruit eaten by numerous gamebirds and mammals	Vines aid in preventing erosion along streams
Yucca <u>Yucca</u> spp. L.	Dry, rocky slopes, hills and plains, 1,500-6,000 ft	Shrub, 3-6 ft, rarely small tree, to 30 ft	Cylindrical 3-celled capsule	Nectar for hummingbirds; seeds eaten by small mammals	
Spanish dagger (datil, fleshy-fruited yucca, yucca) <u>Yucca baccata</u> Torr.	Dry, rocky slopes of desert grasslands and conifer woodland, 3,000-8,000 ft	Shrub to small tree, 1-20 ft	Large fruit, 6 in long	Nectar for hummingbirds; nest cover for woodpeckers	
Soaptree yucca (palmilla) <u>Yucca elata</u> Engelm.	Grassland and desert, 1,500-6,000 ft	Shrub to small tree, to 30 ft	Fleshy or dry capsule, May-July	Fruit eaten by songbirds and small mammals	
Small soapweed <u>Yucca glauca</u> Nutt.	Dry plains, slopes, 4,000-8,500 ft	Shrubby plant, to 6 ft	3-celled dry capsule	Seeds eaten by small mammals; nest cover for songbirds	
Spanish bayonet (palma, spanish dagger) <u>Yucca torreyi</u> Shafer	Scattered on mesas, foothills and plains, 3,500-5,000 ft	Shrub or small tree, 3-16 ft	3-celled capsule	Seeds eaten by songbirds and small mammals	Only in New Mexico and Texas
Desert zinnia <u>Zinnia grandiflora</u> Nutt.	Dry slopes and mesas, 4,000-6,500 ft	Perennial, branched from base, 8 in or less	Achene, May-Oct.		
Desert zinnia <u>Zinnia pumila</u> Gray	Alluvial plains and slopes, 2,000-5,000 ft	Low shrub with woody stem, 8-11 in	Achene, Apr.-Oct.		

Table 3140-52.2 [R] Ecological Characteristics of Selected Plant Species Common to the Mexican Highlands Shrub Steppe in Riparian Habitats

Species	Habitat	Form	Fruit	General wildlife use	Notes
Cat-claw (devil's claw, una de gato) <u>Acacia greggii</u> Gray	Washes, mesas to 5,000 ft	Large shrub to small tree	Pod 2.5-5 in	Seeds eaten by dove and quail, roosting tree for quail	Often abundant
Bigtooth maple <u>Acer grandidentatum</u> Nutt.	Moist soil along streams and canyons, 4,700-7,000 ft, sun or shade	Deciduous tree up to 50 ft, with spreading crown	Samara, Apr.	Seeds eaten by quail, bear, squirrel, fox; browsed by beaver, rabbit, deer	
Iodinebush (pickleweed) <u>Allenrolfea occidentalis</u> (Wats.) Ktze.	Highly alkaline flats and sinks, salt marshes, floodplains	Shrub, 1-5 ft	Berry-like, May-Nov.		
Baccharis <u>Baccharis</u> spp. L.	Along water courses, 500-8,000 ft	Deciduous shrubs, to 7 ft	Achene, Apr.-Feb.		
Seepwillow <u>Baccharis glutinosa</u> Pers.	Moist soil along streams, to 5,500 ft, sun	Willow-like deciduous shrub to 7 ft	Achene, Mar.-Dec.		Often forming thickets
Sedge <u>Carex</u> spp. L.	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun	Perennial grass-like erect herb, 2-4 ft	Achenes in spikes, spring	Seeds eaten by game-birds, bear, fox, squirrel; browsed by rabbit and deer	
Netleaf hackberry (cumero, paloblanco western hackberry) <u>Celtis reticulata</u> Torr.	Streams, canyons, washes, moist soil, 3,500-6,000 ft	Deciduous, large shrub to small tree, to 30 ft	1-seeded drupe	Fruit eaten by game-birds	
Desert-willow (desert catalpa) <u>Chilopsis linearis</u> Cav.	Mostly along washes, in foothills and deserts	Large shrub to small tree, to 30 ft	Long, narrow pod		Good soil binder
Gray-thorn (white crucillo, grayleaf abrojo, lotebush) <u>Condalia lycioides</u> Gray	Mesas, slopes, in desert and desert grassland, 1,500-4,500 ft	Straggly shrub 3-9 ft	Thin skin, one-seeded drupe	Fruit eaten by Gambel's quail, pigeon, dove, fox	Common, often forms thickets
Mustard <u>Cruciferae</u> spp. Juss.	Ubiquitous	Herbaceous or suffrutescent, annual or perennial	Capsule	Seeds eaten by numerous species	
Coyote-melon <u>Cucurbita palmata</u> Wats.	Sandy plains to rocky slopes, to 3,000 ft	Perennial herb, trailing stems	Gourd-like, Apr.-Sept.		
Bermuda grass <u>Cynodon dactylon</u> (L.) Pers.	Moist waste areas, low altitudes	Stoloniferous perennial grass	Grain	Seeds eaten by waterfowl and mammals	Introduced
Saltgrass <u>Distichlis spicata</u> (L.) Greene	Saline or alkaline marshes, lakes	Perennial grass to 1 ft	Grain, summer-fall	Seeds eaten by waterfowl and marsh birds	
Spikerush <u>Eleocharis</u> spp. R. Br.	Moist soil along streams or in forests, 150-3,000 ft	Upright herb, leafless, 1-3 ft	Achenes in spikelets, spring	Seeds eaten by game-birds; plant eaten by rabbit and muskrat	
Filaree (heron-bill) <u>Erodium cicutarium</u> L.	Rocky or sandy soils, ubiquitous	Prostrate annual	Ellipsoid seeds, Feb.-June	Seeds eaten by numerous species	Excellent spring forage
Velvet ash <u>Fraxinus velutina</u> Torr.	Moist soils of stream banks, washes, canyons, 2,500-7,000 ft, sun	Small to medium tree, round crown, to 40 ft	Long-winged samara, Mar.-May	Seeds eaten by game-birds, songbirds, squirrel; browsed by deer; nest covering for squirrel and songbirds	

continued

Table 3140-52.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Arizona walnut <u>Juglans major</u> (Torr.) Heller	Moist soil along streams, canyons, 3,500-7,000 ft, sun	Tree, 50 ft, round crown	Round nut with hairy husk, spring	Seeds eaten by songbirds, squirrel, fox	
Rush <u>Juncus</u> spp. L.	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grass-like herbs, 2-4 ft	Capsule, spring	Forage	
Alligator juniper <u>Juniperus deppeana</u> Steud.	Moist soil along streams or scattered on hillside in oak woodland or ponderosa pine forest, 4,500-8,000 ft, sun	Tree 20-65 ft, round crown	Berry-like fleshy cone, pollinates in spring	Fruit eaten by quail, bear, fox	
Deer vetch <u>Lotus rigidus</u> Benth.	Rocky slopes to 5,500 ft	Perennial or annual to 1 ft	Pod, Feb.-May	Seeds eaten by gamebirds and browsers	
Texas mulberry <u>Morus microphylla</u> Buckl.	Moist soil along streams, washes, canyons, rocky slopes below cliffs, 2,000-6,000 ft, sun or shade	Large shrub or small tree, in dense clumps, up to 20 ft	Oblong cluster of berries, Apr.	Fruit eaten by songbirds, fox, squirrels	
Arizona sycamore <u>Platanus wrightii</u> Wats.	Moist soil along streams, canyons, 2,000-6,000 ft, sun	Tree, 40-80 ft, spreading open crown	Achene, Apr.-May	Seeds eaten by songbirds and squirrels; nesting cover for songbirds and squirrels	Prevents excessive erosion
Fremont cottonwood <u>Populus fremontii</u> Wats.	Moist soils along streams, 150-5,000 ft, sun	Large tree, 50-100 ft, with broad, flat open crown	Seed capsule in catkins	Seeds eaten by gamebirds; browsed by rabbit; nesting cover for songbirds and raptors	
Mesquite (velvet mesquite, honey mesquite) <u>Prosopis juliflora</u> (Sw.) DC.	Sandy alluvial soils, washes, to 5,500 ft	Spiny spreading shrub, to tree, 20-50 ft	Pod, Sept.-Oct.	Important for food and cover for numerous species	Resprouts from cut stumps
Wild Cherry <u>Prunus</u> spp. L.	Moist soil along streams, pine forests, 4,500-9,000 ft	Shrub to small tree, 10-40 ft	1-seeded drupe, Mar.-May	Fruit eaten by numerous birds and animals	
Bracken fern <u>Pteridium aquilinum</u> (L.) Kuhn	Moist soil, along streams, pine woods, aspen groves, 5,000-8,000 ft, shade	Small ground cover fern, 1-3 ft		Plant eaten by porcupine	Poisonous when eaten in large quantities
Arizona white oak <u>Quercus arizonica</u> Sarg.	Moist soil along streams, canyons, oak woodland foothills, mountains, 5,000-7,600 ft	Tree with irregular spreading crown, 30-60 ft	Nut (acorn), spring	Food and cover for many birds and mammals	
Emory oak <u>Quercus emoryi</u> Torr.	Moist soil along streams, canyons, oak woodland foothills, mountains, 4,000-7,000 ft, sun	Tree, with spreading crown, 20-50 ft	Nut (acorn), spring	Seeds eaten by gamebirds, bear, fox, squirrel; nest covering for songbirds and squirrel; browsed by rabbit and deer	
Gambel oak <u>Quercus gambelii</u> Nutt.	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6-70 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, deer, squirrel, rabbit, bear	

continued

Table 3140-52.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Palmer oak <i>Quercus palmeri</i> Engelm.	Moist soil along streams of canyons and mountainsides, 3,500-7,000 ft, sun and shade	Shrub to small tree, 6-25 ft	Nut (acorn), spring	Seeds eaten by game-birds, songbirds, deer, squirrel; nest covering for songbirds and squirrel	
Scarlet sumac (smooth sumac) <i>Rhus glabra</i> L.	Rich moist soil, along streams, canyons, ravines, 5,000-7,000 ft, sun and shade	Tall shrub to small tree, to 8 ft, usually forming thickets	1-seeded drupe, June-Aug.	Fruit eaten by quail; browsed by rabbit and deer	
Poison ivy <i>Rhus radicans</i> L.	Rich soils along streams, ravines and canyons, 3,000-8,000 ft, shade	Small upright shrub 2-3 ft, may be climbing vine	1-seeded drupe, Apr.-Sept.	Fruit eaten by quail; browsed by rabbit and deer	Poisonous sap causes skin irritation
Watercress <i>Rorippa</i> , spp. Scop.	Moist soil along streams or in streams, 1,500-9,500 ft, shade	Small prostrate forb, 6-18 in	Globose capsule, spring		
Blackberry <i>Rubus</i> spp. L.	Widespread, but developing fully only in open areas	Arching or trailing shrubs, to 5 ft, leaves mostly compound, stems with prickles	Aggregate of drupes, June-Aug., red or black, .25 in long	Food and nesting cover for many birds; berries eaten by many other animals; browsed by deer and rabbit	Forms dense patches; berry often lasts into winter
Willow <i>Salix</i> spp. L.	Moist soil along streams, 3,500-9,500 ft, sun	Tree, 15-50 ft	Seed capsules in catkins, Mar.	Browsed by beaver; seeds eaten by squirrel	Prevents erosion and invades burned forest areas
Goodding willow <i>Salix gooddingii</i> Ball	Along streams and rivers, 150-5,000 ft	Tree, 20-50 ft	Capsule, spring	Seeds eaten by numerous species birds; browsed by small mammals	Important for stream bank protection
Yellow willow (yew willow) <i>Salix taxifolia</i> HBK.	Along streams and washes, 3,500-6,000 ft	Large shrub or tree, to 20-40 ft	Capsule, spring	Same as <i>S. gooddingii</i>	Good soil binder and browse
Elderberry <i>Sambucus</i> spp. L.	Moist soil along streams, canyons, in coniferous forests, 1,000-10,000 ft, shade	Large shrub, small tree, 8-33 ft	Berry, June-Aug.	Fruit eaten by fox and squirrel; browsed by deer	
Western soapberry (wild china-tree, cherioni, jaboncillo) <i>Sapindus drummondii</i> H. & A.	Stream banks, canyon sides in upper desert, desert grassland, oak woodland, 2,500-6,000 ft	Large spreading shrub to small tree, to 25 ft	1-seeded berry-like remaining		Fruit and foliage poisonous to wildlife
Climbing milkweed <i>Sarcostemma</i> spp. Torr.	Streams, washes, moist places, to 6,000 ft	Stems twining along ground or over bushes	Follicle, Mar.-Oct.		
Bulrush <i>Scirpus</i> spp. L.	Marshes, ponds, streams, rivers, to 9,000 ft	Perennial, to 6 ft	Achene, spring-fall	Seeds eaten by waterfowl and marsh birds; plant eaten by muskrats	
Salt-marsh bulrush <i>Scirpus paludosus</i> L.	Marshes, saltflats, in mud around lakes and along streams	Erect rush, 1-3.5 ft	Spiked achenes, year-round	Seeds eaten by waterfowl, shorebirds, quail, songbirds; plant eaten by muskrat	Subspecies of <i>S. maritimus</i>
Inkweed (Torrey sea-blite, iodine weed) <i>Suaeda torreyana</i> Wats.	Saline flats with subsurface soil moisture below 5,000 ft	Shrub 2-3 ft	Utricle enclosed by fleshy perianth		

continued

Table 3140-52.2 [R] (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Tamarisk (saltcedar) <i>Tamarix pentandra</i> Pall.	Moist soil along streams, up to 5,000 ft	Large shrub, small tree, usually forming dense thickets	Capsules in spikes, Mar.-Aug.	Nest covering for dove	Often grows in saline soil; usually considered undesirable except for erosion control
Cat-tail <i>Typha</i> spp. L.	Moist soil along streams, ditches, lakes, ponds, to 7,000 ft, sun and shade	Tall perennial herb with round stem, 3-8.5 ft	Fruit and flowers in long, terminal spikes, June-July	Seeds eaten by ducks, geese, muskrat	
Canyon grape <i>Vitis arizonica</i> Engelm.	Moist soil along streams, canyons, often climbing on trees, 2,000-7,000 ft, shade	Climbing or trailing woody vine	1-seeded berry, Apr.-July	Fruit eaten by numerous gamebirds and mammals	Vines aid in preventing erosion along streams

53 PROVINCE 3210 Chihuahuan Desert

SECTION 3211 GRAMA—TOBOSA SECTION 3212 TARBUSH—CREOSOTE BUSH

The Chihuahuan Desert Province encompasses all or part of the Chihuahuan biotic community of Blair (1940), Dice (1943), and Buechner (1950). Included also in Bailey's delineation is a subtropical area of Tamaulipan thornscrub (Clover 1937; Dice 1943; Muller 1947; and Blair 1952). Important areas of Chihuahuan affinity in southeastern Arizona are not included. Much of the vegetative cover is, or was, grassland, so the application of Chihuahuan Desert to this entire province is not appropriate. Furthermore, the division of this province into a Grama—Tobosa Section (3211) and a Tarbush—Creosote Bush Section (3212) along the boundaries shown is incorrect in that these two major plant communities occur in similar habitats throughout both sections. For these reasons, these two sections are treated as a single unit to avoid unnecessary repetition.

The area delineated by Bailey (1976) as Chihuahuan Desert takes in all of Trans-Pecos Texas, most of the lower Rio Grande Valley in Texas and New Mexico, and all the lower Pecos Valley in New Mexico in Texas. Most of this province is characterized by basin and range topography except in the northeast where it merges with the Great Plains along the Llano Estacado, and along the lower Rio Grande River below its confluence with the Devil's River, which is thornscrub. While most of the area is above 3500 feet, elevations range from less than 1000 feet along the lower Rio Grande to over 8500 feet in the Guadalupe Mountains on the New Mexico-Texas boundary.

Annual precipitation varies from an average of less than 8 inches in Chihuahuan desertscrub along the Rio Grande River to over 25 inches in the mountains. Most of this precipitation (over 65 percent) falls between June

and September. Except for areas in the subtropical Tamaulipan thornscrub, freezing temperatures can be expected to occur between 50 and 150 nights a year.

For general information on succession and climax communities, see section 51.

The vegetation in this large geographic area is very diverse. The major upland biotic communities, in addition to Chihuahuan desertscrub, include semidesert grassland, Tamaulipan thornscrub, interior chaparral, Madrean evergreen woodland, Great Basin conifer woodland, and montane conifer forest.

Chihuahuan Desertscrub Community

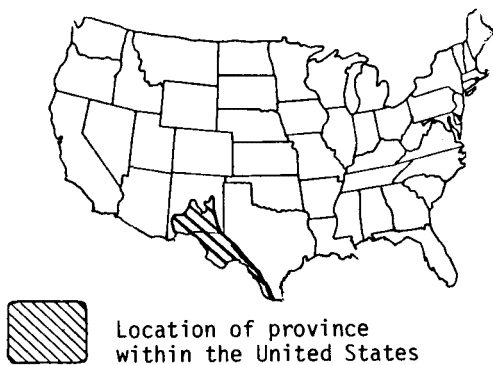
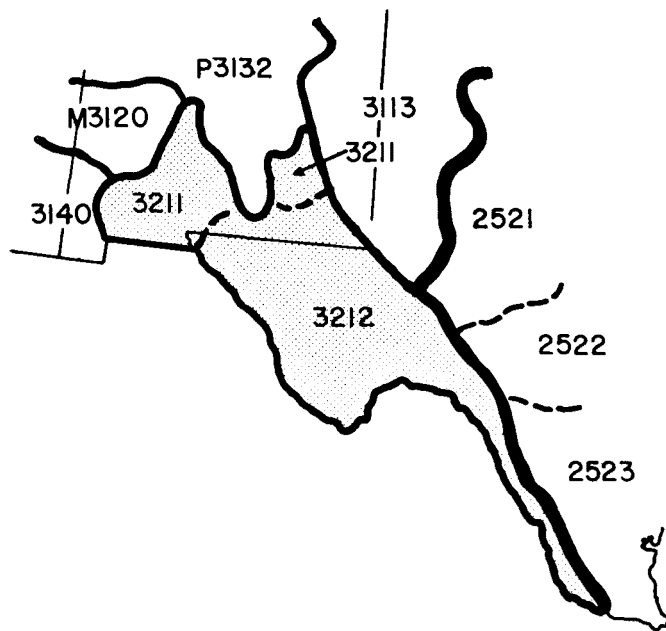
See section 52 for a description of this community.

Semidesert Grassland

See section 52 for a description of this community.

Tamaulipan Thornscrub

The Tamaulipan thornscrub occurs in southern portions of the province, along the Rio Grande River from its confluence with the Devil's River to the Bordas Scarp. This semi-arid community, locally called brushland or "chaparral," occupies areas of plains and low hills similar in many respects to the topography of the Chihuahuan Desert (Muller 1947). Unlike the Chihuahuan Desert in its greater rainfall, lower elevation, and exposure to winds from the Gulf of Mexico, the thornscrub community's habitat differences are correlated with the development of a vegetation characterized by a higher preponderance of thorny species, a greater abundance of grasses, and a more luxuriant and denser growth of shrubs. Characteristic species are much more numerous than in the desert, the flora is much richer in total species, and the number of associations correspondingly higher. Dominant species include several acacias, Texas ranger or cenizio, honey mesquite, coyotilla, and several others depending on local situations. Some important associated plants include lotebush, white brush, crooked bush, paloverde, kidneywood, chittanwood, and javelina bush. As in the case of the semidesert grassland, several







-  Location of sections within the province
-  Province boundary
-  Section boundary
-  State boundary

Figure 53.1 Province 3210, Chihuahuan Desert; Sections 3211, Grama—Tobosa, and 3212, Tarbush—Creosote Bush

characteristic species of cacti, stem succulents, and leaf succulents may be locally abundant. Grasses may be more or less common to abundant throughout, depending on substrate and grazing history.

Interior Chaparral

The interior chaparral communities of dense, low evergreen sclerophyll shrubs are restricted to particular locales in the Organ, Glass, Chisos, and Guadalupe mountains (Wauer 1973). When present, these communities usually occur at elevations between 4500 and 6500 feet and occasionally higher. Shrub live oak, mountain-mahogany, manzanita, sumacs, buckthorns, and silk-tassels are characteristic species. Grasses are uncommon.

Madrean Evergreen Woodland

Madrean evergreen woodland, dominated by evergreen white oaks, junipers, and Mexican pinyon, reach their greatest development in the Sierra Madre Occidental or northwestern Mexico, and reach their northeastward terminus in Trans-Pecos Texas. Here they are found in the foothills and on the slopes of the Chisos, Chinati, Cathedral, Del Norte, and Davis mountains at elevations between 4500 and 7600 feet, occasionally higher on south-facing slopes.

This community may be composed wholly of evergreen oaks, or may be a varied admixture of oaks, junipers (alligator and one-seeded), and Mexican pinyon. Arizona cypress is a tall tree isolated in relict stands within canyons. Much of the woodland of Trans-Pecos Texas is an oak—juniper—pinyon community usually characterized by two or more of five species: gray and Emory oak, alligator and one-seeded juniper, and Mexican pinyon. Understories are open with grasses prevalent and shrubs scattered or absent.

Unlike the winter cold-adapted juniper—pinyon conifer woodlands farther north, these warm woodlands experience relatively mild winters. Their characteristics are largely determined by the moderate winter temperatures and the summer monsoon, with its principal rainfall during the warm July through September period. Precipitation is in the biseasonal pattern with the annual total usually between 12 and 24 inches.

Rocky Mountain Conifer Woodland

This structurally simple woodland predominantly occurs in the San Andreas, Guadalupe, Delaware, Baylor, and Sierra Diablo mountains of this province where it reaches its greatest development at elevations between 5500 and 7500 feet. In this area, juniper is more prevalent than pinyon; hence a vegetational description of juniper—pinyon is more appropriate than the more common pinyon—juniper. Below 6000 feet the woodland is usually characterized by one-seeded junipers in pure stands, or with scattered Rocky Mountain junipers without Colorado pinyons. Annual precipitation is 12 to 21 inches, and in winter is predominately in the form of snow.

Juniper—pinyon woodland occurs on highly varied

soils, from rocky and shallow to deep. Although alligator juniper and Mexican pinyon may occasionally be present, they are not juniper—pinyon woodland species, but species of Madrean oak woodland. One-seeded juniper, Rocky Mountain juniper, and Colorado pinyon are the principal dominant trees on the conifer woodland.

According to general location, grasses may be more or less abundant throughout. Today many weedy and shrubby plants have replaced grasses in the understory where overgrazing has been severe. It is well-established that these cold-adapted woodlands have extended their range to former grasslands during the last 100 years.

Southern Rocky Mountain Montane Conifer Forest

The Southern Rocky Mountain montane conifer forest occurs only on the higher peaks above 7500 feet, in cool canyons and highland depressions, and on the upper north-facing slopes. In Province 3210, therefore, montane conifer forest is restricted to the Davis and Guadalupe mountains with minor elements present in the San Andreas and Chisos mountains. Average annual precipitation is from 18 to 30 inches. This forest type is characterized by steep gradients, the dominance of ponderosa pine, and the intrusion of plant species characteristic of communities downslope.

Principal trees in addition to ponderosa pine are Douglas-fir, Gambel oak, New Mexican locust, bigtooth maple, and white pine.

SECTION 3211

GRAMA—TOBOSA

SECTION 3212

TARBUSH—CREOSOTE BUSH (RIPARIAN COMMUNITIES)

The various riparian communities in the Chihuahuan Desert Province may be represented as formations of forest, woodland, scrubland, or marshland. Occurring in or adjacent to drainageways and/or floodplains or other hydric situations (i.e., springs, etc.), the communities often result as narrow ribbons of riparian communities coursing through other, distinctly terrestrial, communities (Lowe 1964). The importance of these riparian communities to wildlife and outdoor recreation is greatly disproportionate to the limited acreages occupied.

Riparian communities in this province are largely warm to temperate and are recognized primarily by their dominant plant constituents. Within this broad division are several major formation-classes including broadleaf deciduous forest and woodland (cottonwood—willow communities), riparian scrublands, and marshland formations. Riparian disclimax associations dominated by the introduced saltcedar are now prevalent. Although these communities are often distinct, they may be highly integrated or occur as intermittent stands within other communities. Further, many associate plant species are common to more than one community. One riparian species list has therefore been compiled to include all

riparian formation-classes within this temperate biogeographic province. Descriptions and distinctions of the major formation-classes are presented in the following discussion.

Cottonwood—Willow Forests and Woodlands

See Section 52 for a description of this plant community.

Mesquite—Saltcedar Scrublands

Mesquite—saltcedar scrublands are common below 5000 feet elevation along the Rio Grande and Pecos rivers. These winter-deciduous “thickets” attain maximum development on the alluvium of floodplains of major watercourses and their tributaries (Brown and Hausler 1977). Relatively small mesquite areas occur today along these systems, as well as other, more minor, drainages. Increasingly, the deciduous saltcedar attains or shares dominance in many areas. Additional information about this plant community may be found in section 52.

Marshlands

Marshlands are dominated by emergents that normally have their basal portions annually, periodically, or continually submerged. Usually not included as marshland constituents are trees, woody shrubs, or nonhalophytic grasses. Both fresh and brackish water environments are included in this wetland formation; the various communities range from the more xeric and alkali communities of saltgrass and alkali bulrush to hydric freshwater communities of rushes, sedges, bulrushes, and cat-tail.

Marshlands occur where streams periodically overflow their banks; they have disappeared in many areas as a result of water diversions and water “management” projects (Ohmart 1974). Many of these communities are now dependent upon stored and/or recycled agricultural and waste waters. Marshlands in Province 3210 occur principally on, or adjacent to, the Rio Grande and Pecos rivers. Examples include areas on the Bosque del Apache National Wildlife Refuge, Lake McMillan, portions of Bitter Lake National Wildlife Refuge, and many important smaller areas (e.g., near La Jolla).

Table 3210-53.1 [3211, 3212] Selected Plant Species Common to the Grama—Tobosa, Tarbush—Creosote Bush Sections

Growth form	Plant associations	
	Habitat: Montane Conifer Forest-- Southern Rocky Mountain Fasciation	
Tall trees, over 40 ft	<u>Abies concolor</u> <u>Acer grandidentatum</u> <u>Alnus oblongifolia</u> <u>Pinus leiophylla</u> <u>Pinus ponderosa</u> <u>Pinus reflexa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u> <u>Quercus gambelii</u>	White fir Bigtooth maple Arizona alder Chihuahua pine Ponderosa pine White pine Trembling aspen Douglas-fir Gambel oak
Medium trees, 20-40 ft	<u>Arbutus arizonica</u> <u>Quercus hypoleucoides</u> <u>Quercus reticulata</u>	Arizona madrone Silverleaf oak Netleaf oak
Low trees and tall shrubs, 10-20 ft	<u>Rhamnus californica</u> <u>Robinia neomexicana</u>	Coffeeferry New Mexican locust
Low to medium shrubs, under 10 ft	<u>Arctostaphylos pringlei</u> <u>Ceanothus fendleri</u> <u>Ceanothus integerrimus</u> <u>Holodiscus dumosus</u> <u>Rhus glabra</u> <u>Ribes pinetorum</u> <u>Rosa arizonica</u> <u>Senecio</u> spp. <u>Symphoricarpos oreophilus</u>	Manzanita Buckbrush Deer brush Ocean spray Scarlet sumac Orange gooseberry Arizona rose Groundsel Snowberry
Grasses and forbs	<u>Achillea lanulosa</u> <u>Astragalus humistratus</u> <u>Blepharoneuron tricholepis</u> <u>Bouteloua gracilis</u> <u>Castilleja</u> spp. <u>Eriogon divergens</u> <u>Festuca arizonica</u> <u>Hymenoxys quinquesemata</u> <u>Lathyrus graminifolius</u> <u>Lotus oroboides</u> <u>Lupinus</u> spp. <u>Muhlenbergia montana</u> <u>Muhlenbergia virescens</u> <u>Pachystima myrsinites</u> <u>Pteridium aquilinum</u> <u>Viola canadensis</u>	Yarrow Milk-vetch Pine dropseed Blue grama Indian paintbrush Fleabane Arizona fescue Pingwing Peavine Deer vetch Lupine Mountain muhly Screwleaf muhly Myrtle boxleaf Bracken fern Canada violet
	Habitat: Conifer Woodland--Rocky Mountain Fasciation	
Tall trees, over 40 ft	<u>Quercus gambelii</u>	Gambel oak
Medium trees, 20-40 ft	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus edulis</u>	Utah juniper Rocky Mountain juniper Pinyon pine
Low trees and tall shrubs, 10-20 ft	<u>Juniperus monosperma</u> <u>Yucca baccata</u>	One-seeded juniper Spanish dagger
Low to medium shrubs, under 10 ft	<u>Amelanchier alnifolia</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Berberis fremontii</u> <u>Ceanothus fendleri</u> <u>Chamaebatiaria millefolium</u> <u>Chrysothamnus depressus</u> <u>Chrysothamnus nauseosus</u> <u>Cowania mexicana</u> <u>Ephedra viridis</u> <u>Fallugia paradoxa</u>	Serviceberry Black sagebrush Big sagebrush Barberry Buckbrush Fernbush Rabbit brush Rabbit brush Cliffrose Mormon tea Apache plume

continued

Table 3210-53.1 [3211, 3212] (Continued)

Growth form	Plant associations	
	<u>Conifer Woodland (Continued)</u>	
Low to medium shrubs -- (Continued)	<u>Opuntia basilaris</u> <u>Opuntia fragilis</u> <u>Opuntia polycantha</u> <u>Opuntia whipplei</u> <u>Purshia tridentata</u> <u>Quercus turbinella</u>	Beavertail Little prickly pear Plains prickly pear Whipple cholla Antelope brush Shrub live oak
Grasses	<u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Festuca arizonica</u> <u>Koeleria cristata</u> <u>Muhlenbergia torreyi</u> <u>Oryzopsis hymenoides</u> <u>Piptochaetium fimbriatum</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u> <u>Stipa</u> spp.	Side-oats grama Black grama Blue grama Arizona fescue Mountain junegrass Ring muhly Indian rice-grass Pinyon rice-grass Squirreltail Sand dropseed Needlegrass
	<u>Habitat: Madrean Evergreen Woodland</u>	
Tall trees, over 40 ft	<u>Juniperus deppeana</u> <u>Pinus latifolia</u> <u>Pinus leiophylla</u> <u>Pinus ponderosa</u> <u>Quercus arizonica</u> <u>Quercus emoryi</u> <u>Quercus grisea</u>	Alligator juniper Apache pine Chihuahuan pine Ponderosa pine Arizona white oak Emory oak Gray oak
Medium trees, 20-40 ft	<u>Arbutus arizonica</u> <u>Cupressus arizonica</u> <u>Pinus cembroides</u> <u>Quercus emoryi</u> <u>Quercus hypoleucoides</u> <u>Quercus oblongifolia</u> <u>Quercus reticulata</u>	Arizona madrone Arizona cypress Mexican pinyon Emory oak Silverleaf oak Mexican blue oak Netleaf oak
Low trees and tall shrubs, 10-20 ft	<u>Eysenhardtia polystachya</u> <u>Juniperus monosperma</u>	Kidneywood One-seeded juniper
Low to medium shrubs and cacti, under 10 ft	<u>Agave palmeri</u> <u>Agave parryi</u> <u>Arctostaphylos pungens</u> <u>Echinocereus pectinatus</u> <u>Erythrina flabelliformis</u> <u>Mammillaria gummifera</u> <u>Mimosa biuncifera</u>	Palmer agave Parry agave Pointleaf manzanita Rainbow cactus Coral bean Cream cactus Wait-a-minute bush
Grasses and forbs	<u>Andropogon barbinodis</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Elyonurus barbiculmus</u> <u>Lycurus phleoides</u> <u>Muhlenbergia emersleyi</u> <u>Oxalis</u> spp.	Cane bluestem Side-oats grama Blue grama Woolspike balsam-scale Wolftail Bullgrass Wood-sorrel
	<u>Habitat: Interior Chaparral</u>	
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus betuloides</u> <u>Cercocarpus breviflorus</u> <u>Juniperus monosperma</u> <u>Quercus emoryi</u> <u>Rhus ovata</u>	Birchleaf mountain-mahogany Hairy mountain-mahogany One-seeded juniper Emory oak Sugar sumac
Low to medium shrubs, under 10 ft	<u>Amorpha californica</u> <u>Arctostaphylos pringlei</u> <u>Arctostaphylos pungens</u> <u>Berberis haemotocarpa</u> <u>Brickellia californica</u> <u>Ceanothus greggii</u> <u>Ceanothus integerrimus</u>	Mock locust Manzanita Pointleaf manzanita Barberry California brickellia California lilac Deer brush

continued

Table 3210-53.1 [3211, 3212] (Continued)

Growth form	Plant associations	
	<u>Interior Chaparral (Continued)</u>	
Low to medium shrubs -- (Continued)	<u>Cowania mexicana</u> <u>Eriodictyon angustifolium</u> <u>Fallugia paradoxa</u> <u>Fremontia californica</u> <u>Garrya flavescens</u> <u>Garrya wrightii</u> <u>Haplopappus taricifolius</u> <u>Mimosa biuncifera</u> <u>Quercus turbinella</u> <u>Rhamnus betulaeifolia</u> <u>Rhamnus californica</u> <u>Rhamnus crocea</u> <u>Rhus trilobata</u> <u>Sophora</u> spp.	Cliffrose Yerba santa Apache plume Flannel bush Silk-tassel Silk-tassel Turpentine-brush Wait-a-minute bush Shrub live oak Birchleaf buckthorn California buckthorn Hollyleaf buckthorn Squawbush Sophora
Grasses	<u>Andropogon barbinodis</u> <u>Aristida longiseta</u> <u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Fragrostis intermedia</u> <u>Lycurus phleoides</u> <u>Muhlenbergia porteri</u>	Cane beardgrass Red three-awn Side-oats grama Black grama Blue grama Plains lovegrass Wolftail Bush muhly
	<u>Habitat: Tamaulipan Thornscrub</u>	
Low trees and tall shrubs, 10-20 ft	<u>Bumelia lycoides</u> <u>Cercidium floridum</u> <u>Cercidium texanum</u> <u>Condalia</u> spp. <u>Cordia boissieria</u> <u>Parkinsonia aculeata</u> <u>Portia angustifolia</u> <u>Prosopis juliflora</u> <u>Zizyphus obtusifolia</u>	Chittanwood Blue paloverde Paloverde Lotebush Anacahuite Retama Soapbush Mesquite Crooked bush
Low to medium shrubs, under 10 ft	<u>Acacia berlandieri</u> <u>Acacia rigidula</u> <u>Agave asperima</u> <u>Aloisia gratissima</u> <u>Castela texana</u> <u>Celtis pallida</u> <u>Cereus pentagonus</u> <u>Columbrina texensis</u> <u>Condalia ericoides</u> <u>Ephedra antisyphilitica</u> <u>Eysenhardtia texana</u> <u>Forestiera angustifolia</u> <u>Heliotropium confertifolium</u> <u>Karwinskia humboldtiana</u> <u>Krameria parvifolia</u> <u>Leucophyllum frutescens</u> <u>Leucophyllum minus</u> <u>Lycium berlandieri</u> <u>Lycium pallidum</u> <u>Mimosa</u> spp. <u>Opuntia leptocaulis</u>	Guajillo Blackbrush Rough agave White brush Allthorn Spiny hackberry Barbed-wire cactus Texas columbrina Javelina bush Joint-fir Kidneywood Desert olive Turnsole heliotrope Coyotilla Ratany Camino Big bend silver-leaf Wolfberry Pale lycium Mimosa Desert Christmas cactus Texas prickly pear Crucillo Vervain Yucca
Grasses and forbs	<u>Andropogon saccharoides</u> <u>Andropogon scoparius</u> <u>Aristida purpurea</u> <u>Bouteloua barbata</u> <u>Bouteloua breviseta</u> <u>Bouteloua trifida</u> <u>Buchloe dactyloides</u> <u>Coldenia canescens</u> <u>Croton</u> spp. <u>Dalea nana</u> <u>Echinocereus enneacanthus</u>	Silver bluestem Little bluestem Purple three-awn Six-weeks grama Chino grama Red grama Buffalo grass Little coldenia Dove weed Dwarf dalea Hedgehog cactus

continued

Table 3210-53.1 [3211, 3212] (Continued)

Growth form	Plant associations	
	<u>Tamaulipan Thornscrub (Continued)</u>	
Grasses and forbs (Continued)	<u>Hilaria belangeri</u> <u>Jatropha cathartica</u> <u>Trichachne californica</u>	Curly mesquite Jacamilla California cottontop
	<u>Habitat: Semidesert Grassland</u>	
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Agave deserti</u> <u>Celtis reticulata</u> <u>Fouquieria splendens</u> <u>Juniperus monosperma</u> <u>Prosopis juliflora</u> <u>Sapindus drummondii</u> <u>Yucca baccata</u> <u>Yucca elata</u>	Cat-claw Desert agave Netleaf hackberry Ocotillo One-seeded juniper Mesquite Western soapberry Spanish dagger Soaptree yucca
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u> <u>Agave palmeri</u> <u>Agave parryi</u> <u>Agave shottii</u> <u>Artemisia filifolia</u> <u>Calliandra eriophylla</u> <u>Condalia ericoides</u> <u>Condalia lycioides</u> <u>Condalia spathulata</u> <u>Ephedra trifurca</u> <u>Ferocactus wislizenii</u> <u>Gossypium thurberi</u> <u>Gutierrezia lucida</u> <u>Gutierrezia sarothrae</u> <u>Haplopappus tenuisectus</u> <u>Hoffmanseggia</u> spp. <u>Lycium</u> spp. <u>Mimosa bluncifera</u> <u>Mimosa dysocarpa</u> <u>Nolina microcarpa</u> <u>Nolina texana</u> <u>Opuntia chlorotica</u> <u>Opuntia imbricata</u> <u>Opuntia leptocaulis</u> <u>Opuntia phaeacantha</u> <u>Opuntia spinosior</u> <u>Rhus choriophylla</u> <u>Sphaeralcea</u> spp. <u>Yucca torreyi</u>	White-thorn Palmer agave Parry agave Shott agave Sand sagebrush False mesquite Javelina bush White crucillo Mexican crucillo Mormon tea Barrel cactus Desert cotton Yellow-green matchweed Snakeweed Burroweed Rat potato Wolfberry Wait-a-minute bush Velvet pod mimosa Bear grass Bear grass Pancake pear cactus Tree cholla Desert Christmas cactus Prickly pear Cane cholla Mearns sumac Globe mallow Spanish bayonet
Grasses and forbs	<u>Andropogon barbinodis</u> <u>Aristida</u> spp. <u>Bouteloua chondrosioides</u> <u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua filiformis</u> <u>Bouteloua gracilis</u> <u>Bouteloua hirsuta</u> <u>Bouteloua rothrockii</u> <u>Croton</u> spp. <u>Croton texensis</u> <u>Eragrostis intermedia</u> <u>Eragrostis lehmanniana</u> <u>Heteropogon contortus</u> <u>Hilaria belangeri</u> <u>Hilaria mutica</u> <u>Lycurus phleoides</u> <u>Muhlenbergia</u> spp. <u>Muhlenbergia porteri</u> <u>Panicum obtusum</u> <u>Sitanion hystrix</u> <u>Solanum elaeagnifolium</u> <u>Sporobolus</u> spp. <u>Sporobolus wrightii</u> <u>Trichachne californica</u> <u>Tridens puchellus</u>	Cane beardgrass Three-awn Sprucetop grama Side-oats grama Black grama Slender grama Blue grama Hairy grama Rothrock grama Dove weed Dove weed Plains lovegrass Lehmann lovegrass Tanglehead Curly mesquite Tobosa-grass Wolf tail Muhly Bush muhly Vine mesquite Squirrel tail Nightshade Dropseed Sacaton California cottontop Fluffgrass

continued

Table 3210-53.1 [3211,3212] (Concluded)

Growth form	Plant associations	
	<u>Semidesert Grassland (Continued)</u>	
Grasses and forbs (Continued)	<u>Zinnia grandiflora</u> <u>Zinnia pumila</u>	Desert zinnia Desert zinnia
	<u>Habitat: Chihuahuan Desertscrub</u>	
Medium trees, 20-40 ft	<u>Prosopis juliflora</u>	Mesquite
Low trees and tall shrubs, 10-20 ft	<u>Fouquieria splendens</u> <u>Yucca baccata</u>	Ocotillo Spanish dagger
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u> <u>Acacia vernicosa</u> <u>Agave palmeri</u> <u>Cassia wislizeni</u> <u>Condalia spathulata</u> <u>Coryphantha vivipara</u> <u>Ferocactus wislizenii</u> <u>Flourensia cernua</u> <u>Koeberlinia spinosa</u> <u>Larrea divaricata</u> <u>Lippia wrightii</u> <u>Mammalaria</u> spp. <u>Mortonia scabrella</u> <u>Opuntia leptocaulis</u> <u>Opuntia phaeacantha</u> <u>Opuntia spinosior</u> <u>Opuntia stanlyi</u> <u>Opuntia violacea</u> <u>Parthenium incanum</u> <u>Rhus microphylla</u> <u>Yucca</u> spp.	White-thorn White-thorn Palmer agave Shrubby senna Squawbush Pincushion cactus Barrel cactus Tarbush Crucifixion thorn Creosote bush Wright lippia Fish-hook cactus Scurfy mortonia Desert Christmas cactus Prickly pear Cane cholla Devil cholla Purple prickly pear Mariola Desert sumac Yucca
Grasses and forbs	<u>Aristida purpurea</u> <u>Bouteloua eriopoda</u> <u>Coldenia canescens</u> <u>Muhlenbergia porteri</u> <u>Tridens puchellus</u> <u>Zinnia pumila</u>	Purple three-awn Black grama Little coldenia Bush muhly Fluffgrass Desert zinnia

Table 3210-53.1 [3211, 3212R] Selected Plant Species Common to the Grama—Tobosa, Tarbush—Creosote Bush Sections in Riparian Habitats

Growth form	Plant associations	
Tall trees, over 40 ft	<u>Populus acuminata</u> <u>Populus angustifolia</u> <u>Populus arizonica</u> <u>Quercus arizonica</u>	Lanceleaf cottonwood Narrowleaf cottonwood Arizona cottonwood Arizona white oak
Medium trees, 20-40 ft	<u>Acer negundo</u> <u>Chilopsis linearis</u> <u>Fraxinus velutina</u> <u>Prosopis pubescens</u> <u>Quercus emoryi</u> <u>Salix spp.</u> <u>Salix gooddingii</u> <u>Sambucus mexicana</u>	Box-elder Desert-willow Velvet ash Screwbean mesquite Emory oak Willow Goodding willow Mexican elder
Low trees and tall shrubs, 10-20 ft	<u>Celtis reticulata</u> <u>Morus microphylla</u> <u>Sapindus drummondii</u> <u>Tamarix pentandra</u>	Netleaf hackberry Texas mulberry Western soapberry Saltcedar
Low to medium shrubs, under 10 ft	<u>Acacia spp.</u> <u>Allenrolfea occidentalis</u> <u>Arundo donax</u> <u>Baccharis spp.</u> <u>Baccharis glutinosa</u> <u>Celtis pallida</u> <u>Condalia spp.</u> <u>Juncus spp.</u> <u>Phragmites communis</u> <u>Pluchea camphorata</u> <u>Prosopis glandulosa</u> <u>Rhus spp.</u> <u>Scirpus spp.</u> <u>Scirpus pallidus</u> <u>Tessaria sericea</u> <u>Typha spp.</u>	Acacia Iodinebush Carrizo Baccharis Seepwillow Desert hackberry Lotebush Rush Reed Camphor-weed Honey mesquite Sumac Bulrush Bulrush Arrow-weed Cat-tail
Lesser vegetation	<u>Carex spp.</u> <u>Cruciferae spp.</u> <u>Cucurbita foetidissima</u> <u>Cynodon dactylon</u> <u>Distichlis spicata</u> <u>Eleocharis spp.</u> <u>Erodium cicutarium</u> <u>Hibiscus spp.</u> <u>Janusia gracilis</u> <u>Rorippa spp.</u> <u>Sarcostemma spp.</u> <u>Suaeda torreyana</u> <u>Vitis arizonica</u>	Sedges Mustard Buffalo-gourd Bermuda grass Saltgrass Spikerush Fillaree Rose mallow Janusia Watercress Climbing milkweed Inkweed Canyon grape

Table 3210-53.2 Ecological Characteristics of Selected Plant Species Common to the Chihuahuan Desert

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir <i>Abies concolor</i> Hoopes 3211, 3212	Common in conifer forest, 5,500-10,000 ft	Large evergreen tree, 80-150 ft, conical crown	Cone 3-5 in, pollinates in spring	Seeds eaten by song-birds; browsed by deer and elk	
Guajillo <i>Acacia berlandieri</i> Benth. 3212	Rio Grande plains	Shrub, 3-15 ft	Legume, summer		
White-thorn (mesquite) <i>Acacia constricta</i> Benth. 3211, 3212	Washes, slopes, mesas, 2,000-5,000 ft, sun	Spreading shrub 2-10 ft	Glabrous pod splitting when ripe, spring	Seeds eaten by dove, quail, rabbit	Common along washes, a weed on rangelands
Cat-claw (devil's claw, una degato) <i>Acacia greggii</i> Gray 3211, 3212	Washes, mesas, to 5,000 ft	Large shrub to small tree, to 25 ft	Pod 2.5-5 in	Seeds eaten by dove and quail; roosting tree for quail	Often abundant
Blackbrush (chapparoprieto) <i>Acacia rigidula</i> Benth. 3212	Rio Grande plains	Shrub, 3-10 ft	Legume, summer		
White-thorn (acacia) <i>Acacia vernicosa</i> Standl. 3211, 3212	Rocky hills, mesas on limestone soils, 3,500-5,000 ft	Shrub with spreading branches, 2-6 ft	Hard pod, Apr.-Nov.		Similar to <i>A. constricta</i>
Bigtooth maple <i>Acer grandidentatum</i> Nutt. 3211, 3212	Moist soil along streams and canyons, 4,700-7,000 ft, sun or shade	Deciduous tree up to 50 ft, with spreading crown	Samara, Apr.	Seeds eaten by quail, turkey, bear, beaver, rabbit, squirrel, fox, deer	
Yarrow <i>Achillea lanulosa</i> Nutt. 3211, 3212	Common in pine forest, 5,500-11,500 ft, sun	Perennial herb with creeping rootstocks, 10-20 in	One-seeded, June-Sept.	Plant eaten by rabbit and bighorn sheep	
Rough agave (maguey cenizo) <i>Agave asperima</i> Jacobi 3212	Sandy calcareous soils in S. Texas and No. Mexico	Succulent shrub, 2.5-20 ft	Capsule, summer	Seeds eaten by dove	
Desert agave <i>Agave deserti</i> Engelm. 3211, 3212	Rocky gravelly slopes in desert mountains, 500-3,500 ft	Succulent shrub 6-27 in diameter, leaves spiny margined, flower stalks 6.5-18 ft	Brown, cylindrical 1.5-2 in, June	Dried stems used as nesting sites for woodpeckers	
Palmer agave (mesquite century plant) <i>Agave palmeri</i> Engelm. 3211, 3212	Locally common in rocky foothills and mountains grasslands, 3,500-6,500 ft, sun	Leaf cluster 1.5-4.5 ft	Capsule, many seeded, June-July		
Parry agave (mesquite) <i>Agave parryi</i> Engelm. 3211, 3212	Common in mountains, 4,500-8,000 ft, sun	Numerous crowded leaves forming a rounded cluster 2-3 ft diameter	Capsule		May spread by underground sprouts
Shott agave (amole) <i>Agave shottii</i> Engelm. 3211, 3212	Abundant on dry rocky mountain slopes, desert grasslands, lower oak woodlands, 3,300-6,500 ft	Succulent shrub, 12-16 in diameter	Capsule		Forming mats spreading vegetatively, valuable in erosion control
Arizona alder <i>Alnus oblongifolia</i> Torr. 3211, 3212	Moist soil along streams, canyons, 5,000-7,000 ft, sun	Tree up to 60 ft, round open crown	Cone with nutlets	Seeds eaten by song-birds; browsed by deer and rabbit	Checks erosion

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
White brush (common bee-brush, white bush, palo amarillo) <u>Aloysia gratissima</u> (Gill) Hook 3212	Sandy soil, gravelly hillsides, chaparral thickets, arroyos, limestone bluffs	Shrub to 10 ft	Schizocarp, spring-fall, winter		
Serviceberry <u>Amelanchier alnifolia</u> Nutt. 3211, 3212	Banks, slopes, mountains, 5,000-10,000 ft, sun	Shrub or small tree, 3-12 ft	Pome, summer-early fall	Fruit eaten by songbirds and bear; browsed by deer	
Mock locust (stinking willow) <u>Amorpha californica</u> Nutt. 3211, 3212	Along streams, 5,000-6,500 ft	Shrub, 4-10 ft	Pod, summer		
Cane beardgrass (cane bluestem) <u>Andropogon barbinodis</u> Lag. 3211, 3212	Dry rocky or sandy slopes, plains and roadsides, below 6,000 ft, sun	Tufted perennial grass, 30-70 in	Grain, June-Nov.	Seeds eaten by turkey; plant eaten by deer and antelope	Good range plant, drought resistant
Silver bluestem <u>Andropogon saccharoides</u> Lag. 3211, 3212	Rocky slopes, sandy plains, prefers calcareous soils	Tall tufted erect perennial grass, 20-40 in	Long-awned grain, July-Nov.		
Little bluestem <u>Andropogon scoparius</u> Michx. 3212	Prairies, open woods, dry hills, fields, mountain meadows, pine forests	Densely tufted erect perennial grass, 20-60 in	Long-awned grain, July-Oct.	Same as <u>A. barbinodis</u>	
Arizona madrone (madrone) <u>Arbutus arizonica</u> Buckl. 3211, 3212	Mountains in oak woodland, 4,000-8,000 ft	Evergreen tree, 20-50 ft, compact crown	Berrylike, fleshy drupe, Apr.-Sept.	Fruit eaten by songbirds and gamebirds; browsed by deer	
Manzanita <u>Arctostaphylos pringlei</u> Parry 3211, 3212	Dry slopes, often with cypress, 4,000-6,500 ft, sun	Shrub, 6 ft	Several seeded berry, Apr.-June	Fruit eaten by songbirds and gamebirds; browsed by deer	
Pointleaf manzanita <u>Arctostaphylos pungens</u> HBK. 3211, 3212	Dry slopes, 3,500-8,000 ft, sun	Shrub, 3-5 ft	Several seeded berry, Feb.-May	Fruit eaten by songbirds; browsed by deer	Common plant of open chaparral, forms thickets
Three-awn <u>Aristida</u> spp. L. 3211, 3212	Dry open slopes, woodlands	Tufted perennial grass	Grain, July-Nov.	Plant eaten by jack-rabbit	Mature seeds may be injurious to livestock
Red three-awn (three awn) <u>Aristida longiseta</u> Steud. 3211, 3212	Arid, sandy and rocky hills, plateaus, forest openings, 5,000-8,500 ft, sun	Perennial bunchgrass, 4-14 in	Long-awned grain, May-Nov.	Plant eaten by rabbit and deer	
Purple three-awn <u>Aristida purpurea</u> Nutt. 3212	Dry, rocky or sandy hills and plains, roadsides up to 5,000 ft, occasionally 7,000 ft	Erect perennial grass, 1-2 ft	Grain, Mar.-Sept.	Same as <u>A. longiseta</u>	
Sand sagebrush <u>Artemisia filifolia</u> Torr. 3211, 3212	Loose sandy soil, 4,000-6,000 ft	Undershrub, 12-40 in	Achene	Plant eaten by deer, rabbit, antelope	Valuable browse plant in winter, and early spring

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Black sagebrush <i>Artemisia nova</i> A. Nels. 3211, 3212	Dry slopes, mesas, shallow stony soil, 6,000-8,000 ft, sun	Shrub, 1-3 ft	Achene, Aug.-Sept.	Browsed by rabbit and deer	
Big sagebrush <i>Artemisia tridentata</i> Nutt. 3211, 3212	Plains, mesas, rocky slopes, in pinyon pine, 5,000-8,000 ft, sun	Shrub, 1-7 ft	Achene, July-Oct.	Same as <i>A. nova</i>	Good growth indicates deep, fertile non-saline soil
Milk-vetch <i>Astragalus humistratus</i> Gray 3211, 3212	Pinyon forest, pine woods, 5,000-9,000 ft	Forb, 1-2 ft, prostrate stem hugging ground	Leathery dehiscent or indehiscent pod, May-Sept.	Seeds eaten by quail and turkey; plant eaten by antelope	
Barberry (hollygrape) <i>Berberis fremontii</i> Torr. 3211, 3212	In conifer woodland, 4,000-7,000 ft	Shrub, 3-9 ft	Berry, late spring-summer	Browsed by rabbit and deer	
Barberry (red mahonia) <i>Berberis haematocarpa</i> Woot 3211, 3212	Dry rocky soils, 4,500-5,000 ft, sun	Shrub to 6 ft	Berry, summer	Same as <i>B. fremontii</i>	
Pine dropseed (hairy dropseed) <i>Blepharoneuron tricholepis</i> (Torr.) Nash 3211, 3212	Rocky slopes, dry open forest, 4,500-9,500 ft, sun	Erect, densely tufted perennial grass, 8-24 in	Grain, July-Nov.	Browsed by deer	Good forage species
Six-weeks grama <i>Bouteloua barbata</i> Lag. 3212	Open rocky, sandy slopes and washes, disturbed soil, to 6,000 ft	Loosely tufted annual grass, 10 in or less, occasionally much taller	Long-awned grain, July-Nov.	Plant eaten by turkey, rabbit, deer, bighorn sheep	Grows well in disturbed soils
Chino grama (gyp grama) <i>Bouteloua brevisetata</i> Vasey 3212	Gypsum sands, calcareous rock	Loosely tufted wiry perennial grass, 10-18 in	Grain, summer-fall		
Sprucetop grama <i>Bouteloua chondrosioides</i> HBK. 3211, 3212	Dry rocky slopes, rolling desert grasslands, 2,500-6,000 ft	Tufted erect perennial grass, 12-24 in	Grain, Aug.-Nov.	Plant eaten by turkey, rabbit, deer, bighorn sheep, antelope	Highly favored range species
Side-oats grama <i>Bouteloua curtipendula</i> Michx. 3211, 3212	Rocky slopes, woodlands, forest openings, plains, to 7,000 ft, sun	Erect, tufted perennial grass, 14-40 in	Grain, May-Nov.	Plant eaten by turkey, rabbit, deer, antelope	Good range grass fast growing, highly palatable
Black grama <i>Bouteloua eriopoda</i> Torr. 3211, 3212	Dry, sandy plateaus, rocky slopes, 3,500-6,000 ft, sun	Low, tufted perennial grass, 8-35 in	Long-awned grain, July-Nov.	Same as <i>B. curtipendula</i>	Drought adapted climax species, easily overgrazed
Slender grama <i>Bouteloua filiformis</i> (Fourn.) Griffiths 3211, 3212	Dry rocky slopes below 5,000 ft	Slender erect perennial grass, 12-18 in	Grain, July-Nov.	Same as <i>B. chondrosioides</i>	Able to persist on badly abused ranges
Blue grama <i>Bouteloua gracilis</i> HBK. 3211, 3212	Open rocky slopes, plains, forest openings, meadows, 4,000-8,000 ft	Tufted perennial grass, 10-30 in	Grain, July-Nov.	Plant eaten by turkey, rabbit, deer	Excellent range grass, adapted to drought and heavy grazing
Hairy grama <i>Bouteloua hirsuta</i> Lag. 3211, 3212	Rocky slopes, dry sandy mesas, plains and rocky hills, 1,000-6,000 ft	Erect perennial grass, 10-30 in	Hairy grain, July-Nov.	Same as <i>B. gracilis</i>	
Rothrock grama <i>Bouteloua rothrockii</i> Vasey 3211, 3212	Dry sandy soils, mesas, canyons, slopes, below 6,000 ft	Erect perennial grass, 10-24 in	Grain, Aug.-Nov.	Same as <i>B. curtipendula</i>	Important range grass, moderate palatability

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Red grama <u>Bouteloua trifida</u> Thurb. 3212	Dry sandy, rocky soil and plains, to 4,000 ft	Densely tufted perennial grass, 10-18 in	Long-awned grain, Apr.-July	Plant eaten by turkey, Good graze when rabbit, bighorn sheep, available deer	
California brickellia <u>Brickellia californica</u> Gray 3211, 3212	Washes, dry rocky slopes, below 8,000 ft, sun	Shrub, 1.5-3 ft	Achene, fall	Seeds eaten by game-birds	
Buffalo grass <u>Buchloe dactyloides</u> Nutt. 3212	Dry plains	Low spreading perennial grass, 2-5 in	Grain	Seeds eaten by snow goose, deer, antelope	
Chittanwood <u>Bumelia lyciodes</u> L. 3212	Low woods, savannas	Shrub or small tree, to 30 ft	Drupe-like, summer		
False mesquite (fairy duster, huajillo, hairy-leaved calliandra) <u>Calliandra eriophylla</u> Benth. 3211, 3212	Desert slopes, mesas, 2,000-5,000 ft	Low rounded bushy shrub, 1-3 ft	Hairy pod, spring	Seeds eaten by dove and deer	Valuable browse and erosion control
Shrubby senna <u>Cassia wislizeni</u> Gray 3211, 3212	Rocky hills, 4,000-5,000 ft	Shrub, 3-9 ft	Hairy pod, spring	Linear pod	
Allthorn (bisbirinda, chapparro amargoso) <u>Castela texana</u> T. & G. 3212	Gravelly hills, bluffs, thickets, in mesquite prairies	Shrub, to 6 ft	Drupe-like, summer		
Indian paintbrush <u>Castilleja</u> spp. L.f. 3211, 3212	Arid slopes to moist coniferous forest, 2,000-10,000 ft	Annual, perennial forb, 6-20 in	Many-seeded capsule, Mar.-Nov.	Seeds eaten by song-birds; plant eaten by deer	
Buckbrush (deer-brier) <u>Ceanothus fendleri</u> Gray 3211, 3212	Foothills, mountains, common in pine forests, 5,000-10,000 ft, sun and shade	Shrub to 3 ft, forming low thickets	3-celled capsule, Apr.-Oct.	Browsed by deer	
California lilac (desert ceanothus) <u>Ceanothus greggii</u> Gray 3211, 3212	Dry slopes, 3,500-7,500 ft	Shrub 3-6 ft	Capsule, summer	Same as <u>C. fendleri</u>	
Deer brush <u>Ceanothus integerrimus</u> (Hook) Arn. 3211, 3212	Chaparral and open coniferous forest, 3,500-7,000 ft, sun and shade	Loosely branched deciduous shrub, 3-8 ft	Round 3-celled capsule, May-Oct.	Same as <u>C. fendleri</u>	
Spiny hackberry (desert hackberry) <u>Celtis pallida</u> Torr. 3212	Foothills, mesas, 1,500-3,500 ft	Spiny, densely branched deciduous shrub, 3-10 ft	Oval, one-seeded drupe, spring	Fruit eaten by dove, quail, deer, numerous small species	Often forms thickets, ornamental
Netleaf hackberry (cumero, paloblanco, western hackberry) <u>Celtis reticulata</u> Torr. 3211, 3212	Streams, canyons, washes, moist soil, 3,500-6,000 ft	Deciduous large shrub to small tree, to 30 ft, spreading crown	One-seeded drupe	Fruit eaten by game-birds	
Blue paloverde (border paloverde) <u>Cercidium floridum</u> Benth. 3212	Desert washes and valleys, to 4,000 ft, sun	Small tree, to 30 ft	Flattened pod, Mar.-May	Seeds eaten by birds and mammals	

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Paloverde <u>Cercidium texanum</u> Gray 3212	Desert, arid plains	Large shrub to small tree, to 15 ft	Legume, summer	Cover for many species	
Birchleaf mountain- mahogany <u>Cercocarpus betuloides</u> Nutt. 3211, 3212	Mountains, 3,000- 8,000 ft	Shrub to small tree, up to 20 ft	Hairy achene, sum- mer-fall	Browsed by deer and antelope	Absent in New Mex- ico
Hairy mountain-mahogany <u>Cercocarpus breviflorus</u> Gray 3211, 3212	Dry slopes, mountainsides	Evergreen shrub or tree, to 15 ft	Hairy achene, summer-fall	Same as <u>C. betuloides</u>	
Barbed-wire cactus <u>Cereus pentagonus</u> Haw. 3212	Thickets	Sprawling succu- lent shrub, 10 ft or taller	Modified berry, summer	Fruit eaten by song- birds, quail, dove; browsed by rabbit	
Fernbush (tansybush) <u>Chamaebatiaria</u> <u>millefolium</u> (Torr.) Maxim 3211, 3212	Dry rocky slopes, 4,500-8,000 ft, sun	Aromatic leafy shrub, 2-6 ft	Leathery, few- seeded capsule, July-Nov.	Browsed by sheep and deer	Often occurring with juniper and pinyon
Rabbit brush <u>Chrysothamnus depressus</u> Nutt. 3211, 3212	Dry rocky slopes, plains, 5,000- 7,000 ft	Small shrub, 4-8 in	Achene, summer- fall	Browsed by rabbit, antelope, deer	
Rabbit brush <u>Chrysothamnus nauseosus</u> Britt. 3211, 3212	Dry plains and hills, 5,000- 9,000 ft	Shrub, .5-6 ft	Achene, summer- fall	Same as <u>C. depressus</u>	
Little coldenia <u>Coldenia canescens</u> DC. 3211, 3212	Dry, sunny mesas, slopes, on rocky calcareous soil, below 3,500 ft	Low spreading forb, less than 2 in	Depressed globose nutlet		
Texas columbrina (snakewood) <u>Columbrina texensis</u> Gray 3212	Rio Grande plains	Shrub 3-6 ft	Capsule, year round		
Lotebush <u>Condalia</u> spp. Cav. 3211, 3212	Rio Grande plains	Shrub to small tree, 3-15 ft	Drupe, summer- fall	Fruit eaten by dove, fox, ringtail	
Javelina bush <u>Condalia ericoides</u> M.C. Johnst. 3211, 3212	Dry plains, mesas, at lower elevations	Shrub to 5 ft	One-seeded drupe, summer	Fruit eaten by dove, pigeons, fox	
White crucillo (gray- leaf abrojo, lotebush, gray-thorn) <u>Condalia lycioides</u> Gray 3211, 3212	Mesas, slopes, in desert and desert grassland, 1,500- 4,500 ft	Straggly shrub, 3-9 ft	Thin skin one- seeded drupe	Fruit eaten by Gambel's Common, often forms quail, pigeon, dove, thickets fox	
Mexican crucillo, squaw- bush (spiny abrojo) <u>Condalia spathulata</u> Gray 3211, 3212	Sandy, gravelly, well-drained soil, mesas and slopes of deserts and desert grasslands, 2,500-4,500 ft	Compactly and densely branched shrub, 3-5 ft	Black or purplish drupe, bitter	Fruit eaten by dove and fox	
Anacahuite <u>Cordia boissieria</u> DC. 3212	Rio Grande plains and brushlands	Shrub to small tree, to 25 ft	Drupe, year round		

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Pincushion cactus <u>Coryphantha vivipara</u> (Nutt.) Britt. & Rose 3211, 3212	Plains, hills, 1,000-5,400 ft	Depressed-globose to ovoid or cylindroid cactus, to 1 ft, usually formed in clumps	Green, ellipsoid, fleshy		
Cliffrose <u>Cowania mexicana</u> D. Don 3211, 3212	Rocky hills and plateaus on lime- stone formations 3,500-8,000 ft	Evergreen shrub, 3-6 ft	Hairy achene, late spring-fall	Browsed by deer	
Dove weed <u>Croton</u> spp. L. 3211, 3212	Canyon bottoms, dry stream beds, 200-7,000 ft	Herb or shrub	One-3 seeded capsule	Seeds eaten by dove, quail, turkey; browsed by deer	
Dove weed (texas croton) <u>Croton texensis</u> Klotzsch 3211, 3212	Roadsides, fields, dry stream beds	Annual shrub, to 12 in	1-3 seeded cap- sule, with large oily seeds	Same as <u>Croton</u> spp.	
Arizona cypress (rough- bark arizona cypress, smooth cypress, smooth arizona cypress) <u>Cupressus arizonica</u> Greene 3211, 3212	Canyons, mountains, oak woodlands	Medium sized trees, 30 ft	Short stalked round cone		Very scattered and localized, probably relic population
Dwarf dalea <u>Dalea nana</u> Torr. 3212	Rio Grande plains	Perennial herb, 4-12 in	Legume, year round		
Hedgehog cactus <u>Echinocereus</u> <u>enneacanthus</u> Engelm. 3212	So. Texas, in drier soils	Small succulent shrub, to 18 in	Berry, summer	Fruit eaten by dove, quail, peccary, coyote	
Rainbow cactus <u>Echinocereus pectinatus</u> Scheidw. 3211, 3212	Limestone hills, 3,500-5,200 ft	Columnar, 4-6 in	Spiny, green, fleshy		
Woolspike balsamscale <u>Elyonurus barbiculmus</u> Hack 3211, 3212	Dry, rocky slopes and plains, desert grasslands, juniper- oak woodlands	Perennial grass, 16-32 in	Grain, July-Nov.		Good forage grass
Joint-fir (clapweed, popote, vine ephedra) <u>Ephedra antisyphilitica</u> C.A. Mey. 3212	Gravelly, rocky soil on plains, hills, arroyos, ravines, canyons	Erect or spread- ing shrub, to 3 ft	Cone	Seeds eaten by quail and rabbit; browsed by deer	Only in semi-arid grasslands of Texas
Mormon tea (mexican tea, longleaf joint-fir, popotilla, teposote, canatilla) <u>Ephedra trifurca</u> Torr. 3211, 3212	Mesas, plains and sandy hills of deserts and desert grasslands, to 5,000 ft	Small shrubby bush, to 2 ft	Cone	Seeds eaten by quail; browsed by rabbit, deer, sheep	
Mormon tea <u>Ephedra viridis</u> Coville 3211, 3212	Arid slopes, mesas, 3,000-7,000 ft	Erect shrub, 1-3 ft	Naked seed, summer	Seeds eaten by quail; browsed by antelope, deer, rabbit	
Plains lovegrass <u>Eragrostis intermedia</u> Hitchc. 3211, 3212	Sandy or rocky slopes and plains, 3,500-6,000 ft	Tufted erect peren- nial grass, 22-35 in	Grain, July-Nov.		Used to reseed rangeland, good soil binder

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Lehmann lovegrass <u>Eragrostis lehmanniana</u> Nees 3211, 3212	Semi-arid ranges, open prairies and slopes	Tufted perennial grass, 20-28 in	Grain, July-Nov.		Introduced, well established
Fleabane (wild daisy) <u>Erigeron divergens</u> (Torr.) Gray 3211, 3212	Dry slopes, mesas to open pine woods	Forb, 6-30 in	Achene, Feb.-Oct.		
Yerba santa <u>Eriodictyon angustifolium</u> Nutt. 3211, 3212	Dry slopes, 2,000-7,000 ft	Shrub, to 6.5 ft	Capsule, summer-fall	Browsed by deer	
Coral bean (Southwestern coral bean, western coral bean, chilicote, Indian bean) <u>Erythrina flabelliformis</u> Kearney 3211, 3212	Dry rocky slopes, washes, canyons of foothills and mountains, 3,000-6,500 ft	Shrub to small tree, to 15 ft	Several-seeded pod		
Kidneywood (varadulce) <u>Eysenhardtia polystachya</u> Ortega 3211, 3212	Bushy areas with highly calcareous soil	Shrub, 6-10 ft	Legume, summer-fall		
Kidneywood (varadulce) <u>Eysenhardtia texana</u> Scheele 3212	Brush vegetation on highly calcareous soils	Shrub, usually 4-6 ft	Flat, indehiscent pod, Apr.-Sept.		
Apache plume <u>Fallugia paradoxa</u> Endl. 3211, 3212	Dry rocky slopes, 4,000-5,500 ft	Shrub, 1-5 ft	Achene, summer		
Barrel cactus <u>Ferocactus wislizenii</u> (Engelm.) Britt. & Rose 3211, 3212	Rocky, gravelly or sandy soils of hills, canyons, washes, alluvial fans, 1,000-5,600 ft	Barrel to columnar, 2-10 ft	Fleshy, many seeded yellow, July-Sept.	Fruit important to many mammals	
Arizona fescue <u>Festuca arizonica</u> Vasey 3211, 3212	Forest, mountain meadows, 6,000-10,000 ft	Densely tufted perennial grass, 18-36 in	Grain, June-Sept.	Seeds eaten by turkey and songbirds; browsed by deer	
Tarbrush (blackbrush, hojase) <u>Flourensia cernua</u> DC. 3211, 3212	Mesas, slopes on limestone soils, 3,500-5,000 ft	Low shrub, to 3 ft	Achene		
Desert olive (panalero) <u>Forestiera angustifolia</u> Torr. 3212	Brushlands of Rio Grande plains	Shrub to 10 ft	Drupe, summer	Fruit eaten by quail; browsed by deer	
Ocotillo (coachwhip, candlewood) <u>Fouquieria splendens</u> Engelm. 3211, 3212	Dry slopes, mesas, to 5,000 ft	Thorny, deciduous shrub with tall, unbranched whiplike stems, 6-27 ft	3-celled capsule, splitting when ripe, Apr.-June	Browsed by bighorn sheep	
Flannel bush (California fremont) <u>Fremontia californica</u> Torr. 3211, 3212	Dry north facing slopes, canyons, 3,500-6,000 ft	Shrub, 4-12 ft	Capsule, summer		

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Silk-tassel <u>Garrya flavescens</u> Wats. 3211, 3212	Dry slopes, 3,000-8,000 ft	Evergreen shrub, to 6 ft	Berry-like, spring	Fruit eaten by turkey; browsed by deer	
Silk-tassel <u>Garrya wrightii</u> Torr. 3211, 3212	Dry slopes, 3,000-8,000 ft, sun	Large evergreen shrub, 6-10 ft	Berry, Mar.-Aug.	Same as <u>G. flavescens</u>	
Desert cotton (thurberia, algoncillo) <u>Gossypium thurberi</u> Tod. 3211, 3212	Rocky, gravelly mountain slopes and canyons, in desert and desert grasslands, 2,500-4,500 ft	Shrub, 3-6 ft	Capsule with wooly seeds		
Yellow-green matchweed (snakeweed) <u>Gutierrezia lucida</u> Greene 3211, 3212	Alluvial plains, slopes, hillsides of desert grassland, oak woodland and pinyon-juniper, 1,000-7,000 ft	Halfshrub with woody stem, 1-3 ft	Achene, June-Oct.	Seeds eaten by quail; browsed by rabbit	
Snakeweed (broom snake-weed) <u>Gutierrezia sarothrae</u> (Pursh.) Britt. & Rusby 3211, 3212	Plains, slopes in upper desert, desert grasslands, oak woodlands, 3,000-7,000 ft	Shrub, .5-1 ft	Small achene, July-Nov.	Seeds eaten by quail; browsed by rabbit, antelope, deer	Invader of over-grazed ranges
Turpentine-brush <u>Haplopappus laricifolius</u> Gray 3211, 3212	Mesas, slopes, canyons, 3,000-6,000 ft	Shrub, 1-3 ft	Cylindric achene, Aug.-Nov.		
Burroweed <u>Haplopappus tenuisectus</u> Greene 3211, 3212	Alluvial plains, slopes in desert and desert grasslands, 2,000-5,500 ft	Round shrub, 1-2 ft	Cylindric achene		Invader of depleted ranges, poisonous to livestock when consumed in large quantities
Turnsole heliotrope <u>Heliotropium confertifolium</u> Torr. 3212	Gypsum soils, South Texas	Tiny shrub, 4 in or less	Schizocarp, summer-fall		
Tanglehead <u>Heteropogon contortus</u> L. 3211, 3212	Open dry rocky or sandy plains and slopes, below 5,000 ft	Tufted erect, perennial grass, 8-35 in	Long-awned grain, Mar.-June		Important range grass
Curly mesquite <u>Hilaria belangeri</u> Streud. 3211, 3212	Rocky slopes, dry hillsides, sandy plains, 1,500-6,000 ft	Tufted perennial grass, 10-15 in	Grain, Apr.-Nov.		Can form large colony via stolons, holds up under heavy grazing
Tobosa-grass <u>Hilaria mutica</u> Buckl. 3211, 3212	Dry exposed sandy or rocky slopes and plains, 2,000-6,000 ft	Perennial grass, 12-30 in	Grain, June-Nov.		
Rat potato (hog potato, camote-de-raton) <u>Hoffmanseggia</u> spp. Cav. 3211, 3212	Gravelly washes, canyons to cultivated fields, 500-5,000 ft	Perennial herb or shrub with wand-like branches, 2-3 ft	Pod		Tubers are edible, hog feed, good soil binder
Ocean spray (foam bush, mountain spray, cream-bush) <u>Holodiscus dumosus</u> (Nutt.) Heller 3211, 3212	Pine or spruce forests, often on cliffs, 5,500-10,000 ft, sun	Aromatic, deciduous shrub, 3 ft	One-seeded follicle, June-Sept.		

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Pingwing (pinque) <u>Hymenoxys</u> <u>quinquesquamata</u> Rydb. 3211, 3212	Lower woodlands, rocky open area, 5,000-7,000 ft	Forb, 10-25 in	Achene, Apr.-Sept.		
Jacamilla <u>Jatropha cathartica</u> (Terun.) Berl. 3212	In brush on clay soil	Perennial herb, 4-12 in	Capsule, spring- winter		
Alligator juniper <u>Juniperus deppeana</u> Steud. 3211, 3212	Moist soil along streams or scat- tered on hillside in oak woodland or ponderosa pine forest, 4,500- 8,000 ft, sun	Tree 20-65 ft, round crown	Berrylike fleshy cone, pollinates in spring	Fruit eaten by deer, quail, turkey, bear, fox	
One-seeded juniper <u>Juniperus monosperma</u> (Engelm.) Sarg. 3211, 3212	Dry hills, mesas, 3,000-7,000 ft, foothills, pinyon juniper woodland	Shrub to small evergreen tree, conical crown, 10-25 ft	One-seeded berry- like cone, matures in 1 year	Important food and cover for numerous species	Most common juniper in New Mexico
Utah juniper (western juniper) <u>Juniperus osteosperma</u> (Torr.) Little 3211, 3212	Dry plains, plat- eaus, hills, often in pure stands or with pinyon, 3,000-7,500 ft, sun	Small evergreen tree, broad, round crown, 15-40 ft	Berrylike brown cone, pollinates in spring	Same as <u>J. monosperma</u>	
Rocky Mountain juniper (western juniper) <u>Juniperus scopulorum</u> Sarg. 3211, 3212	Scattered in moun- tains and canyons of pinyon-juniper woodland and lower ponderosa pine, 5,000-9,000 ft, sun	Small to medium evergreen tree, narrow, pointed open crown, 20- 60 ft	Berrylike cone, pollinates in spring	Same as <u>J. monosperma</u>	Fastest growing juniper
Coyotilla <u>Karwinskia humboldtiana</u> R. & S. 3212	Rio Grande plains	Shrub, 3-6 ft	Drupe, summer- fall		
Crucifixion thorn <u>Koeberlinia spinosa</u> Zucc. 3211, 3212	Sandy or gravelly mesas, 2,400-5,000 ft	Rounded shrub, 3-4.5 ft	Black berry, late summer	Browsed by rabbit	
Mountain junegrass (prairie junegrass) <u>Koeleria cristata</u> (L.) Pers. 3211, 3212	Prairie, open woods, sandy soils, rocky slopes, below 9,000 ft	Tufted or bunched perennial grass, 14-28 in	Grain, May-Oct.	Plant eaten by deer	Good forage, rarely locally abundant
Ratany <u>Krameria parvifolia</u> Benth. 3212	Dry rocky slopes, gravelly plains, 500-5,000 ft	Shrub, 1-1.5 ft	Small burr with several spines, Apr.-Oct.		Relished by live- stock
Creosote bush (grease- wood) <u>Larrea divaricata</u> Cav. 3211, 3212	Alluvial plains, foothills, slopes, to 4,000 ft	Shrub usually 3-6 ft	Five-celled cap- sule, spiny, spring	Seeds eaten by rabbit and rodent	Mostly common and widely distributed shrub in desert
Peavine <u>Lathyrus graminifolius</u> (Wats.) White 3211, 3212	Dry open woods to pine forests, 4,000-11,000 ft, sun	Perennial forb with erect or climbing stem, 8-24 in	Two-valved pod	Seeds eaten by turkey	
Camino (cenizo, Texas ranger, purple sage) <u>Leucophyllum frutescens</u> Berl. 3212	Limestone hills, bluffs, ravines, arroyos, brush- lands	Shrub, to 8 ft	Capsule, all year		
Big bend silver-leaf <u>Leucophyllum minus</u> Gray 3212	Rocky or gravelly hills, flats, or brushlands	Shrub, to 3 ft	Capsule, summer- winter		

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Wright lippia (white brush) <u>Lippia wrightii</u> Gray 3211, 3212	Rocky or gravelly hills, flats, or brushlands	Shrub, 3-4.5 ft	Nutlet		
Deer vetch <u>Lotus oroboides</u> (HBK.) Ottley 3211, 3212	Pine woods, sometimes dry mesas, 5,000-8,000 ft, sun	Forb, 5-30 in, leafy stem	Narrow, several-seeded pod, Apr.-Sept.	Plant eaten by deer; seeds eaten by quail, dove, rabbit	
Lupine <u>Lupinus</u> spp. L. 3211, 3212	Dry slopes, mesas, open forest, 100-10,000 ft, sun	Annual or perennial forb with terminal clusters of flowers, 6-24 in	Flat pod, constricted between seeds, spring-fall	Seeds eaten by quail and turkey; plant eaten by deer	Some species poisonous to livestock
Wolfberry <u>Lycium</u> spp. L. 3211, 3212	Plains, slopes, 1,000-7,000 ft	Spreading to erect spiny shrub, 3-9 ft	Many-seeded berry	Fruit eaten by dove and quail	
Wolfberry <u>Lycium berlandieri</u> (Gray) Terrac. 3211, 3212	Low mountains, plains and dry valleys, to 3,000 ft	Shrub, to 8 ft	Berry	Same as <u>Lycium</u> spp.	
Pale lycium <u>Lycium pallidum</u> Miers. 3211, 3212	Desert plains and slopes, 3,000-7,000 ft	Shrub, 3-6 in	Many-seeded juicy berry	Same as <u>Lycium</u> spp.	
Wolftail (Texas-timothy) <u>Lycurus phleoides</u> HBK. 3211, 3212	Open rocky slopes, plains, below 8,000 ft	Tufted erect perennial, 8-25 in	Awned grain, July-Nov.		Valuable range grass
Fish-hook cactus (mammillaria, pincushion cactus) <u>Mammillaria</u> spp. Haw. 3211, 3212	Sandy, gravelly, dry soils, on hillsides and in valleys, 500-8,000 ft	Single or clumped cylindroid cacti, to 1 ft	Many-seeded, fleshy		
Cream cactus <u>Mammillaria gummifera</u> Engelm. 3211, 3212	Rocky or gravelly limestone soils, 4,000-4,500 ft	Globose to 4 in	Smooth berry, summer		
Mimosa (cat-claw) <u>Mimosa</u> spp. L. 3212	Rio Grande plains	Shrub or liana, to 15 ft	Legume, summer	Seeds eaten by dove and quail	
Wait-a-minute bush (cat-claw, wait-a-bit) <u>Mimosa biuncifera</u> Benth. 3211, 3212	Dry soil on mesas, rocky slopes, 3,000-6,000 ft	Spiny deciduous shrub, 2-6 ft	Many-seeded legume, May-Aug.	Seeds eaten by deer; cover for deer and rabbit	Often forms large, dense thickets; good soil binder
Velvet pod mimosa <u>Mimosa dysocarpa</u> Benth. 3211, 3212	Hillside, slopes, in desert grasslands and oak woodlands, 4,000-6,000 ft	Spiny deciduous shrub, 3-6 ft	Long prickly pod		Palatable to livestock
Scurfy mortonia (sandpaper bush) <u>Mortonia scabrella</u> Gray 3211, 3212	Rocky or gravelly slopes and mesas, 3,000-5,000 ft	Small shrub, 1.5-3 ft	Short, cylindroidal capsule		
Muhly <u>Muhlenbergia</u> spp. Schreb. 3211, 3212	Dry, open slopes and mesas	Perennial grass, 5-35 in	Grain, spring-fall	Seeds eaten by turkey; plant eaten by deer	

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bullgrass <i>Muhlenbergia emersleyi</i> Vasey 3211, 3212	Rocky slopes, ledges, woodlands, openings, drier soils, below 6,500 ft	Erect perennial grass, 20-40 in	Grain, June-Nov.		Good soil binder on steep slopes
Mountain muhly <i>Muhlenbergia montana</i> Hitchc. 3211, 3212	Rocky slopes, ledges, woodlands, forest openings, 4,500-9,500 ft	Tufted perennial grass, 6-26 in	Grain, Aug.-Oct.	Plant eaten by turkey and deer	
Bush muhly <i>Muhlenbergia porteri</i> Schribn. 3211, 3212	Dry mesas, rocky slopes, canyons, 2,000-6,000 ft	Erect perennial grass, 12-40 in	Grain, Aug.-Nov.		Highly palatable, largely grazed out
Ring muhly (ring grass) <i>Muhlenbergia torreyi</i> Hitchc. 3211, 3212	Dry ridges, sandy plateaus, rocky slopes, below 6,500 ft	Perennial grass, 6-12 in	Grain, Aug.-Nov.		Poor range grass; good soil binder
Screwleaf muhly <i>Muhlenbergia virescens</i> Kunth 3211, 3212	Rocky slopes, ridges, pine forests, 5,000-9,500 ft, shade	Densely tufted perennial grass, 16-24 in	Grain, May-July	Seeds eaten by turkey; plant eaten by deer	In Arizona and New Mexico only
Bear grass (sacahuista, sacahuiste) <i>Nolina microcarpa</i> Wats. 3211, 3212	Gravelly or sandy well drained soil, slopes and mesas, deserts, grasslands and woodlands, 3,000-6,000 ft	Grasslike shrubs with subterranean stems, 3-6 ft	Three-lobed capsule, May-June		May be poisonous to livestock
Bear grass (sacahuista, sacahuiste) <i>Nolina texana</i> Wats. 3211, 3212	Rolling rangelands and foothills	Woody stem leaves 5 ft long, perennial shrub	Three-lobed capsule		Causes hepatogenic photosensitization in livestock
Beavertail <i>Opuntia basilaris</i> (Engelm.) Bigelow 3211, 3212	Sandy flat dunes, valleys in woodlands, 4,000-7,000 ft	Clumps, 6-12 in high	Dry, not spiny		
Pancake pear cactus (Santa Rita prickly pear, dollarjoint prickly pear) <i>Opuntia chlorotica</i> (Engelm.) Bigelow 3211, 3212	Sandy or rocky soil, slopes, canyons, 2,000-5,000 ft	Arborescent shrub, 2-6 ft	Ellipsoid, fleshy fruit, spring	Fruit eaten by dove, quail, coyote, fox, peccary	
Little prickly pear (brittle prickly pear) <i>Opuntia fragilis</i> Nutt. 3211, 3212	Sandy to gravelly soils, 4,500-8,000 ft	Mat forming plant, 2-4 in	Obovoid dry fruit	Plant eaten by numerous birds and mammals, especially peccary	
Tree cholla (cane cholla) <i>Opuntia imbricata</i> Haw. 3211, 3212	Gravelly or sandy soils of hills, plains and grasslands, 4,000-6,000 ft	Small tree or thicket forming shrub, 3-10 ft	Obovoid, fleshy, all winter		
Desert Christmas cactus (tesajo, cholla) <i>Opuntia leptocaulis</i> DC. 3211, 3212	Mesas, flats, valleys, plains, washes in deserts	Bush or erect small shrub, 1-15 ft	Persistent obovoid, fleshy fruit, May-June		Usually growing within another shrub
Texas prickly pear (nopal prickly pear, cacanapo) <i>Opuntia lindheimeri</i> Engelm. 3212	Drier soils of southern Texas	Succulent shrub, 2-10 ft	Modified berry, late summer	Fruit and plant eaten by deer, coyote, dove, quail, peccary	

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Prickly pear <i>Opuntia phaeacantha</i> Engelm. 3211, 3212	Sandy soils of plains, washes, hills, deserts, grasslands, 1,500-7,000 ft	Variable clumps, 2-20 ft diameter, 1-3 ft high	Obovoid, many seeded, Apr.-June	Fruit and plant eaten by numerous mammals, including peccary and coyotes	May be invader in overgrazed areas
Plains prickly pear <i>Opuntia polycantha</i> Haw. 3211, 3212	Sandy soils of plains, flats, washes and canyon sides, 4,000-6,000 ft	Clump forming cactus, 3-6 in high	Dry, obovoid, spring	Fruit and plant eaten by dove, quail, coyote, peccary, deer	
Cane cholla <i>Opuntia spinosior</i> (Engelm.) Toumey 3211, 3212	Deep soils of valleys, plains, hillsides, grasslands, chaparrals, woodlands, 2,000-6,500 ft	Small shrub or cactus trees, 3-8 ft	Persistent, fleshy, many-seeded, May-June		Characteristic of desert grassland
Devil cholla (Stanly cholla) <i>Opuntia stanlyi</i> Engelm. 3211, 3212	Fine soils of valleys, 1,000-2,000 ft	Mat forming cactus, to 1 ft high	Fleshy		
Purple prickly pear <i>Opuntia violacea</i> Engelm. 3211, 3212	Sandy, gravelly soils of plains, hills, washes, 3,500-5,500 ft	Sprawling shrub, 2-7 ft	Fleshy	Fruit and plant eaten by dove, quail, coyote, fox, deer, peccary	
Whipple cholla <i>Opuntia whipplei</i> (Engelm.) Bigelow 3211, 3212	Deep soils of valleys, plains, slopes, 4,500-7,000 ft	Generally low mat forming cactus, occasionally reaching 6 ft	Obovoid, fleshy, yellow, spineless, June-July		
Indian rice-grass <i>Oryzopsis hymenoides</i> (R. & S.) Ricker 3211, 3212	Open sandy plains, hills, woodlands, at medium elevations	Densely tufted perennial grass, 12-24 in	Grain, May-Nov.	Seeds eaten by gamebirds; plant eaten by deer	Excellent range grass in semi-arid areas
Wood-sorrel <i>Oxalis</i> spp. L. 3211, 3212	Moist soils, 2,500-9,000 ft	Herbaceous, perennial forb with creeping rootstocks, to 1 ft	Dehiscent 5-celled capsule, spring-fall	Seeds eaten by gamebirds; plant eaten by deer	Occasionally grown as ornamentals
Myrtle boxleaf (Oregon boxwood, mountain-lover) <i>Pachystima myrsinites</i> (Pursh.) Raf. 3211, 3212	Coniferous forests, 6,000-9,000 ft	Low inconspicuous ground cover	Two-celled capsule, May	Plant relished by deer	
Vine mesquite <i>Panicum obtusum</i> HBK. 3211, 3212	Mudflats, heavy soiled lowlands, river banks, arroyos, along ditches	Wiry, erect perennial grass, 8-35 in	Grain, June-Oct.	Plant eaten by rabbit, antelope, deer	Good range plant and soil binder
Retama (Jerusalem-thorn) <i>Parkinsonia aculeata</i> L. 3212	Low, poorly drained soil of foothills, 2,000-4,000 ft	Tree to 35 ft	Legume, summer	Seeds eaten by small mammals	Ornamental; fast-growing
Mariola <i>Parthenium incanum</i> HBK. 3211, 3212	Caliche soils, plains, slopes, 2,500-5,000 ft	Low shrub, 1-2.5 ft	Achene, June-Oct.		
Mexican pinyon <i>Pinus cembroides</i> Zucc. 3211, 3212	Pinyon-juniper woodland, 5,000-7,500 ft	Small evergreen tree, 15-50 ft	Cone with oily nuts	Seeds eaten by band-tailed pigeons, songbirds, bear, rabbit, deer	
Pinyon pine (Colorado pinyon, Rocky Mountain pinyon) <i>Pinus edulis</i> Engelm. 3211, 3212	Pinyon-juniper woodland, 4,000-7,500 ft	Small evergreen bushy tree, compact spreading crown, 15-35 ft	Egg-shaped cone, pollinates in spring	Seeds eaten by pinyon jay, songbirds, fox, squirrel, gamebirds, deer, bear	

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Apache pine (Arizona pine, Arizona longleaf pine) <u>Pinus latifolia</u> Sarg. 3211, 3212	Mountains along Mexican border, 5,000-8,500 ft, sun	Evergreen tree, 50-70 ft	Prickly scaled cone	Seeds eaten by band-tailed pigeons, songbirds, bear, rabbit, deer	Scattered in distribution
Chihuahua pine <u>Pinus leiophylla</u> (Schiede) Deppe 3211, 3212	Mountains, 5,000-7,800 ft	Tree 30-80 ft	Stalked, spreading cone	Same as <u>P. latifolia</u>	
Ponderosa pine <u>Pinus ponderosa</u> Laws. 3211, 3212	Plateaus, mountain slopes, in pure or mixed stands, 5,500-8,500 ft, sun	Large evergreen tree, 80-125 ft, straight trunk with narrow open crown	Cone	Food and nesting sites for tassel-eared squirrel	Most common forest tree in southwest
White pine <u>Pinus reflexa</u> Engelm. 3211, 3212	Coniferous forest of mountains, 6,500-10,000 ft	Large tree, 60-100 ft	Cone	Seeds eaten by gamebirds, bear, deer, squirrel	
Pinyon rice-grass <u>Piptochaetium fimbriatum</u> Hitchc. 3211, 3212	Open, rocky, woodlands, pine forest, 5,000-7,000 ft	Perennial bunch grass, 16-30 in	Awned grain, summer-fall	Plant eaten by deer	Good range grass
Trembling aspen (golden aspen, trembling poplar) <u>Populus tremuloides</u> Michx. 3211, 3212	Widely distributed in coniferous forest above 6,500 ft	Tree, slender crown, 20-80 ft	Cottony capsule, early spring	Seeds eaten by gamebirds, songbirds, squirrel; browsed by rabbit and deer	Great aesthetic value in fall, sprouts from cut roots
Soapbush (lignum vitae, guazacan) <u>Porlieria angustifolia</u> Engelm. 3212	Rio Grande plains	Shrub to small tree, to 25 ft	Capsule, spring-fall		
Mesquite (velvet mesquite, honey mesquite) <u>Prosopis juliflora</u> (Sw.) DC. 3211, 3212	Sandy alluvial soils, washes, to 5,500 ft	Spiny spreading shrub, to tree, 20-50 ft	Pod, Sept.-Oct.	Important for food and cover for numerous species	Resprouts from cut stumps
Douglas-fir <u>Pseudotsuga menziesii</u> (Mirb.) Franco 3211, 3212	Mixed coniferous forest, cold canyons, 5,200-10,000 ft, sun	Large tree, 100-190 ft, with open broadly conical crown	Cone	Seeds eaten by squirrel; browsed by deer and rabbit	
Bracken fern <u>Pteridium aquilinum</u> (L.) Kuhn 3211, 3212	Moist soil, along streams, pine woods, aspen groves, 5,000-8,000 ft, shade	Small ground cover fern, 1-3 ft		Plant eaten by porcupine	Poisonous when eaten in large quantities
Antelope brush (bitterbrush) <u>Purshia tridentata</u> Pursh. 3211, 3212	Open slopes, mesas, coniferous forests, 4,000-9,000 ft	Shrub, to 5 ft	Hairy achene, summer	Browsed by rabbit, antelope, deer	Prevents soil erosion
Arizona white oak <u>Quercus arizonica</u> Sarg. 3211, 3212	Moist soil along streams, canyons, oak woodland foothills, mountains, 5,000-7,600 ft	Tree with irregular spreading crown, 30-60 ft	Nut (acorn), spring	Food and cover for many birds and mammals	
Emory oak <u>Quercus emoryi</u> Torr. 3211, 3212	Moist soil along streams, canyons, oak woodland foothills, mountains, 4,000-7,000 ft, sun	Tree, with spreading crown, 20-50 ft	Nut (acorn), spring	Seeds eaten by gamebirds, bear, fox, rabbit, squirrel, deer; nest for songbirds and squirrel	

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Gambel oak <i>Quercus gambelii</i> Nutt. 3211, 3212	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree with rounded crown, 6-70 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel, rabbit, deer, bear	
Gray oak <i>Quercus grisea</i> Liebm. 3211, 3212	Dry rocky hillside, 4,500-8,000 ft	Shrub to tree, 65 ft, evergreen	Nut (acorn), spring	Seeds eaten by songbirds, bear, deer, rabbit, squirrel	
Silverleaf oak <i>Quercus hypoleucoides</i> A. Camus 3211, 3212	Mountain slopes, canyons of oak woodlands, 5,000-7,000 ft, sun	Small evergreen tree with round spreading crown, 15-30 ft, sometimes clumping shrub, 6 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, bear, squirrel, deer	
Mexican blue oak <i>Quercus oblongifolia</i> Torr. 3211, 3212	Foothills, mountains, canyons, 4,500-6,000 ft	Small evergreen tree, to 25 ft	Nut (acorn), spring	Same as <i>Q. hypoleucoides</i>	
Netleaf oak <i>Quercus reticulata</i> (Humb.) Bonpl. 3211, 3212	Uncommon in mountains, canyons, and oak woodlands, 4,000-8,000 ft, sun	Evergreen shrub to tree with rounded crown, 6-40 ft	Nut (acorn), in clusters, spring	Seeds eaten by gamebirds, songbirds, bear, squirrel, deer	
Shrub live oak (scrub oak, California scrub oak, turbinella-oak) <i>Quercus turbinella</i> Greene 3211, 3212	Dry slopes, hill-sides, canyons, 3,000-8,000 ft	Evergreen shrub, to 7 ft	Nut (acorn), late summer-fall	Same as <i>Q. reticulata</i>	Often abundant
Crucillo <i>Randia rhagocarpa</i> Standl. 3212	Open brushlands and thickets	Shrub, 6 ft	Berrylike, spring-summer		
Birchleaf buckthorn <i>Rhamnus betulaeifolia</i> Greene 3211, 3212	Canyons, along streams, in mountains, oak woodland and pine forest, 5,500-7,500 ft	Rounded shrub, 8 ft or less rarely, small tree, to 18 ft	3-seeded, berrylike, May-June	Fruit eaten by gamebirds, bear, squirrel; browsed by deer	
California buckthorn (coffeeberry) <i>Rhamnus californica</i> Esch. 3211, 3212	Common in canyons, along streams, chaparral, open 3,500-7,000 ft, sun and shade	Evergreen shrub to small tree, 6-20 ft	Berrylike fruit, May-July	Same as <i>R. betulaeifolia</i>	
Hollyleaf buckthorn (buckthorn, red berry buckthorn) <i>Rhamnus crocea</i> Nutt. 3211, 3212	Mountains, chaparral, lower pine forests, dry washes, canyons, 3,000-7,000 ft, sun and shade	Spreading evergreen shrub in small tree, 3-15 ft	Berrylike pome, Mar.-May	Fruit eaten by gamebirds and bear; browsed by deer	
Mearns sumac <i>Rhus choriophylla</i> (Woot.) Standl. 3211, 3212	Rocky slopes, 4,000-6,000 ft	Shrub to 7 ft	Small one-seeded drupe, July-Sept.	Fruit eaten by pigeons, turkey, quail; browsed by deer and rabbit	
Scarlet sumac (smooth sumac) <i>Rhus glabra</i> L. 3211, 3212	Rich moist soil, along streams, canyons, ravines, 5,000-7,000 ft, sun and shade	Tall shrub to small tree, to 8 ft, usually forming thickets	One-seeded drupe, June-Aug.	Fruit eaten by quail; browsed by rabbit and deer	
Desert sumac <i>Rhus microphylla</i> Engelm. 3211, 3212	Gravelly or sandy mesas, 4,000-6,000 ft	Shrub, 3-6 ft	One-seeded drupe, Mar.-May	Fruit eaten by quail, songbirds, small mammals	

continued

Table 3210-53.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sugar sumac (sugar bush, mountain-laurel) <u>Rhus ovata</u> Wats. 3211, 3212	Mountain slopes, canyons, in moist soils, 3,000-5,000 ft	Evergreen tree or shrub, to 15 ft	Cluster of berries, late spring		
Squawbush <u>Rhus trilobata</u> Nutt. 3211, 3212	Along streams, in canyons, on slopes in chaparral, 2,500-7,500 ft, sun	Aromatic deciduous shrub, 2-7 ft	Berrylike, Mar.-June	Browsed by deer	
Orange gooseberry <u>Ribes pinetorum</u> Greene 3211, 3212	Rocky slopes, along streams, 7,000-10,000 ft, in coniferous forests, sun and shade	Spiny, sometimes trailing deciduous shrub, 1-3 ft	Several-seeded round berry, Apr.-Sept.	Fruit eaten by game-birds and squirrel; browsed by deer	Alternate host for white pine blister rust
New Mexican locust <u>Robinia neomexicana</u> Gray 3211, 3212	Canyons, mountains, forming almost pure thickets on north facing slopes, 4,000-8,500 ft, sun	Spiny shrub or small tree, to 25 ft	Pod, May-Aug.	Fruit eaten by quail and squirrel; browsed by deer	Effective in reducing erosion
Arizona rose <u>Rosa arizonica</u> Rydb. 3211, 3212	Along streams in pine forests, partial shade, 4,000-9,000 ft	Deciduous shrub, 1-3 ft	Berrylike pome, May-July	Fruit eaten by many gamebirds and mammals	
Western soapberry (wild china-tree, cherioni, jaborcillo) <u>Sapindus drummondii</u> (Hook) Arn. 3211, 3212	Stream banks, canyon sides in upper desert, desert grassland, oak woodland, 2,500-6,000 ft	Large spreading shrub to small tree, to 25 ft	One-seeded berrylike, remaining until spring		Fruit and foliage poisonous to wildlife
Groundsel <u>Senecio</u> spp. L. 3211, 3212	Openings in pine woods, 1,000-10,500 ft, sun	Forb or shrub, 1-3 ft	Achene, July-Oct.		
Squirreltail <u>Sitanion hystrix</u> Nutt. 3211, 3212	Desert slopes to subalpine meadows	Tufted, erect perennial grass, 6-28 in	Stiffly awned grain, year round depending on habitat		A preferred forage
Nightshade (white horse-nettle, silver horse-nettle, bullnettle, trompillo) <u>Solanum elaeagnifolium</u> Cav. 3211, 3212	Fields and roadsides, 1,000-5,500 ft	Herbaceous or slightly woody shrub, 1-3 ft	Small berry, May-Oct.	Fruit eaten by dove, quail, raccoon, skunk	
Sophora (silky sophora, mescal bean, fringeleaf sophora) <u>Sophora</u> spp. L. 3211, 3212	Dry soils, hillsides, 3,500-7,000 ft	Shrub, to 11 ft	Flat pod, Apr.-June		Ornamental, good soil binder; poisonous to livestock
Globe mallow <u>Sphaeralcea</u> spp. St. Hil. 3211, 3212	Dry mesas to pine forests, 1,000-8,000 ft	Erect perennial, 5-50 in	Capsule, fall		
Dropseeds <u>Sporobolus</u> spp. R. Br. 3211, 3212	Open slopes, hills, mesas, 5,000-7,000 ft	Tufted perennial grass, to 6 ft	Grain, spring-fall	Plant eaten by deer	
Sand dropseed <u>Sporobolus cryptandrus</u> Torr. 3211, 3212	Exposed sites on sandy soil, below 7,000 ft	Perennial grass, 15-50 in	Grain, July-Nov.	Plant eaten by deer; seeds eaten by turkey	

continued

Table 3210-53.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sacaton <u>Sporobolus wrightii</u> Scribn. 3211, 3212	River banks, sandy washes, plains and valley flats, 2,000-5,500 ft	Densely tufted perennial grass, to 6 ft	Grain, July-Oct.		
Needlegrass <u>Stipa</u> spp. L. 3211, 3212	Mountain meadows, woodland openings, above 5,000 ft	Perennial grass, 10-30 in	Grain, summer-fall	Plant eaten by deer	
Snowberry <u>Symphoricarpos oreophilus</u> Gray 3211, 3212	Slopes and along streams in mountains, coniferous forests, 5,500-9,000 ft	Erect or trailing shrub, 1-6 ft	Berry, Apr.-Aug.	Browsed by deer	
California cottontop (Arizona cottontop) <u>Trichachne californica</u> Benth. 3212	Open, well-drained soil, often on steep rocky slopes, below 6,000 ft	Erect perennial grass, 14-35 in	Grain, Aug.-Nov.	Plant eaten by rabbit and bighorn sheep	Responds rapidly to precipitation; good forage
Fluffgrass <u>Tridens puchellus</u> Hitchc. 3211, 3212	Dry rocky slopes, plains, below 6,000 ft	Low tufted perennial or annual grass, 6 in	Grain, Apr.-Nov.		Often abundant on overgrazed land
Vervain <u>Verbena</u> spp. L. 3212	Rio Grande plains, 3,000-7,000 ft	Shrub, to 9 ft	Nutlet, summer-fall	Browsed by rabbit	
Canada violet <u>Viola canadensis</u> L. 3211, 3212	Rich moist soils in coniferous forests, 6,000-11,500 ft	Forb 8-16 in	Capsule, Apr.-Sept.	Seeds eaten by dove, quail, turkey; plant eaten by rabbit	
Yucca (soaptree yucca, palmilla) <u>Yucca</u> spp. L. 3211, 3212	Dry rocky slopes, hills and plains, 1,500-6,000 ft	Shrub, 3-6 ft, rarely small tree, to 30 ft	Cylindrical 3-celled capsule	Nectar for hummingbirds; seeds eaten by small mammals	
Spanish dagger (datil, fleshy-fruited yucca, yucca) <u>Yucca baccata</u> Torr. 3211, 3212	Dry rocky slopes of desert grasslands and conifer woodland, 3,000-8,000 ft	Shrub to small tree, 1-20 ft	Large fruit, 6 in long	Nectar for hummingbirds	
Soaptree yucca (palmilla) <u>Yucca elata</u> Engelm. 3211, 3212	Grassland and desert, 1,500-6,000 ft	Shrub to small tree, to 30 ft	Fleshy or dry capsule, May-July	Fruit eaten by songbirds, small mammals	
Spanish bayonet (palma, spanish dagger) <u>Yucca torreyi</u> Shafer 3211, 3212	Scattered on mesas, foothills and plains, 3,500-5,000 ft	Shrub or small tree, 3-16 ft	3-celled capsule	Seeds eaten by songbirds and small mammals	Only in New Mexico and Texas
Desert zinnia <u>Zinnia grandiflora</u> Nutt. 3211, 3212	Dry slopes and mesas, 4,000-6,500 ft	Perennial branched from base, 8 in or less	Achene, May-Oct.		
Desert zinnia <u>Zinnia pumila</u> Gray 3211, 3212	Alluvial plains and slopes, 2,000-5,000 ft	Low shrub with woody stem, 8-11 in	Achene, Apr.-Oct.		
Crooked bush (lotebush, gumdrop tree) <u>Zizyphus obtusifolia</u> T. & G. 3212	Lower plains of Texas	Shrub to small tree, to 15 ft	Drupe, summer-fall	Fruit eaten by dove	

continued

Table 3210-53.2 [R] Ecological Characteristics of Selected Plant Species Common to the Chihuahuan Desert in Riparian Habitats

Species	Habitat	Form	Fruit	General wildlife use	Notes
Acacia <i>Acacia</i> spp. Mill. 3210	Deserts and grass-lands to 5,000 ft	Shrubs or trees, to 12 ft	Pod, spring-summer	Seeds eaten by dove and quail; browsed by deer and rabbit	
Box-elder <i>Acer negundo</i> L. 3210	Moist soil along streams, 4,000-8,000 ft, sun and shade	Deciduous tree up to 50 ft, broad rounded crown	Paired samara, Apr.	Seeds eaten by quail, bear, beaver, rabbit, squirrel, fox; browsed by deer	
Iodinebush (pickleweed) <i>Allenrolfea occidentalis</i> (Wats.) Ktze. 3210	Highly alkaline flats and sinks, salt marshes, floodplains	Shrub, 1-5 ft	Berry-like, May-Nov.		
Carrizo (giant reed, Georgia cane) <i>Arundo donax</i> L. 3210	Sand bars and levees, near rivers and lakes	Cane-like grass forming clumps, culms to 15 ft	Plume-like panicle, summer-fall	Provides cover	Native to Old World
Baccharis <i>Baccharis</i> spp. L. 3210	Along water courses, 500-8,000 ft	Deciduous shrub, to 7 ft	Achene, Apr.-Feb.		
Seepwillow <i>Baccharis glutinosa</i> Pers. 3210	Moist soil along streams, to 5,500 ft, sun	Willow-like deciduous shrub, to 7 ft	Achene, Mar.-Dec.		Often forming thickets
Sedge <i>Carex</i> spp. L. 3210	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun	Perennial grass-like erect herb, 2-4 ft	Achene in spikes, spring	Seeds eaten by game-birds, bear, rabbit, squirrel, fox; plant eaten by deer	
Desert hackberry <i>Celtis pallida</i> Torr. 3210	Foothills, mesas, 1,500-3,500 ft	Spiny, densely branched deciduous shrub, 3-10 ft	Oval, one-seeded drupe, spring	Fruit eaten by dove, quail, numerous small species; browsed by deer	Often forming thickets, ornamental
Netleaf hackberry (curnero, paloblanco, western hackberry) <i>Celtis reticulata</i> Torr. 3210	Streams, canyons, washes, moist soil, 3,500-6,000 ft	Deciduous, large shrub to small tree, to 30 ft	One-seeded drupe	Fruit eaten by game-birds	
Desert-willow (desert catalpa) <i>Chilopsis linearis</i> Cav. 3210	Mostly along washes, in foothills and deserts	Large shrub to small tree, to 30 ft	Long, narrow pod		Good soil binder
Lotebush <i>Condalia</i> spp. Cav. 3210	Rio Grande plains	Shrub to small tree, 3-15 ft	Drupe, summer-fall	Fruit eaten by dove, fox, ringtail cat	
Mustard <i>Cruciferae</i> spp. Juss. 3210	Ubiquitous	Herbaceous or suffrutescent, annual or perennial	Capsule	Seeds eaten by numerous species	
Buffalo-gourd <i>Cucurbita foetidissima</i> HBK. 3210	Alluvial soil, 1,000-7,000 ft	Perennial trailing herb, to 20 ft long	Gourd-like, May-Aug.		
Bermuda grass <i>Cynodon dactylon</i> (L.) Pers. 3210	Moist waste areas, low altitudes	Stoloniferous perennial grass	Grain	Seeds eaten by water-fowl, mammals	Introduced

continued

Table 3210-53.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Saltgrass <u>Distichlis spicata</u> (L.) Greene 3210	Saline or alkaline marshes, lakes	Perennial grass, to 1 ft	Grain, summer-fall	Seeds eaten by waterfowl and marsh birds	
Spikerush <u>Eleocharis</u> spp. R. Br. 3210	Moist soil along streams or in forests, 150-3,000 ft	Upright herb, leafless, 1-3 ft	Achene in spikelets, spring	Seeds eaten by gamebirds; plant eaten by rabbit and muskrat	
Filaree (heron-bill) <u>Erodium cicutarium</u> L. 3210	Rocky or sandy soils, ubiquitous	Prostrate, annual	Ellipsoid seed, Feb.-June	Seeds eaten by numerous species	Excellent spring forage
Velvet ash <u>Fraxinus velutina</u> Torr. 3210	Moist soils of stream banks, washes, canyons, 2,500-7,000 ft, sun	Small to medium tree, round crown, to 40 ft	Long winged samara, Mar.-May	Seeds eaten by gamebirds, songbirds, squirrel; browsed by deer; nest cover for squirrel and songbirds	
Rose mallow <u>Hibiscus</u> spp. L. 3210	Marshes, lakes, ponds, streams, wet soils	Perennial, to 6 ft	Capsule, May-Oct.		
Janusia <u>Janusia gracilis</u> Gray 3210	Moist to dry, rocky, 1,000-5,000 ft	Twining, tangled, slender stems	Samaras, Apr.-Oct.		
Rush <u>Juncus</u> spp. L. 3210	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grass-like herb, 2-4 ft	Capsule, spring	Forage	
Texas mulberry <u>Morus microphylla</u> Buckl. 3210	Moist soil along streams, washes, canyons, rocky slopes, below cliffs, 2,000-6,000 ft, sun or shade	Large shrub or small tree, in dense clumps, up to 20 ft	Oblong cluster of berries, Apr.	Fruit eaten by songbirds, fox, squirrel	
Reed <u>Phragmites communis</u> Trin. 3210	Wet places and alkalai sinks, below 5,000 ft	Tall perennial reed, up to 12 ft	Grain, July-Dec.		
Camphor-weed (salt-marsh fleabane) <u>Pluchea camphorata</u> (L.) DC. 3210	Alluvial and saline soils along streams, rivers, marshes	Perennial herb to 5 ft	Achene, Sept.-Oct.	Cover	
Lanceleaf cottonwood <u>Populus acuminata</u> Rydb. 3210	Canyons and valleys around springs, streams, and water tanks	Tree to 55 ft, with compact domelike crown	Ovoid-ellipsoid, 1 cm. long, Apr.-June	Seeds eaten by gamebirds and songbirds; nest cover for songbirds and raptors	
Narrowleaf cottonwood <u>Populus angustifolia</u> James 3210	Moist soils, along streams, 5,000-7,000 ft, sun	Tree to 50 ft, narrow crown	Seed capsule, spring	Seeds eaten by gamebirds and squirrel; browsed by rabbit; nest cover for songbirds and squirrel	Suitable for erosion control
Arizona cottonwood (chopo) <u>Populus arizonica</u> Sarg. 3210	Banks and sand-gravel bars of rivers and streams, springs and tanks	Tree to 80 ft, with broad spreading crown	Deeply pitted globose fruits, Feb.-Apr.	Same as <u>P. acuminata</u>	
Honey mesquite (honeylocust, algaroba) <u>Prosopis glandulosa</u> Torr. 3210	Desert areas, sandy to silty soils	Shrub or tree, to 10 ft	Pod, Apr.-Aug.	Important food and cover for numerous species	Becomes abundant on disturbed grasslands

continued

Table 3210-53.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Screwbean mesquite (tornillo) <i>Prosopis pubescens</i> Benth. 3210	Bottomlands along desert streams and water holes, up to 4,000 ft	Large shrub or small tree, 6-30 ft	Pod, May	Seeds eaten by dove, quail, numerous other species	
Arizona white oak <i>Quercus arizonica</i> Sarg. 3210	Moist soil along streams, canyons, oak woodland foothills, mountains, 5,000-7,600 ft	Tree with irregular spreading crown, 30-60 ft	Nut (acorn), spring	Food and cover for many birds and mammals	
Emory oak <i>Quercus emoryi</i> Torr. 3210	Moist soil along streams, canyons, oak woodland foothills, mountains, 4,000-7,000 ft, sun	Tree, with spreading crown, 20-50 ft	Nut (acorn), spring	Seeds eaten by gamebirds, bear, fox, rabbit, squirrel, deer; nest for songbirds and squirrel	
Sumac <i>Rhus</i> spp. L. 3210	Streams to rocky slopes, to 7,500 ft	Shrub or occasionally a tree, to 15 ft	Drupe, spring-fall	Fruit eaten by quail; browsed by rabbit and deer	
Watercress <i>Rorippa</i> spp. Scop. 3210	Moist soil along streams or in streams, 1,500-9,500 ft, shade	Small prostrate forb, 6-18 in	Globose capsule, spring		
Willow <i>Salix</i> spp. L. 3210	Moist soil along streams, 3,500-9,500 ft, sun	Tree, 15-50 ft	Seed capsule in catkins, Mar.	Browsed by beaver; seeds eaten by squirrel	Prevents erosion and invades burned forest areas
Goodding willow <i>Salix gooddingii</i> Ball 3210	Along streams and rivers, 150-5,000 ft	Tree, 20-50 ft	Capsule, spring	Seeds eaten by numerous species, birds, small mammals, browsers	Important for stream-bank protection
Mexican elder (Arizona elder, tapiro) <i>Sambucus mexicana</i> Prest. 3210	Along streams and river banks, 1,200-5,000 ft elevation	Shrub or tree, to 30 ft	Dark-blue fruits, 6 mm. diameter	Fruit eaten by gamebirds, songbirds, mammals	Often cultivated as ornamentals
Western soapberry (wild china-tree, cherioní, jaboncillo) <i>Sapindus drummondii</i> H. & A. 3210	Stream banks, canyon sides in upper desert, desert grassland, oak woodland, 2,500-6,000 ft	Large spreading shrub to small tree, to 25 ft	One-seeded berry-like, remaining throughout winter		Fruit and foliage poisonous to wildlife
Climbing milkweed <i>Sarcostemma</i> spp. R. Br. 3210	Streams, washes, moist places, to 6,000 ft	Stems twining along ground or over bushes	Follicle, Mar.-Oct.		
Bulrush <i>Scirpus</i> spp. L. 3210	Marshes, ponds, streams, rivers, to 9,000 ft	Perennial, to 6 ft	Achene, spring-fall	Seeds eaten by waterfowl, marshbirds, muskrats	
Bulrush <i>Scirpus pallidus</i> Britt. 3210	Along streams and wet meadows, lakes, sloughs	Rhizomatous perennial, culms to 5 ft	Achene, summer	Same as <i>Scirpus</i> spp.	
Inkweed (Torrey sea-blight, iodine weed) <i>Suaeda torreyana</i> Wats. 3210	Saline flats with subsurface soil moisture below 5,000 ft	Shrub, 2-3 ft	Utricle enclosed by fleshy perianth		
Saltcedar (tamarisk) <i>Tamarix pentandra</i> Pall. 3210	Moist soil along streams, up to 5,000 ft	Large shrub, small tree, usually forming dense thickets, 10-25 ft	Capsule in spikes, Mar.-Aug.		Often grows in saline soil, usually considered undesirable except for erosion control

continued

Table 3210-53.2 [R] (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Arrow-weed <i>Tessaria sericea</i> Nutt. 3210	Along streams, rivers, marshes	Shrub to 3 ft or more, willow-like	Achene, summer	Cover	
Cat-tails <i>Typha</i> spp. L. 3210	Moist soil along streams, ditches, lakes, ponds, to 7,000 ft, sun and shade	Tall perennial herb with round stem, 3- 8.5 ft	Fruit and flowers in long, terminal spikes, June-July	Seeds eaten by ducks and geese	
Canyon grape <i>Vitis arizonica</i> Engl. 3210	Moist soil along streams, canyons, often climbing on trees, 2,000- 7,000 ft, shade	Climbing or trailing woody vine	One-seeded berry, Apr.-July	Fruit eaten by numerous gamebirds and mammals	

54 PROVINCE 3220 American Desert (Mojave—Colorado—Sonoran)

SECTION 3221, CREOSOTE BUSH

The Creosote Bush Section includes most of the Mojave Desert. The Mojave Desert lies between the colder Great Basin Desert, merging with it to the north, and the warmer, subtropical Sonoran Desert, with which it merges to the south. Both Great Basin and Sonoran Desert species are represented as well as a number of endemics.

The Mojave Desert is an upland desert with elevations between 2000 and 5000 feet. Death Valley, however, which is located within the province, is 280 feet below sea level. Lying within the rainshadow of the southern Sierra Nevada, Tehachapi, San Gabriel, San Bernardino, and Little San Bernardino mountains, much of the Mojave Desert receives less than 4 or 5 inches of precipitation annually. Most of this precipitation occurs during the winter and spring; winter precipitation occasionally occurs as snow but rapidly melts. The localized summer rains are of great intensity and erosional power, often washing out roads and trails and altering the surface of the land in a matter of hours.

Several of the numerous mountain ranges within this section, such as the Spring, Clark, and Sheep mountains, exceed 11,000 feet elevation. Total annual precipitation on these mountain gradients increases at a rate of approximately 5 inches per 1000 feet increase in elevation (Shreve 1915; Lull and Ellison 1950). The climatic and topographic features of these mountains support several major biotic communities other than desertscrub. For more information on succession and climax communities see section 52.

Mojave Desertscrub

The Mojave desertscrub occurs below 4500 to 5200 feet elevation, mostly between 1000 and 4000 feet, in large, undrained, nearly level basins separated by mountain

ranges with gently sloping bajadas. Annual precipitation in this shrub-dominated community averages 5 to 11 inches but is generally much less than 10 inches. Annual flowering plants may be abundant during winter and spring rainy seasons. A few species of cacti are present. Creosote bush and/or white bur sage predominate. Mesquites and cat-claw are common along the dry washes.

Interior Chaparral

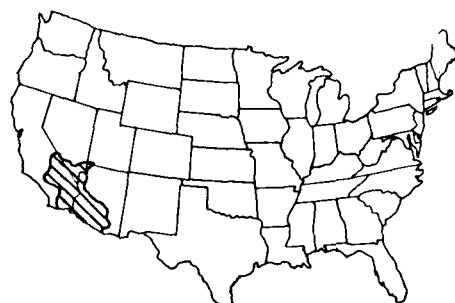
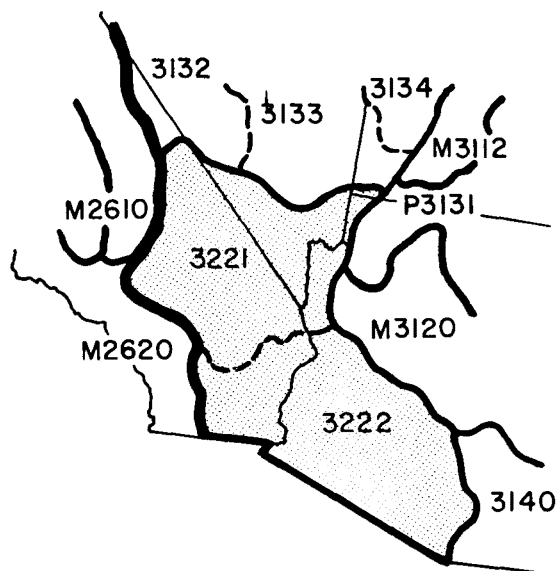
Interior chaparral is characteristically composed of tough-leaved evergreen shrubs, generally between 3 and 6 feet in height. Occurring in favored locales between 4500 and 6000 feet elevation, this community is an intermediate between desertscrub and conifer woodland. Scrub live oak and manzanita are common dominants in portions of the New York, Spring, and other mountains.

Great Basin and Rocky Mountain Conifer Woodland

The Great Basin and Rocky Mountain conifer woodland occurs between 5500 and 7500 feet (and higher) where annual precipitation is generally between 12 and 21 inches. The woodland is dominated by evergreen junipers and pinyon pine with an understory of grassland, chaparral, or desertscrub. Dominant overstory species are generally less than 20 feet in height and include Utah juniper, California juniper, and singleleaf pinyon.

Rocky Mountain Montane Conifer Forest

The Rocky Mountain montane conifer forest is often dominated by nearly pure stands of ponderosa pine or white fir with Douglas-fir occasionally dominating canyons and north- and east-facing slopes. This community, restricted to the Spring, Clark, and Charleston mountains, is generally found between 6000 and 9500 feet but may extend down to about 5500 feet in north-facing slopes and up to about 10,000 feet on south-facing slopes. Annual precipitation usually averages 20 to 30 inches.



Location of province
within the United States



Location of sections
within the province



Province boundary



Section boundary



State boundary

Figure 54.1 Province 3220, American Desert (Mojave—Colorado—Sonoran); Sections 3221, Creosote Bush, and 3222, Creosote Bush—Bur Sage

SECTION 3222, CREOSOTE BUSH—BUR SAGE

The Creosote Bush—Bur Sage Section engages much of the Sonoran Desert and is therefore principally Sonoran desertscrub vegetation. Much of the western portion of this section lies at or near sea level; this desert is the hottest of the North American deserts. The Salton Sink of southern California, in which the Salton Sea lies, is an enclosed basin 273 feet below sea level at its lowest point. Places along the Colorado River, which traverses the section, are at or near 100 feet elevation. Numerous small granitic hills and volcanic mountains of about 4000 feet elevation (e.g., Sierra Estrella, Castle Dome, Gila, Mohawk, and the Cabeza Prieta Mountains) are scattered throughout the area, becoming increasingly abundant eastward. Several mountain ranges (e.g., the Sierrita and Baboquivari mountains) in the southeastern portion of this section rise to over 7000 feet. The eastern boundary, as delineated by Bailey (1976), is near the peaks of the Santa Rita and Santa Catalina mountains, rising to over 9000 feet.

The eroded materials carried down from the hills and mountains, form broad, outwash detrital fans or bajadas which generally slope down to the centers of wide valleys. The Algodones Dunes of southeastern California are the largest in the Sonoran Desert, with their 5 mile width and 50 mile southerly extension into northern Baja California, Mexico.

Most of this section has a southwestern climatic pattern (Kincer 1922) characterized by a biseasonal regime of periods of rain separated by periods of drought. Precipitation normally occurs in the summer months of July through September and in the winter months of December through February or March. The spring drought is usually the most severe; May and June are often totally rain-free. Winter rains are usually gentle and may last for several days. In contrast, summer rains are typically conventional in nature—intense and very local (Lowe 1964). Annual precipitation in the lower western desert areas, which receive mostly winter rain, ranges from less than 4 inches to 13 inches in the eastern parts where both winter and summer precipitation occurs. Total precipitation increases on mountain gradients at a rate of approximately 5 inches per 1000 feet increase in elevation (Shreve 1915; Lull and Ellison 1950); the peaks of the higher mountains in the southeastern areas average greater than 20 inches annually.

Sonoran Desertscrub

The Sonoran desertscrub occupies most of the geographical area of Section 3222. This biotic community is divided into two major vegetative subdivisions: Arizona Upland and Lower Colorado River (Shreve 1915). Basically, the northeastern half of the section is Arizona Upland; the southeastern half is Lower Colorado River. Due to the vegetational differences of these two major divisions and the large geographical area that each occupies, they are discussed individually.

Arizona Upland associations — Arizona upland associations are frequently comprised of small-leaved desert

trees, shrubs, and numerous cacti. This community is best developed on rocky hills, bajadas, and other coarse-soiled slopes from about 2500 to 4000 feet elevation. The principal desert trees, generally under 30 feet in height, include yellow paloverde, saguaro, and ironwood. The associated shrubs are much more varied than the trees; as many as 15 or more shrub species are present at some locales. Prominent shrubs often include triangle bur sage and brittle bush. For the purposes of this report, the desert “riparian” association occurring along dry arroyos and washes is considered as part of the Arizona Upland association. Dominant species along these dry washes include blue paloverde, mesquite, cat-claw, western hackberry, and desert-willow.

Lower Colorado River associations — The Lower Colorado River associations are composed mainly of shrubs and dwarf shrubs, usually without trees except for those occurring along dry washes. This community ranges from sea level and below up to about 2500 or 3000 feet elevation. Annual precipitation generally averages 4 to 7 inches. The principal dominant species are creosote bush and white bur sage. For purposes of this manual, the Algodones Dunes and other sand areas in the western part of Section 3222 and their respective vegetation are treated as part of the Lower Colorado Desert association. The most conspicuous plants of the dunes include big galleta and wild buckwheat.

Interior Chaparral

The interior chaparral is characteristically dominated by tough-leaved evergreen shrubs between 3 and 6 feet in height with an occasional taller shrub or short tree that is usually an oak or juniper. Chaparral occurs at 4000 to 6000 feet in the Harquahala, Harquavar, and Poachie mountains with desertscrub below. Annual precipitation usually averages 13 to 23 inches. At some sites, tall stands of birchleaf mountain-mahogany may reach over 10 feet in height. Scrub live oak is the most common dominant and in some areas may comprise 90 percent of the stand.

Semidesert Grassland

Semidesert grassland is a highly diverse admixture of grasses and various weedy shrubs occurring in the eastern portions of this section above the desertscrub and below chaparral or Madrean evergreen woodland, generally between 3500 and 5000 feet elevation. Annual precipitation usually averages 10 to 15 inches. Common grasses include grammas, three-awn, cane, beardgrass, tobosa, and bush muhly, while common associated shrubs include bear grass, acacias, mimosas, mesquite, burroweed, and snakeweeds. Shrubs are proportionately more common in the lower elevational areas, particularly where overgrazing has reduced the density of perennial grasses. Burroweed and snakeweed are commonly very abundant dominants in highly overgrazed or disturbed areas.

Madrean Evergreen Woodland

The Madrean evergreen woodland is best developed on the foothills and lower slopes of the larger mountains, at elevations between 4000 and 7000 feet and an annual

precipitation of about 12 to 23 inches. This community is dominated by evergreen oaks, junipers, and pinyons; the oaks generally are most abundant. Arizona cypress, a tall tree, occurs in isolated relict stands within canyons.

SECTION 3221, CREOSOTE BUSH (RIPARIAN COMMUNITIES)

Temperate Riparian

Cottonwood—willow forests and woodlands — Cottonwood—willow forests and woodlands occur in Section 3221, principally along the Mojave and Colorado rivers and tributaries of the Colorado River, and along the Moapa (Muddy) and Virgin rivers, and the perennial-flowing section of Meadow Valley Wash (Bradley and Deacon 1965). Forests and woodlands are generally confined to riparian environments on clay or other fine soils and rock deposits where streamflows are either perennial or nearly so. The understory of these communities may be open and parklike, or may be a tangle of riparian trees and shrubs. Indications are that these communities are maintained through periodic winter-spring flooding. Stabilized water flows results in decadent stands in which the dominant species are lacking in reproduction. Cottonwood regenerates itself principally from seed, unlike other broadleaf riparian species that reproduce by sprouting, forming clones (Horton et al. 1960).

Riparian scrublands — Riparian scrublands are extensive in Section 3221. Winter-deciduous mesquite scrublands occur principally along the Colorado, Moapa (Muddy), and Virgin rivers as well as along the perimeters of desert springs such as those at Ash Meadows, Railroad, White River, Pahrnagat, and Moapa valleys. Mesquite grows with arrow-weed, several saltbushes, and, not uncommonly, cottonwood. Water diversion, flood control, agricultural clearing programs, and, principally, dropping water tables have reduced these communities in many areas (Bradley and Deacon 1965).

Increasingly, the deciduous saltcedar may now share or dominate local riparian situations (Bradley and Deacon 1965). The understory, if present, is often composed of iodinebush, saltgrass, saltbush, and inkweed. Where intermittent flooding and/or slowly receding summer surface flow occurs, adventive understory tends to replace mesquite, especially in areas that have been cleared or burned and where ground water is close to the surface and water-storage facilities and agricultural tracts are present upstream. The aggressive ability of saltcedar to out-compete native riparian species after summer flooding has been well-documented by Turner (1974) and Warren and Turner (1975).

Marshlands — Marshlands are rare in Section 3221; limited to the Colorado, Virgin, and Moapa rivers and Meadow Valley Wash and to desert springs such as those at Ash Meadows, Railroad, White River, Pahrnagat, and Moapa valleys (Bradley and Deacon 1965).

The principal plant constituents of these aquatic

communities are emergents that normally have their basal portions annually, periodically, or continually submerged. Not included as principal constituents are trees, woody shrubs, or nonhalophytic grasses. Both fresh and brackish water environments are included in these wetland formations. Dominants range from the more xeric and alkali communities of saltgrass and alkali bulrush through the carrizo, or reed, communities to the more mesic freshwater communities of rushes, sedges, bulrushes, and cat-tail.

SECTION 3222 CREOSOTE BUSH—BUR SAGE (RIPARIAN COMMUNITIES)

Cottonwood—Willow Riparian Forests and Woodlands

Interrupted cottonwood—willow riparian forests and woodlands are still present along the Verde, Hassayampa, Bill Williams, Colorado rivers and other major streamways, although most of the once extensive forests have been greatly diminished over the last 100 years due to diversion, interruption, and elimination of streamflow (Davis 1973). Generally confined to riparian environments below 3500 feet elevation on clay or other fine soils and rock deposits where streamflows are either perennial or nearly so (Brown and Lowe 1973), indications are that these communities are maintained through periodic winter-spring flooding. Stabilized water flows result in decadent stands in which the dominant species are lacking in reproduction. Cottonwood regenerates itself principally from seed, unlike sycamore and other broadleaf riparian species that reproduce by sprouting, forming clones (Horton et al. 1960). The understory of these communities may be open and parklike or a tangle of riparian trees and shrubs.

Mesquite—Saltcedar Woodlands

While many of the famous bosques, such as the ones at San Xavier, Komatke (New York Thicket), and Texas Hill, are today mostly of historical interest, some excellent remnants remain along the Santa Maria and Verde rivers, on the Robbins Butte Wildlife Area adjacent to the Gila River, along the upper middle Gila, and in scattered patches along other Lower Sonoran watercourses.

Several thousand acres of Federal land along the Gila River, much of which is saltcedar and mesquite, have been withdrawn under Public Law 1015 as the "Fred Weiler Greenbelt." Other areas receiving some degree of protection include the mesquite bosques on the Tonto National Forest lands along the Verde River and on the Black Butte Wildlife Management Area maintained by the Arizona Game and Fish Department. For a general discussion of this community, see section 53.

Marshlands

Marshlands, found principally on the Colorado, Lower Gila, Salt, and Verde rivers, occur only where the shallow streams experience periodic flooding. Marshlands have disappeared in many areas as a result of

water diversions and water "management" projects (Ohmart 1974). Other examples of marshlands in this section include Picacho Lake, Quigley Pond, and elsewhere, as local conditions permit. Many of these marshland communities are now dependent upon stored and/or recycled agricultural and waste waters.

Table 3220-54.1 [3221] Selected Plant Species Common to the Creosote Bush Section

Growth form	Plant associations	
	<u>Habitat: Mojave Desertscrub</u>	
Medium trees, 20-40 ft	<u>Prosopis juliflora</u> <u>Yucca brevifolia</u>	Mesquite Joshua tree
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Chilopsis linearis</u>	Cat-claw Desert-willow
Low to medium shrubs, under 10 ft	<u>Acamptopappus sphaerocephalus</u> <u>Ambrosia dumosa</u> <u>Ambrosia eriocentra</u> <u>Atriplex confertifolia</u> <u>Coleogyne ramosissima</u> <u>Dalea fremontii</u> <u>Encelia farinosa</u> <u>Eurotia lanata</u> <u>Ferocactus wislizenii</u> <u>Grayia spinosa</u> <u>Krameria parvifolia</u> <u>Larrea divaricata</u> <u>Lycium andersonii</u> <u>Lycium pallidum</u> <u>Menodora spinescens</u> <u>Mentzelia nitens</u> <u>Opuntia</u> spp. <u>Opuntia basilaris</u> <u>Penstemon microphyllus</u> <u>Salazaria mexicana</u> <u>Salvia mohavensis</u> <u>Yucca baccata</u> <u>Yucca schidigera</u>	Goldenhead White bur sage Woolly bur sage Shadscale Blackbrush Fremont dalea Brittle bush Winter-fat Barrel cactus Spiny hop-sage Ratany Creosote bush Anderson thornbush Pale lycium Spiny menodora Blazing-star Prickly pear Beavertail Bush penstemon Bladder sage Mojave sage Spanish dagger Mojave yucca
Lesser vegetation	<u>Abronia villosa</u> <u>Aster abatus</u> <u>Oenothera brevipes</u> <u>Stanleya pinnatifida</u>	Hairy sand verbena Mojave aster Yellow cups Prince's plume
	<u>Habitat: Interior Chaparral</u>	
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus betuloides</u> <u>Cercocarpus breviflorus</u> <u>Juniperus monosperma</u> <u>Quercus emoryi</u> <u>Rhus ovata</u>	Birchleaf mountain-mahogany Hairy mountain-mahogany One-seeded juniper Emory oak Sugar sumac
Low to medium shrubs, under 10 ft	<u>Amorpha californica</u> <u>Arctostaphylos pringlei</u> <u>Arctostaphylos pungens</u> <u>Berberis haematocarpa</u> <u>Brickellia californica</u> <u>Ceanothus greggii</u> <u>Ceanothus integerrimus</u> <u>Cowania mexicana</u> <u>Eriodictyon angustifolium</u> <u>Fallugia paradoxa</u> <u>Fremontia californica</u> <u>Garrya flavescens</u> <u>Garrya wrightii</u> <u>Haplopappus laricifolius</u> <u>Mimosa biuncifera</u> <u>Quercus turbinella</u> <u>Rhamnus betulaeifolia</u> <u>Rhamnus californica</u> <u>Rhamnus crocea</u> <u>Rhus trilobata</u> <u>Sophora</u> spp.	Mock locust Manzanita Pointleaf manzanita Barberry California brickellia California lilac Deer brush Cliffrose Yerba santa Apache plume Flannel bush Silk-tassel Silk-tassel Turpentine-bush Wait-a-minute bush Shrub live oak Birchleaf buckthorn California buckthorn Hollyleaf buckthorn Squawbush Sophora

continued

Table 3220-54.1 [3221] (Continued)

Growth form	Plant associations	
	<u>Interior Chaparral (Continued)</u>	
Lesser vegetation	<u>Andropogon barbinodis</u> <u>Aristida longiseta</u> <u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Eragrostis intermedia</u> <u>Lycurus phleoides</u> <u>Muhlenbergia porteri</u>	Cane beardgrass Red three-awn Side-oats grama Black grama Blue grama Plains lovegrass Wolftail Bush muhly
	<u>Habitat: Conifer Woodland--Rocky Mountain Fasciation</u>	
Tall trees, over 40 ft	<u>Quercus gambelii</u>	Gambel oak
Medium trees, 20-40 ft	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus edulis</u> <u>Pinus monophylla</u>	Utah juniper Rocky Mountain juniper Colorado pinyon Singleleaf pinyon
Low trees and tall shrubs, 10-20 ft	<u>Juniperus monosperma</u> <u>Yucca baccata</u>	One-seeded juniper Spanish dagger
Low to medium shrubs, under 10 ft	<u>Amelanchier utahensis</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Berberis fremontii</u> <u>Ceanothus fendleri</u> <u>Chamaebatiaria millefolium</u> <u>Chrysothamnus depressus</u> <u>Chrysothamnus nauseosus</u> <u>Cowania mexicana</u> <u>Ephedra viridis</u> <u>Fallugia paradoxa</u> <u>Opuntia basilaris</u> <u>Opuntia fragilis</u> <u>Opuntia polycantha</u> <u>Opuntia whipplei</u> <u>Purshia tridentata</u> <u>Quercus turbinella</u>	Utah serviceberry Black sagebrush Big sagebrush Barberry Buckbrush Fernbush Rabbit brush Rabbit brush Cliffrose Mormon tea Apache plume Beavertail Little prickly pear Plains prickly pear Whipple cholla Antelope brush Shrub live oak
Lesser vegetation	<u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Festuca arizonica</u> <u>Koeleria cristata</u> <u>Muhlenbergia torreyi</u> <u>Oryzopsis hymenoides</u> <u>Piptochaetium fimbriatum</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u> <u>Stipa</u> spp.	Side-oats grama Black grama Blue grama Arizona fescue Mountain junegrass Ring muhly Indian rice-grass Pinyon rice-grass Squirreltail Sand dropseed Needlegrass
	<u>Habitat: Montane Conifer Forest--Rocky Mountain Fasciation</u>	
Tall trees, over 40 ft	<u>Abies concolor</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u> <u>Quercus arizonica</u> <u>Quercus gambelii</u>	White fir Limmer pine Ponderosa pine Quaking aspen Douglas-fir Arizona white oak Gambel oak
Medium trees, 20-40 ft	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus edulis</u>	Utah juniper Rocky Mountain juniper Colorado Pinyon
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus breviflorus</u> <u>Cercocarpus ledifolius</u> <u>Robinia neomexicana</u> <u>Sambucus cerulea</u>	Hairy mountain-mahogany Curleaf mountain-mahogany New Mexican locust Canadian elder

continued

Table 3220-54.1 [3221] (Concluded)

Growth form	Plant associations	
<u>Montane Conifer Forest--Rocky Mountain Fasciation (Continued)</u>		
Low to medium shrubs, under 6 ft	<u>Arctostaphylos patula</u>	Greenleaf manzanita
	<u>Artemisia nova</u>	Black sagebrush
	<u>Artemisia tridentata</u>	Big sagebrush
	<u>Berberis repens</u>	Oregon-grape
	<u>Ceanothus fendleri</u>	Buckbrush
	<u>Chamaebatiaria millefolium</u>	Fernbush
	<u>Chrysothamnus parryi</u>	Parry rabbit brush
	<u>Cowania mexicana</u>	Cliffrose
	<u>Fallugia paradoxa</u>	Apache plume
	<u>Fendlerella utahensis</u>	Fendlerella
	<u>Gutierrezia sarothrae</u>	Snakeweed
	<u>Holodiscus dumosus</u>	Ocean spray
	<u>Jamesia americana</u>	Cliffbush
	<u>Philadelphus microphyllus</u>	Mock orange
	<u>Physocarpus monogynus</u>	Ninebark
	<u>Ribes cereum</u>	Wax currant
	<u>Rubus strigosus</u>	Raspberry
	<u>Symphoricarpos oreophilus</u>	Snowberry
Lesser vegetation	<u>Ambrosia psilostachya</u>	Ragweed
	<u>Artemisia spp.</u>	Sagebrush
	<u>Artemisia ludoviciana</u>	Sagebrush
	<u>Blepharoneuron tricholepis</u>	Pine dropseed
	<u>Bouteloua gracilis</u>	Blue grama
	<u>Bromus marginatus</u>	Mountain brome
	<u>Erigeron divergens</u>	Fleabane
	<u>Erigeron flagellaris</u>	Wild daisy
	<u>Festuca arizonica</u>	Arizona fescue
	<u>Koeleria cristata</u>	Mountain junegrass
	<u>Muhlenbergia montana</u>	Mountain muhly
	<u>Muhlenbergia rigens</u>	Deergrass
	<u>Muhlenbergia wrightii</u>	Spike muhly
	<u>Pachystima myrsinites</u>	Myrtle boxleaf
	<u>Poa fendleriana</u>	Muttongrass
	<u>Sitanion hystrix</u>	Squirreltail
	<u>Sporobolus interruptus</u>	Black dropseed
	<u>Thalictrum fendleri</u>	Meadow-rue
<u>Vicia americana</u>	American vetch	

Table 3220-54.1 [3222] Selected Plant Species Common to the Creosote Bush--Bur Sage Section

<u>Habitat: Sonoran Desertscrub--Arizona Upland Association</u>		
Medium trees, 20-40 ft	<u>Celtis reticulata</u>	Netleaf hackberry
	<u>Cercidium floridum</u>	Blue paloverde
	<u>Cereus giganteus</u>	Saguaro
	<u>Chilopsis linearis</u>	Desert-willow
	<u>Olneya tesota</u>	Ironwood
	<u>Prosopis juliflora</u>	Mesquite
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u>	Cat-claw
	<u>Canotia holacantha</u>	Crucifixion thorn
	<u>Cercidium microphyllum</u>	Yellow paloverde
	<u>Cereus thurberi</u>	Organpipe cactus
	<u>Fouquieria splendens</u>	Ocotillo
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u>	White-thorn
	<u>Ambrosia ambrosioides</u>	Canyon ragweed
	<u>Ambrosia deltoidea</u>	Triangle bur sage
	<u>Celtis pallida</u>	Spry hackberry
	<u>Dodonaea viscosa</u>	Hopbush
	<u>Echinocereus spp.</u>	Hedgehog cactus
	<u>Encelia farinosa</u>	Brittle bush
	<u>Eriogonum wrightii</u>	Deer buckwheat
	<u>Ferocactus wislizenii</u>	Barrel cactus

continued

Table 3220-54.1 [3222] (Continued)

Growth form	Plant associations	
<u>Sonoran Desertscrub--Arizona Upland Association (Continued)</u>		
Low to medium shrubs -- (Continued)	<u>Holacantha emoryi</u>	Crucifixion thorn
	<u>Krameria grayi</u>	White ratany
	<u>Krameria parvifolia</u>	Ratany
	<u>Larrea divaricata</u>	Creosote bush
	<u>Lycium spp.</u>	Wolfberry
	<u>Mammillaria microcarpa</u>	Fish-hook cactus
	<u>Opuntia fulgida</u>	Jumping cholla
	<u>Opuntia leptocaulis</u>	Desert Christmas cactus
	<u>Opuntia phaeacantha</u>	Prickly pear
	<u>Opuntia spinosior</u>	Cane cholla
Lesser vegetation	<u>Simmondsia chinensis</u>	Jojoba
	<u>Bouteloua rothrockii</u>	Rothrock grama
	<u>Muhlenbergia porteri</u>	Bush muhly
	<u>Tridens puchellus</u>	Fluffgrass
<u>Habitat: Sonoran Desertscrub--Lower Colorado Association</u>		
Medium trees, 20-40 ft	<u>Prosopis juliflora</u>	Mesquite
	<u>Washingtonia filifera</u>	California fan palm
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u>	Cat-claw
	<u>Bursera microphylla</u>	Elephant-tree
	<u>Dalea spinosa</u>	Smoke tree
	<u>Prosopis pubescens</u>	Screwbean mesquite
	<u>Tamarix pentandra</u>	Tamarisk
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u>	White-thorn
	<u>Allenrolfea occidentalis</u>	Pickleweed
	<u>Ambrosia dumosa</u>	White bur sage
	<u>Atriplex canescens</u>	Four-wing saltbush
	<u>Atriplex tentiformis</u>	Quailbrush
	<u>Atriplex polycarpa</u>	Desert saltbush
	<u>Eriogonum deserticola</u>	Wild buckwheat
	<u>Hyptis emoryi</u>	Desert lavender
	<u>Larrea divaricata</u>	Creosote bush
	<u>Lycium spp.</u>	Wolfberry
	<u>Lycium andersonii</u>	Anderson thornbush
	<u>Nolina bigelovii</u>	Tree nolina
	<u>Suaeda torreyana</u>	Inkweed
	Lesser vegetation	<u>Hilaria rigida</u>
<u>Oryzopsis hymenoides</u>		Indian rice-grass
<u>Habitat: Interior Chaparral</u>		
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus betuloides</u>	Birchleaf mountain-mahogany
	<u>Cercocarpus breviflorus</u>	Hairy mountain-mahogany
	<u>Juniperus monosperma</u>	One-seeded juniper
Low to medium shrubs, under 10 ft	<u>Quercus emoryi</u>	Emory oak
	<u>Rhus ovata</u>	Sugar sumac
	<u>Amorpha californica</u>	Mock locust
	<u>Arctostaphylos pringlei</u>	Manzanita
	<u>Arctostaphylos pungens</u>	Pointleaf manzanita
	<u>Berberis haemotocarpa</u>	Barberry
	<u>Brickellia californica</u>	California brickellia
	<u>Ceanothus greggii</u>	California lilac
	<u>Ceanothus integriramus</u>	Deer brush
	<u>Cowania mexicana</u>	Cliffrose
	<u>Eriodictyon angustifolium</u>	Yerba santa
	<u>Fallugia paradoxa</u>	Apache Plume
	<u>Fremontia californica</u>	Flannel bush
	<u>Garrya flavescens</u>	Silk-tassel
	<u>Garrya wrightii</u>	Silk-tassel
	<u>Haplopappus laricifolius</u>	Turpentine-brush
	<u>Mimosa biuncifera</u>	Wait-a-minute bush
	<u>Quercus turbinella</u>	Shrub live oak
	<u>Rhamnus betulaefolia</u>	Birchleaf buckthorn
	<u>Rhamnus californica</u>	California buckthorn
	<u>Rhamnus crocea</u>	Hollyleaf buckthorn

continued

Table 3220-54.1 [3222] (Continued)

Growth form	Plant associations	
	<u>Interior Chaparral (Continued)</u>	
Low to medium shrubs -- (Continued)	<u>Rhus trilobata</u> <u>Sophora</u> spp.	Squawbush Sophora
Lesser vegetation	<u>Andropogon barbinodis</u> <u>Aristida longiseta</u> <u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Eragrostis intermedia</u> <u>Lycurus phleoides</u> <u>Muhlenbergia porteri</u>	Cane beardgrass Red three-awn Side-oats grama Black grama Blue grama Planis lovegrass Wolf tail Bush muhly
	<u>Habitat: Semidesert Grassland</u>	
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Agave deserti</u> <u>Celtis reticulata</u> <u>Fouquieria splendens</u> <u>Juniperus monosperma</u> <u>Prosopis juliflora</u> <u>Sapindus drummondii</u> <u>Yucca baccata</u> <u>Yucca elata</u>	Cat-claw Desert agave Netleaf hackberry Ocotillo One-seeded juniper Mesquite Western soapberry Spanish dagger Soap tree yucca
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u> <u>Agave palmeri</u> <u>Agave parryi</u> <u>Agave shottii</u> <u>Artemisia filifolia</u> <u>Calliandra eriophylla</u> <u>Condalia ericoides</u> <u>Condalia lycioides</u> <u>Condalia spathulata</u> <u>Ephedra antisiphilitica</u> <u>Ephedra trifurca</u> <u>Ferocactus wislizenii</u> <u>Gossypium thurberi</u> <u>Gutierrezia lucida</u> <u>Gutierrezia sarothrae</u> <u>Haplopappus tenuisectus</u> <u>Hoffmanseggia</u> spp. <u>Lycium</u> spp. <u>Mimosa biuncifera</u> <u>Mimosa dysocarpa</u> <u>Nolina microcarpa</u> <u>Nolina texana</u> <u>Opuntia chlorotica</u> <u>Opuntia imbricata</u> <u>Opuntia leptocaulis</u> <u>Opuntia phaeacantha</u> <u>Opuntia spinosior</u> <u>Rhus choriophylla</u> <u>Sphaeralcea</u> spp. <u>Yucca torreyi</u>	White-thorn Palmer agave Parry agave Shott agave Sand sagebrush False mesquite Javelina bush White crucillo Mexican crucillo Joint-fir Mormon tea Barrel cactus Desert cotton Yellow-green matchweed Snakeweed Burroweed Rat potato Wolfberry Wait-a-minute bush Velvet pod mimosa Bear grass Bear grass Pancake pear cactus Tree cholla Desert Christmas cactus Prickly pear Cane cholla Mearns sumac Globe mallow Spanish bayonet
Lesser vegetation	<u>Andropogon barbinodis</u> <u>Aristida</u> spp. <u>Bouteloua chondrosioides</u> <u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua filiformis</u> <u>Bouteloua gracilis</u> <u>Bouteloua hirsuta</u> <u>Bouteloua rothrockii</u> <u>Croton</u> spp. <u>Croton texensis</u> <u>Eragrostis intermedia</u> <u>Eragrostis lehmanniana</u> <u>Heteropogon contortus</u> <u>Hilaria belangeri</u> <u>Hilaria mutica</u> <u>Lycurus phleoides</u>	Cane beardgrass Three-awn Sprucetop grama Side-oats grama Black grama Slender grama Blue grama Hairy grama Rothrock grama Dove weed Dove weed Plains lovegrass Lehmann lovegrass Tanglehead Curly mesquite Tobosa-grass Wolf tail

continued

Table 3220-54.1 [3222] (Concluded)

Growth form	Plant associations	
	<u>Interior Chaparral (Continued)</u>	
Lesser vegetation (Continued)	<u>Muhlenbergia</u> spp. <u>Muhlenbergia porteri</u> <u>Panicum obtusum</u> <u>Sitanion hystrix</u> <u>Solanum elaeagnifolium</u> <u>Sporobolus</u> spp. <u>Sporobolus wrightii</u> <u>Trichachne californica</u> <u>Tridens puchellus</u> <u>Zinnia grandiflora</u> <u>Zinnia pumila</u>	Muhly Bush muhly Vine mesquite Squirreltail Nightshade Dropseed Sacaton California cottontop Fluffgrass Desert zinnia Desert zinnia
	<u>Habitat: Madrean Evergreen Woodland</u>	
Tall trees, over 40 ft	<u>Juniperus deppeana</u> <u>Pinus latifolia</u> <u>Pinus leiophylla</u> <u>Pinus ponderosa</u> <u>Quercus arizonica</u> <u>Quercus emoryi</u> <u>Quercus grisea</u>	Alligator juniper Apache pine Chihuahua pine Ponderosa pine Arizona white pine Emory oak Gray oak
Medium trees, 20-40 ft	<u>Arbutus arizonica</u> <u>Cupressus arizonica</u> <u>Pinus cembroides</u> <u>Quercus emoryi</u> <u>Quercus hypoleucoides</u> <u>Quercus oblongifolia</u> <u>Quercus reticulata</u>	Arizona madrone Arizona cypress Mexican pinyon Emory oak Silverleaf oak Mexican blue oak Netleaf oak
Low trees and tall shrubs, 10-20 ft	<u>Eysenhardtia polystachya</u> <u>Juniperus monosperma</u>	Kidneywood One-seeded juniper
Low to medium shrubs and cacti, under 10 ft	<u>Agave palmeri</u> <u>Agave parryi</u> <u>Arctostaphylos pungens</u> <u>Echinocereus pectinatus</u> <u>Erythrina flabelliformis</u> <u>Mammillaria gumifera</u> <u>Mimosa biuncifera</u>	Palmer agave Parry agave Pointleaf manzanita Rainbow cactus Coral bean Cream cactus Wait-a-minute bush
Lesser vegetation	<u>Andropogon barbinodis</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Elyonurus barbiculmus</u> <u>Lycurus phleoides</u> <u>Muhlenbergia emersleyi</u> <u>Oxalis</u> spp.	Cane bluestem Side-oats grama Blue grama Woolspike balsam-scale Wolf tail Bullgrass Wood-sorrel

Table 3220-54.1 [3221R] Selected Plant Species Common to the Creosote Bush Section in Riparian Habitats

Growth form	Plant associations	
Tall trees, over 40 ft	<u>Populus fremontii</u>	Fremont cottonwood
Medium trees, 20-40 ft	<u>Chilopsis linearis</u> <u>Fraxinus</u> spp. <u>Prosopis juliflora</u> <u>Prosopis pubescens</u> <u>Salix gooddingii</u> <u>Salix lasiolepis</u>	Desert-willow Ash Mesquite Screwbean mesquite Goodding willow Arroyo willow
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Tamarix pentandra</u>	Cat-claw Saltcedar
Low to medium shrubs, under 10 ft	<u>Allenrolfea occidentalis</u> <u>Atriplex confertifolia</u> <u>Atriplex lentiformis</u> <u>Baccharis</u> spp. <u>Baccharis glutinosa</u> <u>Juncus</u> spp. <u>Juncus torreyi</u> <u>Mentzelia</u> spp. <u>Phragmites communis</u> <u>Scirpus</u> spp. <u>Scirpus paludosus</u> <u>Tessaria sericea</u> <u>Typha angustifolia</u>	Iodinebush Shadscale Big saltbush Baccharis Seepwillow Rush Rush Blazing-star Reed Bulrush Salt-marsh bulrush Arrow-weed Narrow-leaved cat-tail
Lesser vegetation	<u>Carex</u> spp. <u>Cucurbita palmata</u> <u>Dalea mollis</u> <u>Distichlis spicata</u> <u>Eleocharis</u> spp. <u>Helianthus annuus</u> <u>Hibiscus</u> spp. <u>Lotus rigidus</u> <u>Nemacladus glanduliferus</u> <u>Oenothera multijuga</u> <u>Potamogeton</u> spp. <u>Rorippa</u> spp. <u>Sarcostemma</u> spp. <u>Suaeda torreyana</u> <u>Vitis arizonica</u>	Sedge Coyote-melon Indigobush Saltgrass Spikerush Sunflower Rose mallow Deer vetch Nemacladus Evening-primrose Pondweed Watercress Climbing milkweed Inkweed Canyon grape

Table 3220-54.1 [3222R] Selected Plant Species Common to the Creosote Bush—Bur Sage Section in Riparian Habitats

Growth form	Plant association	
Tall trees, over 40 ft	<u>Populus fremontii</u> <u>Salix gooddingii</u>	Fremont cottonwood Goodding willow
Medium trees, 20-40 ft	<u>Chilopsis linearis</u> <u>Prosopis juliflora</u> <u>Prosopis pubescens</u> <u>Salix bonplandiana</u>	Desert-willow Mesquite Screwbean mesquite Bonplad willow
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Celtis reticulata</u> <u>Tamarix pentandra</u>	Cat-claw Netleaf hackberry Saltcedar
Low to medium shrubs, under 10 ft	<u>Allenrolfea occidentalis</u> <u>Atriplex lentiformis</u> <u>Atriplex polycarpa</u> <u>Baccharis</u> spp. <u>Baccharis glutinosa</u> <u>Celtis pallida</u> <u>Condalia lycioides</u> <u>Juncus</u> spp. <u>Phragmites communis</u> <u>Pluchea camphorata</u> <u>Scirpus</u> spp. <u>Scirpus paludosus</u> <u>Tessaria sericea</u> <u>Typha</u> spp.	Iodinebush Shadscale Desert saltbush Baccharis Seepwillow Desert hackberry Gray-thorn Rush Reed Camphor-weed Bulrush Salt-marsh bulrush Arrow-weed Cat-tail
Lesser vegetation	<u>Bromus rubens</u> <u>Carex</u> spp. <u>Cruciferae</u> spp. <u>Cucurbita palmata</u> <u>Cynodon dactylon</u> <u>Distichlis spicata</u> <u>Erodium cicutarium</u> <u>Janusia gracilis</u> <u>Nemacladus glanduliferus</u> <u>Suaeda torreyana</u> <u>Vitis arizonica</u>	Red brome Sedge Mustard Coyote-melon Bermuda grass Saltgrass Filaree Janusia Nemacladus Inkweed Canyon grape

Table 3220-54.2 Ecological Characteristics of Selected Plant Species Common to the American Desert (Mohave—Colorado—Sonoran)

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir (balsam fir) <u>Abies concolor</u> Hoopes 3221	Common in conifer forest, 5,500-10,000 ft	Large evergreen tree, 80-150 ft, conical crown	Cone 3-5 in, pollinates in spring	Seeds eaten by song-birds; browsed by deer	
Hairy sand verbena <u>Abronia villosa</u> Wats. 3221	Open sandy areas at base of sand dunes, below 3,000 ft	Annual, 5-12 in	Narrow, oblong		
White-thorn (mescal acacia) <u>Acacia constricta</u> Benth. 3222	Washes, slopes, mesas, 2,000-5,000 ft, sun	Spreading shrub, 2-10 ft	Glabrous pod splitting when ripe, spring	Seeds eaten by dove and quail; browsed by rabbit	Common along washes; a weed on range-lands
Cat-claw (devil's claw, una degato) <u>Acacia greggii</u> Gray 3221, 3222	Washes, mesas, to 5,000 ft	Large shrub to small tree, to 25 ft	Pod 2.5-5 in	Seeds eaten by dove, and quail; roosting tree for quail	Often abundant
Goldenhead <u>Acamptopappus sphaerocephalus</u> Harv. & Gray 3221	Gravelly or sandy slopes and mesas, at 1,500-4,000 ft	Shrub, 1-1.5 ft	Achene		
Desert agave <u>Agave deserti</u> Engelm. 3222	Rocky gravelly slopes in desert mountains, 500-3,500 ft	Succulent shrub 6-27 in. diameter, leaves spiny margined, flower stalks 6.5-18 in	Brown, cylindrical 1.5-2 in, June	Dried stems used as nesting sites for woodpeckers	
Palmer agave (mescal century plant) <u>Agave palmeri</u> Engelm. 3222	Locally common in rocky foothills and mountains grasslands, 3,500-6,500 ft, sun	Leaf cluster 1.5-4.5 ft	Capsule, many seeded, June-July		
Parry agave (mescal) <u>Agave parryi</u> Engelm. 3222	Common in mountains 4,500-8,000 ft, sun	Numerous crowded leaves forming a rounded cluster 2-3 ft diameter	Capsule, many		May spread by underground sprouts
Shott agave (amole) <u>Agave shottii</u> Engelm. 3222	Abundant on dry rocky mountain slopes, desert grasslands, lower oak woodlands, 3,300-6,500 ft	Succulent shrub 12-16 in diameter	Capsule		Forming mats spreading vegetatively, valuable in erosion control
Pickleweed (iodinebush) <u>Allenrolfea occidentalis</u> (Wats.) Ktze. 3222	Highly alkaline flats and sinks, salt marshes, floodplains	Shrub, 1-5 ft	Berrylike, May-Nov.		
Canyon ragweed <u>Ambrosia ambrosioides</u> Cav. 3222	Sandy washes, canyon bottoms, sun	Shrub, to 3 ft	Fruit heads with lateral spikes		
Triangle bur sage (bur sage) <u>Ambrosia deltoidea</u> Cav. 3222	Alluvial plains, rocky slopes, bajadas, sun	Shrub, .5-2.5 ft	Flattened, spiny fruiting heads		
White bur sage <u>Ambrosia dumosa</u> Gray 3221, 3222	Mesas, alluvial slopes and plains, 500-2,500 ft	Low bushy shrub, .5-1 ft	Small fruiting heads with broad spine	Fruit eaten by small mammals	

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Woolly bur sage <i>Ambrosia eriocentra</i> Gray 3221	Sandy soil often in washes, 1,500- 5,000 ft	Small shrub, to 3 ft	Fusifruit	Same as <i>A. dumosa</i>	
Ragweed <i>Ambrosia psilostachya</i> DC. 3221	Along streams and roadsides, 2,500- 7,000 ft, sun	Weedy forb, 1-3 ft	Achene, July- Oct.	Plant eaten by deer, rabbit, pronghorn; seeds eaten by quail	
Utah serviceberry <i>Amelanchier utahensis</i> Koehne 3221	Dry rocky slopes, 2,000-7,000 ft	Shrub to small tree, 3-18 ft	Berry, summer	Browsed by deer	
Mock locust (stinking willow) <i>Amorpha californica</i> Nutt. 3221, 3222	Along streams, 5,000-6,500 ft	Shrub, 4-10 ft	Pod, summer		
Cane beardgrass (cane bluestem) <i>Andropogon barbinodis</i> Lag. 3221, 3222	Dry rocky or sandy slopes, plains and road- sides, below 6,000 ft, sun	Tufted perennial grass, 30-70 in	Grain, June-Nov.	Plant eaten by antelope	Good range plant; drought resistant
Arizona madrone (madrono) <i>Arbutus arizonica</i> Buckl. 3222	Mountains in oak woodland, 4,000- 8,000 ft, sun	Evergreen tree, 20-50 ft, compact crown	Berrylike, fleshy drupe, Apr.-Sept.	Fruit eaten by song- birds and gamebirds; browsed by deer	
Greenleaf manzanita <i>Arctostaphylos patula</i> Greene 3221	Coniferous for- est, 7,000-8,500 ft, sun	Low shrub, 3 ft	Several seeded round fruit, May- June	Fruit eaten by song- birds; browsed by deer	Very fire resist- ant, forms thickets
Manzanita <i>Arctostaphylos</i> <i>pringlei</i> Parry 3221, 3222	Dry slopes, often with cypress, 4,000-6,500 ft, sun	Shrub, 6 ft	Several seeded berry, Apr.-June	Fruit eaten by song- birds and gamebirds; browsed by deer	
Pointleaf manzanita <i>Arctostaphylos pungens</i> HBK. 3221, 3222	Dry slopes, 3,500- 8,000 ft, sun	Shrub, 3-5 ft	Several seeded berry, Feb.-May	Same as <i>A. pringlei</i>	Common plant of open chaparral, forms thickets
Three-awn <i>Aristida</i> spp. L. 3222	Dry open slopes, woodlands	Tufted perennial grass	Grain, July-Nov.	Plant eaten by jack- rabbit	Mature seeds may be injurious to live- stock
Red three-awn (three- awn) <i>Aristida longiseta</i> Steud. 3221, 3222	Arid, sandy and rocky hills, plateaus, forest openings, 5,000- 8,500 ft	Perennial bunch- grass, 4-14 in	Long-awned grain, May-Nov.	Plant eaten by rabbit and deer	Absent in Nevada
Sagebrush (wormwood) <i>Artemisia</i> spp. L. 3221	Throughout the sagebrush desert, 2,500-10,000 ft	Herb or shrub, 12-40 in	Achene	Plant eaten by rabbit and deer	
Sand sagebrush <i>Artemisia filifolia</i> Torr. 3222	Loose sandy soil, 4,000-6,000 ft	Undershrub, 12-40 in	Achene	Browsed by rabbit, antelope, deer	Valuable browse plant in winter and early spring
Sagebrush <i>Artemisia ludoviciana</i> Nutt. 3221	Dry slope, canyons, open forest, 2,500- 8,000 ft, sun	Forb, 1-2.5 ft	Achene, Aug.-Nov.	Plant eaten by rabbit, deer, sheep	Often on limestone
Black sagebrush <i>Artemisia nova</i> A. Nels. 3221	Dry slopes, mesas, shallow stony soil, 6,000-8,000 ft, sun	Shrub, 1-3 ft	Achene, Aug.-Sept.	Plant eaten by rabbit and deer	

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Big sagebrush <u>Artemisia tridentata</u> Nutt. 3221	Plains, mesas, rocky slopes, in pinyon pine, 5,000-8,000 ft	Shrub, 1-7 ft	Achene, July-Oct.	Browsed by rabbit and deer	Good growth indicates deep, fertile non-saline soil
Mojave aster (desert aster) <u>Aster abatus</u> Blake 3221	Dry rocky hills and slopes, below 6,000 ft	Perennial herb 4 in or less	Hairy achene		
Four-wing saltbush (wingscale, chamiso) <u>Atriplex canescens</u> Parsh. 3222	Moderately alkaline slopes, to 7,000 ft	Shrub, 3-6 ft	Small winged fruit	Seeds eaten by quail; browsed by rabbit, deer, sheep	
Shadscale (spiny saltbush) <u>Atriplex confertifolia</u> Torr. & Frem. 3221	Alkaline mesas and plains in sagebrush and creosote desert, 2,500-6,000 ft	Shrub, 1-3 ft	Flat winged fruit	Seeds eaten by quail and songbirds; browsed by rabbit and sheep	
Quailbrush (shadscale, big saltbush, lenscale) <u>Atriplex lentiformis</u> (Torr.) Wats. 3222	Alkaline soils, below 7,000 ft	Erect shrub, 3-9 ft	Ovate flattened fruit	Fruit eaten by waterfowl and quail; browsed by rabbit, deer, antelope	Halophyte occurring with <i>Sarcobatus</i>
Desert saltbush (cattle spinach) <u>Atriplex polycarpa</u> Torr. 3222	Alkaline plains, 400-3,000 ft	Round shrubs, 3 ft	Flat and disc like	Fruit eaten by quail, and songbirds; browsed by rabbit and deer	
Barberry (hollygrape) <u>Berberis fremontii</u> Torr. 3221	In conifer woodland, 4,000-7,000 ft	Shrub, 3-9 ft	Berry, late spring-summer	Browsed by rabbit and deer	
Barberry (red mahonia) <u>Berberis haematocarpa</u> Woot 3221, 3222	Dry rocky soils, 4,500-5,000 ft, sun	Shrub, to 6 ft	Berry, summer	Same as <i>B. fremontii</i>	
Oregon-grape <u>Berberis repens</u> Lindl. 3221	Coniferous forest, 5,000-8,500 ft	Spreading, low shrub, 1 ft	Round, black berries, Apr.-June	Same as <i>B. fremontii</i>	Forms excellent ground cover to check erosion
Pine dropseed (hairy dropseed) <u>Blepharoneuron tricholepis</u> (Torr.) Nash 3221	Rocky slopes, dry open forest, 4,500-9,500 ft, sun	Erect, densely tufted perennial grass, 8-24 in	Grain, July-Nov.	Plant eaten by deer	Good forage species
Sprucetop grama <u>Bouteloua chondrosioides</u> HBK. 3222	Dry rocky slopes, rolling desert grasslands, 2,500-6,000 ft	Tufted erect perennial grass, 12-24 in	Grain, Aug.-Nov.	Plant eaten by rabbit, deer, bighorn sheep, antelope	Highly favored range species
Side-oats grama <u>Bouteloua curtipendula</u> Michx. 3221, 3222	Rocky slopes, woodlands, forest openings, plains, to 7,000 ft, sun	Erect, tufted perennial grass, 14-40 in	Grain, May-Nov.	Plant eaten by rabbit, deer, antelope	Good range grass; fast growing; highly palatable
Black grama <u>Bouteloua eriopoda</u> Torr. 3221, 3222	Dry, sandy plateaus, rocky slopes, 3,500-6,000 ft, sun	Low, tufted perennial grass, 8-35 in	Long-awned grain, July-Nov.	Same as <i>B. curtipendula</i>	Drought adapted climax species; easily overgrazed
Slender grama <u>Bouteloua filiformis</u> (Fourn.) Griffiths 3222	Dry rocky slopes, below 5,000 ft	Slender erect perennial grass, 12-18 in	Grain, July-Nov.	Plant eaten by rabbit, deer, antelope, bighorn sheep	Able to persist on badly abused ranges

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Blue grama <i>Bouteloua gracilis</i> HBK. 3221, 3222	Open rocky slopes, plains, forest openings, meadows, 4,000-8,000 ft	Tufted perennial grass, 10-30 in	Grain, July-Nov.	Plant eaten by rabbit and deer	Excellent range grass, adapted to drought and heavy grazing
Hairy grama <i>Bouteloua hirsuta</i> Lag. 3222	Rocky slopes, dry sandy mesas, plains and rocky hills, 1,000-6,000 ft	Erect perennial grass, 10-30 in	Hairy grain, July-Nov.	Same as <i>B. gracilis</i>	
Rothrock grama <i>Bouteloua rothrockii</i> Vasey 3222	Dry sandy soils, mesas, canyons, slopes, below 6,000 ft	Erect perennial grass, 10-24 in	Grain, Aug.-Nov.	Plant eaten by rabbit, deer, antelope	Important range grass, moderate palatability
California brickellia <i>Brickellia californica</i> Gray 3221, 3222	Washes, dry rocky slopes, below 8,000 ft, sun	Shrub, 1.5-3 ft	Achene, fall	Seeds eaten by game-birds	
Mountain brome <i>Bromus marginatus</i> Nees 3221	Woodlands and forest openings, above 5,500 ft	Perennial grass, 16-40 in	Grain, Aug.-Nov.	Plant eaten by deer and antelope	Good forage grass
Elephant-tree (torote, copal, elephant bursera) <i>Bursera microphylla</i> Gray 3222	Dry desert slopes, 1,000-2,500 ft	Deciduous shrub to small tree, to 20 ft	Drupe-like, one-seeded		Locally common, rare north of Southern Arizona
False mesquite (fairly duster, huajillo, hairy-leaved calliandra) <i>Calliandra eriophylla</i> Benth. 3222	Desert slopes, mesas, 2,000-5,000 ft	Low rounded bushy shrub, 1-3 ft	Hairy pod, spring	Seeds eaten by dove; browsed by deer	Valuable browse and erosion control
Crucifixion thorn <i>Canotia holacantha</i> Torr. 3222	Dry slopes and mesas, 2,000-5,000 ft	Large shrub or small tree with dense spine-tipped branches 10-15 ft	Woody capsule, May-Aug.		
Buckbrush (deer-brier) <i>Ceanothus fendleri</i> Gray 3221	Foothills, mountains, common in pine forests, 5,000-10,000 ft, sun and shade	Shrub to 3 ft, forming low thickets	3-celled capsule, Apr.-Oct.	Browsed by deer	
California lilac (desert ceanothus) <i>Ceanothus greggii</i> Gray 3221, 3222	Dry slopes, 3,500-7,500 ft	Shrub, 3-6 ft	Capsule, summer	Same as <i>C. fendleri</i>	
Deer brush <i>Ceanothus integerrimus</i> (Hook) Arn. 3221, 3222	Chaparral and open coniferous forest, 3,500-7,000 ft, sun and shade	Loosely branched deciduous shrub, 3-8 ft	Round 3-celled capsule, May-Oct.	Same as <i>C. fendleri</i>	
Spiny hackberry (desert hackberry) <i>Celtis pallida</i> Torr. 3222	Foothills, mesas, 1,500-3,500 ft	Spiny, densely branched deciduous shrub, 3-10 ft	Oval, one-seeded drupe, spring	Fruit eaten by dove, quail, numerous small species, browsed by deer	Often forms thickets, ornamental
Netleaf hackberry (cumero, paloblanco, western hackberry) <i>Celtis reticulata</i> Torr. 3222	Streams, canyons, washes, moist soil, 3,500-6,000 ft	Deciduous large shrub to small tree, to 30 ft, spreading crown	One-seeded drupe	Fruit eaten by game-birds	
Blue paloverde (border paloverde) <i>Cercidium floridum</i> Benth. 3222	Desert washes and valleys, to 4,000 ft, sun	Small tree, to 30 ft	Flattened pod, Mar.-May	Seeds eaten by mammals and birds	

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Yellow paloverde (little- leaf paloverde, little- leaf horse bean, foothill paloverde) <u>Cercidium microphyllum</u> (Torr.) Rose & Johnst. 3222	Foothills, desert slopes, 500-4,000 ft	Small tree to 25 ft, spreading crown	Cylindric pod, Mar.-May	Same as <u>C. floridum</u>	
Birchleaf mountain- mahogany <u>Cercocarpus betuloides</u> Nutt. 3221, 3222	Mountains, 3,000- 8,000 ft	Shrub to small tree, to 20 ft	Hairy achene, summer-fall	Browsed by deer and antelope	
Hairy mountain-mahogany (Wright mountain-mahog- any) <u>Cercocarpus breviflorus</u> Gray 3221, 3222	Dry slopes, moun- tainsides, 5,000- 8,000 ft	Evergreen shrub or tree, to 15 ft or more	Hairy achene, summer-fall	Same as <u>C. betuloides</u>	Absent west of Arizona
Curlleaf mountain- mahogany <u>Cercocarpus ledifolius</u> Nutt. 3221	Generally in pine woods, 5,000- 9,000 ft	Evergreen tree or shrub, to 20 ft	Hairy achene, spring-summer	Browsed by deer	
Saguaro (giant cactus) <u>Cereus giganteus</u> Engelm. 3222	Rocky or gravelly soils of foothills, canyons, bajadas, washes, 600-3,600 ft	Columnar tree, 9-50 ft	Ovoid to ellip- soid juicy fruits, many small seeds	Fruit eaten by many birds and mammals; nesting sites for many birds	Absent in New Mex- ico
Organpipe cactus (pitahaya) <u>Cereus thurberi</u> Engelm. 3222	Rocky or sandy hills, mesas, valleys, 1,000- 3,500 ft	Large cactus, columnar branches, 9-20 ft	Fleshy, many small seeds		Only in Arizona
Fernbush <u>Chamaebatiaria millefolium</u> (Torr.) Maxim 3221	Dry rocky slopes, 4,500-8,000 ft, sun	Aromatic leafy shrub, 2-6 ft	Leathery, few- seeded capsule, July-Nov.	Browsed by sheep and deer	Often occurring with juniper and pinyon
Desert-willow (desert catalpa) <u>Chilopsis linearis</u> Cav. 3221, 3222	Mostly along washes, in foot- hills and deserts	Large shrub to small tree, to 30 ft	Long, narrow pod		Good soil binder
Rabbit brush <u>Chrysothamnus depressus</u> Nutt. 3221	Dry rocky slopes, plains, 5,000-7,000 ft	Small shrub, 4-5 in	Achene, summer- fall	Browsed by rabbit, antelope, deer	
Rabbit brush <u>Chrysothamnus nauseosus</u> Britt. 3221, 3222	Dry plains and hills, 5,000- 9,000 ft	Shrub, .5-6 ft	Achene, summer- fall	Same as <u>C. depressus</u>	
Parry rabbit brush <u>Chrysothamnus parryi</u> Greene 3221	Open pine forests, 5,500-9,000 ft, sun	Shrub, 1-3 ft	Achene, Aug.-Sept.	Seeds eaten by song- birds; browsed by rabbit, deer, ante- lope	
Blackbrush <u>Coleogyne ramosissima</u> Torr. 3221	Dry slopes and mesas in creosote and sagebrush deserts, 3,000- 5,000 ft	Shrub, 1.5-4.5 ft	One-seeded achene		
Javelina bush <u>Condalia ericoides</u> M.C. Johnst. 3222	Dry plains, mesas, at lower elevations	Shrub to 5 ft	One-seeded drupe, summer	Fruit eaten by dove, pigeons, fox	

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
White crucillo (grayleaf abrojo, lotebush, gray-thorn) <u>Condalia lycioides</u> Gray 3222	Mesas, slopes, in desert and desert grassland, 1,500-4,500 ft	Straggly shrub, 3-9 ft	Thin skin one-seeded drupe	Fruit eaten by Gambel's quail, pigeon, dove, fox	Common, often forms thickets
Mexican crucillo (spiny abrojo) <u>Condalia spathulata</u> Gray 3222	Sandy, gravelly, well-drained soil, mesas and slopes of deserts and desert grasslands, 2,500-4,500	Compactly and densely branched shrub, 3-5 ft	Black or purplish drupe, bitter	Fruit eaten by dove and fox	
Cliffrose <u>Cowania mexicana</u> D. Don 3221, 3222	Rocky hills and plateaus on limestone formations, 3,500-8,000 ft	Evergreen shrub, 3-6 ft	Hairy achene, late spring-fall	Browsed by deer	
Dove weed <u>Croton</u> spp. L. 3222	Canyon bottoms, dry stream beds, 200-7,000 ft	Herbs or shrubs	One-3 seeded capsule	Seeds eaten by dove and quail; plant eaten by deer	
Dove weed (Texas croton) <u>Croton texensis</u> Klotzsch 3222	Roadsides, fields, dry stream beds	Annual shrub, to 12 in	1-3 seeded capsule, with large oily seeds	Seeds eaten by dove and quail; browsed by deer	
Arizona cypress (rough-bark Arizona cypress, smooth cypress, smooth Arizona cypress) <u>Cupressus arizonica</u> Greene 3222	Canyons, mountains, oak woodlands, 3,500-7,200 ft	Medium sized tree, 30 ft	Short stalked round cone		Very scattered and localized, probably relic populations
Fremont dalea <u>Dalea fremontii</u> Torr. 3221	Plains and slopes of creosote and sagebrush deserts, 2,000-3,000 ft	Shrub, 1-6 ft	2-seeded pod		
Smoke tree (smokethorn, indigobush, smokethorn dalea) <u>Dalea spinosa</u> Gray 3222	Washes in frost-free locations, to 1,500 ft	Small spiny tree to large shrub, to 20 ft	Eggshaped pod		
Hopbush <u>Dodonaea viscosa</u> Jacq. 3222	Dry, rocky, slopes and canyons, often on limestone, 2,000-5,000 ft	Shrub to 12 ft	Dry fruit with broad wings, Feb.-Oct.		Increases on over-grazed ranges, unpalatable to livestock
Hedgehog cactus <u>Echinocereus</u> spp. Engelm. 3222	Rocky hillsides, to sandy plains, 2,000-5,000 ft	Cylindrical fleshy stems, to 2 ft, solitary awn clumps	Globular or ellipsoid, fleshy		
Rainbow cactus <u>Echinocereus pectinatus</u> Scheidw. 3222	Limestone hills, 3,500-5,200 ft	Columnar, 4-6 in	Spiny, green fleshy		
Woolspike balsamscale <u>Elyonurus barbiculmus</u> Hack 3222	Dry, rocky slopes and plains, desert grasslands, juniper-oak woodlands	Perennial grass, 16-32 in	Grain, July-Nov		Good forage grass
Brittle bush (incienso) <u>Encelia farinosa</u> Gray 3221, 3222	Dry rocky slopes and mesas, to 3,000 ft	Low branching shrub, 1.5-3 ft	Achene, Nov.-May		Common to locally abundant
Joint-fir (clapweed, popote, vine ephedra) <u>Ephedra antisyphilitica</u> C.A. Mey. 3222	Gravelly, rocky soil on plains, hills, arroyos, ravines, canyons	Erect or spreading shrub, to 3 ft	Cone	Seeds eaten by quail; browsed by rabbit and deer	

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mormon tea (Mexican tea, longleaf jointfir, popotilla, teposote, canatilla) <u>Ephedra trifurca</u> Torr. 3222	Mesas, plains and sandy hills of deserts and desert grasslands, to 5,000 ft	Small shrubby bush, to 2 ft	Cone	Seeds eaten by quail; browsed by rabbit, deer, sheep	
Mormon tea <u>Ephedra viridis</u> Coville 3221	Arid slopes, mesas, 3,000-7,000 ft	Erect shrub, 1-3 ft	Naked seed, summer	Seeds eaten by quail; browsed by antelope, deer, rabbit	
Plains lovegrass <u>Eragrostis intermedia</u> Hitchc. 3221, 3222	Sandy or rocky slopes and plains, 3,500-6,000 ft	Tufted erect perennial grass, 22-35 in	Grain, July-Nov.		Used to reseed rangeland; good soil binder
Lehmann lovegrass <u>Eragrostis lehmanniana</u> Nees 3222	Semi-arid ranges, open prairies and slopes	Tufted perennial grass, 20-28 in	Grain, July-Nov.		Introduced, well established
Fleabane (wild daisy) <u>Erigeron divergens</u> (Torr.) Gray 3221	Dry slopes, mesas, to open pine woods, 1,000-9,000 ft, sun	Forb, 6-30 in	Achene, Feb.-Oct.		
Wild daisy (fleabane) <u>Erigeron flagellaris</u> Gray 3221	Open coniferous forest, mountain meadows, 3,000-9,500 ft	Forb, 6-30 in	Achene, Apr.-Sept.		
Yerba santa <u>Eriodictyon angustifolium</u> Nutt. 3221, 3222	Dry slopes, 2,000-7,000 ft	Shrub, up to 6.5 ft	Capsule, summer-fall	Browsed by deer	
Wild buckwheat (desert buckwheat) <u>Eriogonum deserticola</u> Wats. 3222	Desert flats and sand dunes	Erect shrub, to 5 ft	Achene	Seeds eaten by quail and songbird; browsed by deer and songbird	
Deer buckwheat <u>Eriogonum wrightii</u> Torr. 3222	Arid lands, 3,000-7,000 ft	Herb or shrub, to 2.5 ft	Achene, June-Oct.	Seeds eaten by gamebirds and songbirds; browsed by rabbit and deer	Common throughout desert
Coral bean (southwestern coral bean, western coral bean, chilicote, Indian bean) <u>Erythrina flabelliformis</u> Kearn. 3222	Dry rocky slopes, washes, canyons of foothills and mountains, 3,000-6,500 ft	Shrub to small tree, to 15 ft	Several-seeded pod		
Winter-fat <u>Eurotia lanata</u> Pursh. 3221	Slopes, plains in sagebrush and creosote deserts, 2,500-7,000 ft	Shrub, 8-32 in	Bract, villous		Valuable forage
Kidneywood (varadulce) <u>Eysenhardtia polystachya</u> Ortega 3222	Bushy areas with highly calcareous soil	Shrub, 6-10 ft	Legume, summer-fall		
Apache plume <u>Fallugia paradoxa</u> Endl. 3221, 3222	Dry rocky slopes, 4,000-5,500 ft	Shrub, 1-5 ft	Achene, summer		

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<i>Fendlerella</i> <i>Fendlerella utahensis</i> (Wats.) Heller 3221	Dry open pine woods, 5,000-8,000 ft, sun	Small, much branched shrub, 1-3 ft	Capsule, June-Sept.		
Barrel cactus <i>Ferocactus wislizenii</i> (Engelm.) Britt. & Rose 3221, 3222	Rocky, gravelly or sandy soils of hills, canyons, washes, alluvial fans, 1,000-5,600 ft	Barrel to columnar, 2-10 ft	Fleshy, many seeded yellow, July-Sept.	Fruit eaten by many mammals	
Arizona fescue <i>Festuca arizonica</i> Vasey 3221	Forest, mountain meadows, 6,000-10,000 ft	Densely tufted perennial grass, 18-36 in	Grain, June-Sept.	Seeds eaten by song-birds; plant eaten by deer	
Ocotillo (coachwhip, candlewood) <i>Fouquieria splendens</i> Engelm. 3222	Dry slopes, mesas, to 5,000 ft	Thorny, deciduous shrub with tall, unbranched whip-like stems, 6-27 ft	3-celled capsule, splitting when ripe, Apr.-June	Browsed by bighorn sheep	
Flannel bush (California fremont) <i>Fremontia californica</i> Torr. 3221, 3222	Dry north facing slopes, canyons, 3,500-6,000 ft	Shrub, 4-12 ft	Capsule, summer		
Silk-tassel <i>Garrya flavescens</i> Wats. 3221, 3222	Dry slopes, 3,000-8,000 ft	Evergreen shrub, to 6 ft	Berry-like, spring	Browsed by deer	
Silk-tassel <i>Garrya wrightii</i> Torr. 3221, 3222	Dry slopes, 3,000-8,000 ft, sun	Large evergreen shrub, 6-10 ft	Berry, Mar.-Aug.	Same as <i>G. flavescens</i>	
Desert cotton (thurberia, algodoncillo) <i>Gossypium thurberi</i> Tod. 3222	Rocky, gravelly mountain slopes and canyons, in desert and desert grasslands, 2,500-4,500 ft	Shrub, 3-6 ft	Capsule with wooly seeds		
Spiny hop-sage <i>Grayia spinosa</i> Hook 3221	Alkaline plains, slopes in creosote and sagebrush deserts, 2,500-7,000 ft	Shrub, 1-3 ft	Fruit in flattened bracts		
Yellow-green matchweed (snakeweed) <i>Gutierrezia lucida</i> Greene 3222	Alluvial plains, slopes, hillsides of desert grassland, oak woodland and pinyon-juniper, 1,000-7,000 ft	Halfshrub with woody stem, 1-3 ft	Achene, June-Oct.	Seeds eaten by quail; browsed by rabbit	
Snakeweed (broom snake-weed) <i>Gutierrezia sarothrae</i> (Pursh.) Britt. & Rusby 3221, 3222	Plains, slopes, in upper desert, desert grasslands, 3,000-7,000 ft	Shrub, .5-1 ft	Small achene, July-Nov.	Seeds eaten by quail; browsed by rabbit, antelope, deer	
Turpentine-brush <i>Haplopappus taricifolius</i> Gray 3221, 3222	Mesas, slopes, canyons, 3,000-6,000 ft	Shrub, 1-3 ft	Cylindric achene, Aug.-Nov.		
Burroweed <i>Haplopappus tenuisectus</i> Gray 3221, 3222	Alluvial plains, slopes in desert and desert grasslands, 2,000-5,500 ft	Round shrub, 1-2 ft	Cylindric achene		Invader of depleted ranges; poisonous to livestock when consumed in large quantities

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Tanglehead <u>Heteropogon contortus</u> L. 3222	Open dry rocky or sandy plains and slopes, below 5,000 ft	Tufted erect perennial grass, 8-35 in	Long-awned grain, Mar.-June		Important range grass
Curly mesquite <u>Hilaria belangeri</u> Streud. 3222	Rocky slopes, dry hillsides, sandy plains, 1,500-6,000 ft	Tufted perennial grass, 10-15 in	Grain, Apr.-Nov.		Can form large colony via stolons, holds under heavy grazing
Tobosa-grass <u>Hilaria mutica</u> Buckl. 3222	Dry exposed sandy or rocky slopes and plains, 2,000-6,000 ft	Perennial grass, 12-30 in	Grain, June-Nov.		
Big galleta <u>Hilaria rigida</u> Benth. 3222	Rocky or sandy plains and foot hills, below 4,000 ft	Coarse perennial grass, 14-40 in	Grain, Mar.-Nov.	Plant eaten by deer and bighorn sheep	Often in shifting sands
Rat potato (hog potato, camote-de-raton) <u>Hoffmanseggia</u> spp. Cav. 3222	Gravelly washes, canyons to cultivated fields, 500-5,000 ft	Perennial herb or shrub with wand-like branches, 2-3 ft	Pod		Tubers are edible; hog feed; good soil binder
Crucifixion thorn (holacantha, corona de cristo) <u>Holacantha emoryi</u> Gray 3222	Desert valleys on clay soil, sand dunes, 500-2,000 ft	Spiny shrub to small tree, to 12 ft	Drupelike carpel June-July		
Ocean spray (foam bush, mountain spray, cream-bush) <u>Holodiscus dumosus</u> Gray 3222	Pine or spruce forests, often on cliffs, 5,500-10,000 ft, sun	Aromatic, deciduous shrub, 3 ft	One-seeded follicle, June-Sept.		
Desert lavender <u>Hyptis emoryi</u> Torr. 3222	Washes and foothills slopes, sea level to 4,000 ft	Shrub, to 9 ft	Long smooth nutlet	Verdin and black-tailed gnatcatcher nest in this plant	
Cliffbush <u>Jamesia americana</u> Torr. & Gray 3221	Moist canyons, along streams in coniferous forests, 7,500-9,500 ft, sun	Deciduous shrub, 1-6 ft	Dry beaked capsule, June-July		
Alligator juniper <u>Juniperus deppeana</u> Steud. 3222	Moist soil along streams or scattered on hillside in oak woodland or ponderosa pine forest, 4,500-8,000 ft, sun	Tree, 20-65 ft, round crown	Berrylike fleshy cone, pollinates in spring	Fruit eaten by deer, quail, bear, fox	
One-seeded juniper <u>Juniperus monosperma</u> (Engelm.) Sarg. 3221, 3222	Dry hills, mesas, 3,000-7,000 ft, foothills, pinyon-juniper woodland	Shrub to small evergreen tree, conical crown, 10-25 ft	One-seeded berrylike cone, matures in 1 yr	Important food and cover for numerous species	
Utah juniper (western juniper) <u>Juniperus osteosperma</u> (Torr.) Little 3221	Dry plains, plateaus, hills, often in pure stands or with pinyon, 3,000-7,500 ft, sun	Small evergreen tree, broad, round crown, 15-40 ft	Berrylike brown cone, pollinates in spring	Same as <u>J. monosperma</u>	Most common juniper in Arizona
Rocky Mountain juniper (western juniper) <u>Juniperus scopulorum</u> Sarg. 3221	Scattered in mountains and canyons of pinyon-juniper woodland and lower ponderosa pine, 5,000-9,000 ft, sun	Small to medium evergreen tree, narrow, pointed open crown, 20-50 ft	Berrylike cone, pollinates in spring	Same as <u>J. monosperma</u>	Fastest growing juniper

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mountain junegrass (prairie junegrass) <i>Koeleria cristata</i> Pers. 3221	Prairie, open woods, sandy soils, rocky slopes, below 9,000 ft	Tufted or bunched perennial grass, 14-28 in	Grain, May-Oct.	Plant eaten by deer	Good forage, rarely locally abundant
White ratany <i>Krameria grayi</i> Rose & Painter 3222	Dry plains, mesas, 500-5,000 ft	Low branched shrub, 1-2 ft	Round, thick walled spiny one-seeded, Apr.-Sept.		Relished by live-stock
Ratany <i>Krameria parvifolia</i> Benth. 3221, 3222	Dry rocky slopes, gravelly plains, 500-5,000 ft	Shrub, 1-1.5 ft	Small burr with several spines, Apr.-Oct.		Relished by live-stock
Creosote bush (greasewood) <i>Larrea divaricata</i> Cav. 3221, 3222	Alluvial plains, foothills, slopes, to 4,000 ft	Shrub, usually 3-6 ft	Five-celled capsule, spiny, spring	Browsed by rabbit and small mammals	Most common and widely distributed shrub in desert
Wolfberry <i>Lycium</i> spp. L. 3222	Plains, slopes, 1,000-7,000 ft	Spreading to erect spiny shrub, 3-9 ft	Many-seeded berry	Fruit eaten by dove and quail	
Anderson thornbush (Anderson lycium) <i>Lycium andersonii</i> Gray 3221, 3222	Washes, mesas and foothills of creosote and sagebrush deserts, up to 5,500 ft	Round shrub, 3-9 ft	Red, juicy, many-seeded, Feb.-Apr.	Same as <i>Lycium</i> spp.	
Pale lycium <i>Lycium pallidum</i> Miers. 3221	Desert plains and slopes, 3,000-7,000 ft	Shrub, 3-6 in	Many-seeded juicy berry, Apr.-June	Same as <i>Lycium</i> spp.	
Wolftail (Texas-timothy) <i>Lycurus phleoides</i> HBK. 3221, 3222	Open rocky slopes, plains, below 8,000 ft	Tufted erect perennial, 8-25 in	Awned grain, July-Nov.		Valuable range grass
Cream cactus <i>Mammillaria gummifera</i> Engelm. 3222	Rocky or gravelly limestone soils, 4,000-4,500 ft	Globose, to 4 in	Smooth berry, summer		
Fish-hook cactus <i>Mammillaria microcarpa</i> Engelm. 3222	Sandy gravel of canyons, washes, alluvial fans and plains, 1,000-5,000 ft	Cylindroid cactus, 3-6 in	Smooth berry with small seeds, summer		Only in Arizona
Spiny menodora <i>Menodora spinescens</i> Gray 3221	Dry flats and rocky slopes, to 2,500 ft	Small shrub	2-seeded capsule		
Blazing-star (Venus blazing-star) <i>Mentzelia nitens</i> Green 3221	Sandy areas at 3,000 ft or lower, on lower parts of sand dunes	Small shrub with white stem	Sharply angled tuberculate seeds	Seeds eaten by quail	
Wait-a-minute bush (cat-claw, wait-a-bit) <i>Mimosa biuncifera</i> Benth. 3221, 3222	Dry soil on mesas, rocky slopes, 3,000-6,000 ft	Spiny deciduous shrub, 2-6 ft	Many seeded legume, May-Aug.	Browsed by deer; cover for deer and rabbit	Often forms large, dense thickets; good soil binder
Velvet pod mimosa <i>Mimosa dysocarpa</i> Benth. 3222	Hillside, slopes, in desert grasslands and oak woodlands, 4,000-6,000 ft	Spiny deciduous shrub, 3-6 ft	Long prickly pod		Palatable to live-stock

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Muhly <u>Muhlenbergia</u> spp. Vasey 3222	Dry open slopes and mesas	Perennial grass, 5-35 in	Grain, spring- fall	Plant eaten by deer	
Bullgrass <u>Muhlenbergia emersleyi</u> Vasey 3222	Rocky slopes, ledges, woodlands, openings, drier soils, below 6,500 ft	Erect perennial grass, 20-40 in	Grain, June-Nov.		Good soil binder on steep slopes
Mountain muhly <u>Muhlenbergia montana</u> Hitchc. 3221	Rocky slopes, ledges, woodlands, forest openings, 4,500-9,500 ft	Tufted perennial grass, 6-26 in	Grain, Aug.-Oct.	Same as <u>Muhlenbergia</u> spp.	
Bush muhly <u>Muhlenbergia porteri</u> Scribn. 3221, 3222	Dry mesas, rocky slopes, canyons, 2,000-6,000 ft	Erect perennial grass, 12-40 in	Grain, Aug.-Nov.		Highly palatable, largely grazed out
Deergrass <u>Muhlenbergia rigens</u> (Benth.) Hitchc. 3221	Gravelly or sandy canyon bottoms, washes, in moist soil, occasionally dry plateaus or meadows, 3,000- 7,000 ft	Perennial grass, 2-5 ft	Grain, June-Oct.	Same as <u>Muhlenbergia</u> spp.	
Ring muhly (ring grass) <u>Muhlenbergia torreyi</u> Hitchc. 3221	Dry ridges, sandy plateaus, rocky slopes, below 6,500 ft	Perennial grass, 6-12 in	Grain, Aug.-Nov.		Poor range grass; good soil binder
Spike muhly <u>Muhlenbergia wrightii</u> Vasey 3221	Woodland, forest openings, dry meadows, 5,500- 9,000 ft	Perennial grass, 1-2 ft	Grain, July-Nov.	Plant eaten by deer and bighorn sheep	
Tree nolina (Bigelow nolina) <u>Nolina bigelovii</u> Wats. 3222	Rocky or gravelly hillsides or can- yon walls, at 500-3,500 ft	Tree, to 4 ft	3-lobed capsule		
Bear grass (sacahuista, sacahuiste) <u>Nolina microcarpa</u> Wats. 3222	Gravelly or sandy well drained soil, slopes and mesas, deserts grasslands and woodlands, 3,000-6,000 ft	Grasslike shrubs with subterranean stems, 3-6 ft	Three-lobed cap- sule, May-June		May be poisonous to livestock
Bear grass (sacahuista, sacahuiste) <u>Nolina texana</u> Wats. 3222	Rolling rangelands and foothills	Woody stem leaves 5 ft long, peren- nial shrub	Three-lobed cap- sule		Causes hepatogenic photosensitization in livestock
Yellow cups <u>Oenothera brevipes</u> Gray 3221	Dry washes and desert plains, below 4,500 ft	Annual, up to 15 in	4-celled capsule, Feb.-May		
Ironwood (tesota palo fierro, palo-de-hierro) <u>Olneya tesota</u> Gray 3222	Sandy washes, foothills, to 2,500 ft	Spiny evergreen tree, to 30 ft	Pod, May-June	Food and cover for numerous small species	Extremely hard, brittle and heavy wood
Prickly pear (cholla) <u>Opuntia</u> spp. Mill. 3221	Variable from dry slopes to mesas, canyons	Generally low growing to 6 ft with flat- tened or cylindrical joints	Juicy obovoid fruit	Fruit eaten by dove, quail, coyote, fox, rabbit, antelope	
Beavertail <u>Opuntia basilaris</u> Engelm. & Bigel. 3221	Sandy flat dunes, valleys in wood- lands, 4,000- 7,000 ft	Clumps, 6-12 in high	Dry, not spiny		

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Pancake pear cactus (Santa Rita prickly pear, dollarjoint prickly pear) <i>Opuntia chlorotica</i> Engelm. & Bigel. 3222	Sandy or rocky soil, slopes, can- yons, 2,000-5,000 ft	Arborescent shrub, 2-6 ft	Ellipsoid, fleshy fruit spring	Fruit eaten by dove, quail, coyote, fox, peccary	
Little prickly pear <i>Opuntia fragilis</i> Nutt. 3221	Sandy to gravelly soils, 4,500-8,000 ft	Mat forming plant, 2-4 in	Obovoid dry fruit	Fruit eaten by numer- ous gamebirds and mammals, especially peccary	
Jumping cholla <i>Opuntia fulgida</i> Engelm. 3222	Sandy soil of plains, mesas, washes, hills	Small cactus tree, 3-15 ft	Fleshy, in chains, June-Aug.	Principal nesting site for cactus wren	Only in Arizona
Tree cholla (cane cholla) <i>Opuntia imbricata</i> Haw. 3222	Gravelly or sandy soils of hills, plains and grass- lands, 4,000- 6,000 ft	Small tree or thicket forming shrub, 3-10 ft	Obovoid, fleshy, all winter		
Desert Christmas cactus (tesajo, cholla) <i>Opuntia leptocaulis</i> DC. 3222	Mesas, flats, valleys, plains, washes in deserts	Bush or erect small shrub, 1-15 ft	Persistent obo- void, fleshy fruit, May-June		Usually growing within another shrub
Prickly pear <i>Opuntia phaeacantha</i> Engelm. 3222	Sandy soils of plains, washes, hills, deserts, grasslands, 1,500- 7,000 ft	Variable clumps, 2-20 ft diameter, 1-3 ft high	Obovoid, many- seeded, Apr.-June	Fruit eaten by game- birds, numerous mam- mals, including pec- cary and coyotes	May be invader in overgrazed areas
Plains prickly pear <i>Opuntia polyacantha</i> Haw. 3221	Sandy soils of plains, flats, washes and canyon sides, 4,000- 6,000 ft	Clump forming cactus, 3-6 in high	Dry, obovoid, spring	Fruit eaten by dove, quail, coyote, pec- cary, deer	
Cane cholla <i>Opuntia spinosior</i> (Engelm.) Toumey 3222	Deep soils of val- leys, plains, hill- sides, grasslands, chaparrals, wood- lands, 2,000-6,500 ft	Small shrub to cac- tus trees, 3-8 ft	Persistent, fleshy, many- seeded, May-June		Characteristic of desert grassland
Whipple cholla <i>Opuntia whipplei</i> Engelm. & Bigel. 3221	Deep soils of val- leys, plains, slopes, 4,500- 7,000 ft	Generally low mat forming cactus, occasionally reach- ing 6 ft	Obovoid, fleshy yellow, spineless, June-July		
Indian rice-grass <i>Oryzopsis hymenoides</i> (R & S) Ricker 3221, 3222	Open sandy plains, hills, woodlands at medium eleva- tions	Densely tufted per- ennial grass, 12-24 in	Grain, May-Nov.	Seeds eaten by game- birds; plant eaten by deer	Excellent range- grass in semi- arid areas
Wood-sorrel <i>Oxalis</i> spp. L. 3222	Moist soils, 2,500- 9,000 ft	Herbaceous, per- ennial forb with creeping root- stocks, to 1 ft	Dehiscent 5-celled capsule, spring- fall	Seeds eaten by game- birds; plant eaten by deer	Occasionally grown as ornamen- tals
Myrtle boxleaf (Oregon boxwood, mountain lover) <i>Pachystima myrsinites</i> (Pursh.) Raf. 3221	Coniferous for- ests, 6,000-9,000 ft	Low inconspicuous ground cover	Two-celled cap- sule, May	Plant relished by deer	
Vine mesquite <i>Panicum obtusum</i> HBK. 3222	Mudflats, heavy soiled lowlands, river banks, arro- yos, along ditches	Wiry, erect peren- nial grass, 8-35 in	Grain, June-Oct.	Plant eaten by rabbit, antelope, deer	Good range plant and soil binder
Bush penstemon <i>Penstemon microphyllus</i> Gray 3221	Rocky soils of hills and moun- tains, 1,500-5,000 ft	Small shrub, 3-6 ft	2-celled capsule		

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mock orange <i>Philadelphus microphyllus</i> Gray 3221	Rocky slopes, canyons, chaparral, coniferous forest, 5,000-9,000 ft, sun	Much branched deciduous shrub, 3-6 ft	Many-seeded capsule, June-July		
Ninebark <i>Physocarpus monogynus</i> (Torr.) Coult. 3221	Pine and spruce forests, 8,000-9,500 ft, sun and shade	Small shrub, 1-3 ft	Few-seeded dehiscent capsule, June-July		
Mexican pinyon <i>Pinus cembroides</i> Zucc. 3222	Pinyon-juniper woodland, 5,000-7,500 ft	Small evergreen tree, 15-50 ft	Cone with oily nuts	Seeds eaten by band-tailed pigeons, songbirds, rabbit, deer	
Colorado pinyon (Rocky Mountain pinyon) <i>Pinus edulis</i> Engelm. 3221	Pinyon-juniper woodland, 4,000-7,500 ft	Small evergreen bushy tree, compact spreading crown, 15-35 ft	Egg-shaped cone, pollinates in spring	Seeds eaten by pinyon jay, songbirds, fox, squirrel, gamebirds, deer	
Limber pine (Rocky Mountain white pine) <i>Pinus flexilis</i> James 3221	Widely distributed in coniferous forest above 7,000 ft, sun	Large evergreen tree, widely branched, drooping crown, 50-80 ft	Cone, 4-8 in	Seeds eaten by songbirds and squirrel; browsed by deer and rabbit	
Apache pine (Arizona longleaf pine) <i>Pinus latifolia</i> Sarg. 3222	Mountains along Mexican border, 5,000-8,500 ft, sun	Evergreen tree, 50-70 ft	Prickly scaled cone	Same as <i>P. flexilis</i>	Scattered in distribution
Chihuahuan pine <i>Pinus leiophylla</i> Schiede & Deppe 3222	Mountains, 5,000-7,800 ft	Tree, 30-80 ft	Stalked, spreading cone	Same as <i>P. flexilis</i>	
Singleleaf pinyon <i>Pinus monophylla</i> Torr. & Frem. 3221	Drier slopes, 4,000-6,500 ft	Evergreen tree, 15-30 ft	Cone, fall	Seeds eaten by songbirds, gamebirds, fox, squirrel; browsed by deer	
Ponderosa pine <i>Pinus ponderosa</i> Laws 3221, 3222	Plateaus, mountain slopes, in pure or mixed stands, 5,500-8,500 ft, sun	Large evergreen tree, 80-125 ft, straight trunk with narrow, open crown	Cone	Food and nesting sites for tassel-eared squirrels	Most common forest tree in southwest
Pinyon rice-grass <i>Piptochaetium fimbriatum</i> Hitchc. 3221	Open, rocky, woodlands, pine forest, 5,000-7,000 ft	Perennial bunch grass, 16-30 in	Awned grain, summer-fall	Plant eaten by deer	Good range grass
Muttongrass (Fendler bluegrass) <i>Poa fendleriana</i> Vasey 3221	Mesas, rocky hills, open dry woodlands, below 11,500 ft, sun	Perennial grass, 12-20 in	Grain, May-Sept.	Plant eaten by deer and rabbit	Important range grass
Quaking aspen (golden aspen, trembling poplar) <i>Populus tremuloides</i> Michx. 3221	Widely distributed in coniferous forest, above 6,500 ft	Tree, slender crown, 20-80 ft	Cottony capsule, early spring	Seeds eaten by gamebirds, songbirds, squirrel; browsed by deer	Great aesthetic value in fall, sprouts from cut roots
Mesquite (velvet mesquite, honey mesquite) <i>Prosopis juliflora</i> (Sw.) DC. 3221, 3222	Sandy alluvial soils, washes, to 5,500 ft	Spiny spreading shrub to tree, 20-50 ft	Pod, Sept.-Oct.	Important for food and cover for numerous species	Resprouts from cut stumps
Screwbean mesquite (tornillo) <i>Prosopis pubescens</i> Benth. 3221, 3222	Bottomlands along desert streams and water holes, up to 4,000 ft	Large shrub or small tree, 6-30 ft	Pod, May	Seeds eaten by dove, quail, numerous other species	

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Douglas-fir <i>Pseudotsuga menziesii</i> (Mirb.) Franco 3221	Mixed coniferous forest, cold canyons, 5,200-10,000 ft, sun	Large tree, 100-190 ft, open, broadly conical crown	Cone	Seeds eaten by squirrel; browsed by rabbit and deer	
Antelope brush (bitter-brush) <i>Purshia tridentata</i> Pursh. 3221	Open slopes, mesas, coniferous forests, 4,000-9,000 ft	Shrubs, to 9 ft	Hairy achene, summer	Browsed by rabbit, deer, antelope	Prevents soil erosion
Arizona white oak <i>Quercus arizonica</i> Sarg. 3221, 3222	Moist soil along streams, canyons, oak woodland foothills, mountains, 5,000-7,600 ft, sun	Tree with irregular spreading crown, 30-60 ft	Nut (acorn), spring	Food and cover for many birds and mammals	
Emory oak <i>Quercus emoryi</i> Torr. 3221, 3222	Moist soil along streams, canyons, oak woodland foothills, mountains, 4,000-7,000 ft, sun	Tree with spreading crown, 20-50 ft	Nut (acorn), spring	Seeds eaten by gamebirds, fox, squirrel; browsed by rabbit and deer; nesting cover for songbirds and squirrel	
Gambel oak <i>Quercus gambelii</i> Nutt. 3221	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6-70 ft	Nut (acorn), spring	Seeds eaten by songbirds and squirrel; browsed by rabbit and deer	
Gray oak <i>Quercus grisea</i> Liebm. 3222	Dry rocky hillside, 4,500-8,000 ft	Shrub to tree, 65 ft, evergreen	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel; browsed by rabbit and deer	
Silverleaf oak (white-leaf oak) <i>Quercus hypoleucoides</i> A. Camus 3222	Mountain slopes, canyons of oak woodlands, 5,000-7,000 ft, sun	Small evergreen tree with round spreading crown 15-30 ft, sometimes clumping shrub, 6 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel; browsed by deer	
Mexican blue oak <i>Quercus oblongifolia</i> Torr. 3222	Foothills, mountains, canyons, 4,500-6,000 ft	Small evergreen tree, to 25 ft	Nut (acorn), spring	Same as <i>Q. hypoleucoides</i>	
Netleaf oak <i>Quercus reticulata</i> Humb. & Bonpl. 3220	Uncommon in mountains, canyons, and oak woodlands, 4,000-8,000 ft, sun	Evergreen shrub to tree with rounded crown, 6-40 ft	Nut (acorn), spring	Same as <i>Q. hypoleucoides</i>	
Shrub live oak (scrub oak, California scrub oak, turbinella oak) <i>Quercus turbinella</i> Greene 3221, 3222	Dry slopes, hillsides, canyons, 3,000-8,000 ft	Evergreen shrub, to 7 ft	Nut (acorn), late summer-fall	Acorns important for numerous species	Often abundant
Birchleaf buckthorn <i>Rhamnus betulaeifolia</i> Greene 3221, 3222	Canyons, along streams in mountains, oak woodland and pine forest, 5,500-7,500 ft	Rounded shrub 8 ft or less, rarely small tree, to 18 ft	3-seeded, berrylike, May-June	Fruit eaten by gamebirds and squirrel; browsed by deer	
California buckthorn (coffeeberry) <i>Rhamnus californica</i> Esch. 3221, 3222	Common in canyons, along streams, chaparral, open coniferous forest, 3,500-7,000 ft, sun and shade	Evergreen shrub to small tree, 6-20 ft	Berrylike fruit, May-July	Same as <i>R. betulaeifolia</i>	

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Hollyleaf buckthorn (buckthorn, red berry buckthorn) <u>Rhamnus crocea</u> Nutt. 3221, 3222	Mountains, chaparrals, lower pine forests, dry washes, canyons, 3,000-7,000 ft, sun and shade	Spreading evergreen shrub to small tree, 3-15 ft	Berrylike pome, Mar.-May	Fruit eaten by game-birds; browsed by deer	
Mearns sumac <u>Rhus choriophylla</u> Woot & Standl. 3222	Rocky slopes, 4,000-6,000 ft	Shrub, to 7 ft	Small one-seeded drupe, July-Sept.	Fruit eaten by pigeons and quail; browsed by deer and rabbit	
Sugar sumac (sugar bush, mountain-laurel) <u>Rhus ovata</u> Wats. 3221, 3222	Mountain slopes, canyons, in moist soils, 3,000-5,000 ft	Evergreen tree or shrub, to 15 ft	Cluster of berries, late spring		
Squawbush <u>Rhus trilobata</u> Nutt. 3221, 3222	Along streams, in canyons, on slopes in chaparral, 2,500-7,500 ft, sun	Aromatic deciduous shrub, 2-7 ft	Berrylike, Mar.-June	Browse by deer	
Wax currant <u>Ribes cereum</u> Dougl. 3221	Pine forests, sometimes on cliffs, 5,500-9,000 ft, sun	Straggly deciduous shrub, 3-6 ft	Several-seeded juicy berry, May-July	Fruit eaten by game-birds and squirrel; browsed by deer	
New Mexican locust <u>Robinia neomexicana</u> Gray 3221	Canyons, mountains, forming almost pure thickets on north facing slopes, 4,000-8,500 ft, sun	Spiny shrub or small tree, to 25 ft	Pod, May-Aug.	Fruit eaten by quail and squirrel; browsed by deer	Effective in reducing erosion
Raspberry <u>Rubus strigosus</u> Michx. 3221	Rich soil in coniferous forest, 7,000-11,500 ft, sun and shade	Upright deciduous shrub, 4-6 ft	Fleshy aggregate fruit of drupelets, June-July	Fruit eaten by quail, fox, squirrel; browsed by rabbit	
Bladder sage (paper-bag bush) <u>Salazaria mexicana</u> Torr. 3221	Foothills and washes in creosote associations, below 3,000 ft	A low subspinose shrub	Bladder-like fruit with roughened nutlet, Mar.-Oct.		
Mojave sage <u>Salvia mohavensis</u> Green 3221	Dry, rocky slopes, 1,000-4,000 ft	Low rounded shrub, 1-3 ft	Smooth nutlet, spring		
Canadian elder <u>Sambucus cerulea</u> Raf. 3221	Moist soils in coniferous forest, 5,000-9,000 ft	Many-stemmed shrub, to 20 ft	Globose berry, June-Sept.	Browsed by deer	
Western soapberry (wild china-tree, cherion, jaboncillo) <u>Sapindus drummondii</u> Hook & Arn. 3222	Stream banks, canyon sides in upper desert, desert grassland, oak woodland, 2,500-6,000 ft	Large spreading shrub to small tree, to 25 ft	One-seeded berrylike, remaining until spring		Fruit and foliage poisonous to wildlife
Jojoba (goatnut) <u>Simmondsia chinensis</u> Link 3222	Rocky or gravelly well drained slopes, 1,500-5,000 ft	Shrub, 3-6 ft	Oily nut	Browsed by deer	Nuts commercially harvested for oil; absent in New Mexico
Squirreltail (bottle-brush squirreltail) <u>Sitanion hystrix</u> Nutt. 3221, 3222	Desert slopes to subalpine meadows	Tufted, erect perennial grass, 6-28 in	Stiffly awned grain, year round depending on habitat		A preferred forage

continued

Table 3220-54.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Nightshade (white horse-nettle, silver horse-nettle, bullnettle, trompillo) <u>Solanum elaeagnifolium</u> Cav. 3222	Fields and roadsides, 1,000-5,500 ft	Herbaceous or slightly woody shrub, 1-3 ft	Small berry, May-Oct.	Fruit eaten by dove, quail, raccoon, skunk	
Sophora (silky sophora, mescal bean, fringeleaf sophora) <u>Sophora</u> spp. L. 3221, 3222	Dry soils, hillsides, 3,500-7,000 ft	Shrub, to 11 ft	Flat pod, Apr.-June		Ornamental, good soil binder; poisonous to livestock
Globe mallow <u>Sphaeralcea</u> spp. St. Hil 3222	Dry mesas to pine forests, 1,000-8,000 ft	Erect perennial, 5-50 in	Capsule, fall		
Dropseed <u>Sporobolus</u> spp. R. Br. 3222	Open slopes, hills, mesas, 5,000-7,000 ft	Tufted perennial grass, to 6 ft	Grain, spring-fall	Plant eaten by deer	
Sand dropseed <u>Sporobolus cryptandrus</u> Torr. 3221	Exposed sites on sandy soil, below 7,000 ft	Perennial grass, 15-50 in	Grain, July-Nov.	Same as <u>Sporobolus</u> spp.	
Black dropseed <u>Sporobolus interruptus</u> Torr. 3221	Dry soils in forests openings, meadows, oak woodland, pine forests, 5,000-7,000	Perennial grass, 16-48 in	Grain, July-Oct.	Same as <u>Sporobolus</u> spp.	Only in Arizona
Sacaton <u>Sporobolus wrightii</u> Scribn. 3222	River banks, sandy washes, plains and valley flats, 2,000-5,500 ft	Densely tufted perennial grass, 3-6 ft	Grain, July-Oct		
Prince's plume (desert plume) <u>Stanleya pinnatifida</u> 3221	Dry plains and mesas, 2,500-6,000 ft	Low suffrutescent plant	Long capsule, May-Sept.		
Needlegrass <u>Stipa</u> spp. L. 3221	Mountain meadows, woodland openings, above 5,000 ft	Perennial grass, 10-30 in	Grain, summer-fall	Plant eaten by deer	
Inkweed (Torrey sea-blite, iodine weed) <u>Suaeda torreyana</u> Wats. 3222	Saline flats with subsurface soil moisture, below 5,000 ft	Shrub, 2-3 ft	Utricle enclosed by fleshy perianth		
Snowberry <u>Symphoricarpos oreophilus</u> Gray 3221	Slopes and along streams in mountains, coniferous forests, 5,500-9,000 ft	Erect or trailing shrub, 1-6 ft	Berry, Apr.-Aug.	Browsed by deer	
Tamarisk <u>Tamarix pentandra</u> Pall. 3222	Moist soil along streams, up to 5,000 ft	Large shrub, small tree, usually forming dense thickets 10-25 ft	Capsule in spikes, Mar.-Aug.	Seeds eaten by dove; nesting cover for dove	Often grows in saline soil, usually considered undesirable except for erosion control
Meadow-rue <u>Thalictrum fendleri</u> Engelm. 3221	Pine forests, mountain meadows, 5,000-9,500 ft	Perennial herb, 1-2 ft	Achene, spring-fall		
California cottontop (Arizona cottontop) <u>Trichachne californica</u> Benth. 3222	Open, well drained soil, often on steep rocky slopes, below 6,000 ft	Erect perennial grass, 14-35 in	Grain, Aug.-Nov.	Plant eaten by rabbit and bighorn sheep	Response to pre good

continued

Table 3220-54.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Fluffgrass <i>Tridens puchellus</i> Hitchc. 3222	Dry rocky slopes, plains, below 6,000 ft	Low tufted perennial or annual grass, 6 in	Grain, Apr.-Nov.		Often abundant on overgrazed land
American vetch <i>Vicia americana</i> Muhl. 3221	Conifer woodlands, meadows, to 10,500 ft	Perennial forb, 4-18 in	Legume, summer-fall	Seeds eaten by dove and quail	
California fan palm <i>Washingtonia filifera</i> Linden 3222	Moist soil along alkaline streams of desert mountains, 500-3,000 ft	Tall palm tree, 20-50 ft	Drupe with thin dry flesh		
Spanish dagger (datil, fleshy-fruited yucca, yucca) <i>Yucca baccata</i> Torr. 3221, 3222	Dry, rocky slopes of desert grasslands and conifer woodland, 3,000-8,000 ft	Shrub to small tree, 1-20 ft	Large fruit, 6 in long	Nectar for hummingbirds; nest covering for woodpeckers	
Joshua tree (tree yucca) <i>Yucca brevifolia</i> Engelm. 3221, 3222	The bases of high desert mountains, to 3,500 ft	Branching treelike, 20-30 ft	3-celled capsule, Mar.-May	Nest site for various songbirds	
Soaptree yucca (palmita) <i>Yucca elata</i> Engelm. 3222	Grassland and desert, 1,500-6,000 ft	Shrub to small tree, to 30 ft	Fleshy or dry capsule, May-July	Fruit eaten by songbirds, and small mammals	
Mojave yucca (Spanish dagger) <i>Yucca schidigera</i> Roezl. 3221	Broad gravelly benches and deserts, to 3,500 ft	Large erect plants, to 10 ft	3-celled capsule	Food and nesting sites for numerous small species	
Spanish bayonet (palma, Spanish dagger) <i>Yucca torreyi</i> Shafer 3222	Scattered on mesas, foothills and plains, 3,500-5,000 ft	Shrub or small tree, 3-16 ft	3-celled capsule	Seeds eaten by songbirds and small mammals	
Desert zinnia <i>Zinnia grandiflora</i> Nutt. 3222	Dry slopes and mesas, 4,000-6,500 ft	Perennial branched from base, 8 in or less	Achene, May-Oct.		
Desert zinnia <i>Zinnia pumila</i> Gray 3222	Alluvial plains and slopes, 2,000-5,000 ft	Low shrub with woody stem, 8-11 in	Achene, Apr.-Oct.		

Table 3220-54.2 [R] Ecological Characteristics of Selected Plant Species Common to the American Desert (Mohave—Colorado—Sonoran) in Riparian Habitats

Species	Habitat	Form	Fruit	General wildlife use	Notes
Cat-claw (devil's claw, una de gato) <u>Acacia greggii</u> Gray 3221, 3222	Washes, mesas, to 5,000 ft	Large shrub to small tree	Pod, 2.5-5 in	Seeds eaten by dove and quail; roosting tree for quail	Often abundant
Iodinebush (pickleweed) <u>Allenrolfea occidentalis</u> (Wats.) Ktze. 3221, 3222	Highly alkaline flats and sinks, salt marshes, floodplains	Shrub, 1-5 ft	Berrylike, May-Nov.		
Shadscale (spiny saltbush) <u>Atriplex confertifolia</u> Torr. & Frem. 3221	Alkaline mesas and plains in sagebrush and creosote desert, 2,500-6,000 ft	Shrub, 1-3 ft	Flat winged fruit	Seeds eaten by quail and songbirds; browsed by rabbit and sheep	
Shadscale big saltbush (lenscale, quailbrush) <u>Atriplex lentiformis</u> (Torr.) Wats. 3221, 3222	Alkaline soils below 7,000 ft	Erect shrub, 3-9 ft	Ovate flattened fruit	Seeds eaten by waterfowl and quail; browsed by rabbit, deer, antelope	Halophyte occurring with <u>Sarcobatus</u> spp.
Desert saltbush (cattle spinach) <u>Atriplex polycarpa</u> Torr. 3222	Alkaline plains, 400-3,000 ft	Round shrub, 3 ft	Flat and disc-like	Seeds eaten by quail and songbirds; browsed by rabbit and deer	
Baccharis <u>Baccharis</u> spp. L. 3221, 3222	Along water courses, 500-8,000 ft	Deciduous shrub, to 7 ft	Achene, Apr.-Feb.		
Seepwillow <u>Baccharis glutinosa</u> Pers. 3221, 3222	Moist soil along streams, to 5,500 ft, sun	Willow-like deciduous shrub, to 7 ft	Achene, Mar.-Dec.		Often forming thickets
Red brome <u>Bromus rubens</u> L. 3222	Road sides, waste places	Small grass	Grain	Seeds eaten by numerous birds and mammals	Introduced from Europe
Sedge <u>Carex</u> spp. L. 3221, 3222	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grass-like erect herb, 2-4 ft	Achene in spikes, spring	Seeds eaten by gamebirds, bear, rabbit, squirrel, fox; plant eaten by deer	
Desert hackberry <u>Celtis pallida</u> Torr. 3222	Foothills, mesas, 1,500-3,500 ft	Spiny, densely branched deciduous shrub, 3-10 ft	Oval, one-seeded drupe, spring	Fruit eaten by dove, quail, numerous small species; browsed by deer	Often forms thickets; ornamental
Netleaf hackberry (cumero, paloblanco, western hackberry) <u>Celtis reticulata</u> Torr. 3222	Streams, canyons, washes, moist soil, 3,500-6,000 ft	Deciduous, large shrub to small tree, to 30 ft, spreading crown	One-seeded drupe	Fruit eaten by gamebirds	
Desert-willow (desert catalpa) <u>Chilopsis linearis</u> (Cav.) Sweet 3221, 3222	Mostly along washes, in foothills and deserts	Large shrub to small tree, to 30 ft	Long, narrow pod		Good soil binder
Gray-thorn (white crucillo, grayleaf abrojo, lotebush) <u>Condalia lycioides</u> (Gray) Weberb. 3222	Mesas, slopes, in desert and desert grassland, 1,500-4,500 ft	Straggly shrub, 3-9 ft	Thin skin one-seeded drupe	Fruit eaten by Gambel's quail, pigeon, dove, fox	Common, often forms thickets

continued

Table 3220-54.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mustard <u>Cruciferae</u> spp. L. 3222	Ubiquitous	Herbaceous or suffrutescent, annual or perennial	Capsule	Seeds eaten by numerous species	
Coyote-melon <u>Cucurbita palmata</u> Wats. 3221, 3222	Sandy plains to rocky slopes, to 3,000 ft	Perennial herb, trailing stems	Gourd-like, Apr.-Sept.		
Bermuda grass <u>Cynodon dactylon</u> (L.) Pers. 3222	Moist waste areas, low altitudes	Stoloniferous perennial grass	Grain	Seeds eaten by waterfowl and mammals	Introduced
Indigobush (pea-bush) <u>Dalea mollis</u> Benth. 3221	Sandy or rocky soil, to 3,000 ft	Low shrub	Pod, Jan.-Apr.		
Saltgrass <u>Distichlis spicata</u> (L.) Greene 3221, 3222	Saline or alkaline marshes, lakes	Perennial grass, to 1 ft	Grain, summer-fall	Seeds eaten by waterfowl and marshbirds	
Spikerush <u>Eleocharis</u> spp. R. Br. 3221	Moist soil along streams or in forests, 150-3,000 ft	Upright herb, leafless, 1-3 ft	Achene in spikelets, spring	Seeds eaten by gamebirds; plant eaten by rabbit and muskrat	
Filaree (heron-bill) <u>Erodium cicutarium</u> L. 3222	Rocky or sandy soils, ubiquitous	Prostrate, annual	Ellipsoid seed, Feb.-June	Seeds eaten by numerous species	Excellent spring forage
Ash <u>Fraxinus</u> spp. L. 3221	Along streams or rivers, canyons, desert, and oak woodlands	Shrub or tree, to 20 or 40 ft	Dry with large terminal wing, Mar.-June	Seeds eaten by gamebirds, songbirds, squirrel; nest covering for songbirds and squirrel	
Sunflower <u>Helianthus annuus</u> L. 3221	Ubiquitous, 100-7,000 ft	Annual or perennial herb	Seeds mature in summer-fall	Seeds eaten by numerous species	Cultivated for seed oil
Rose mallow <u>Hibiscus</u> spp. L. 3221	Marshes, lakes, ponds, streams, wet soils	Perennial, to 6 ft	Capsule, May-Oct.		
Janusia <u>Janusia gracilis</u> Gray 3222	Moist to dry, rocky, 1,000-5,000 ft	Twining, tangled, slender stem	Samara, Apr.-Oct.		
Rush <u>Juncus</u> spp. L. 3221, 3222	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grass-like herb, 2-4 ft	Capsule, spring	Forage	
Rush <u>Juncus torreyi</u> Cav. 3221	Marshy margins of lakes, ponds, streams, wet meadows, to 5,500 ft	Perennial, culms, to 3 ft	3-celled capsule, July-Aug.	Seeds eaten by rabbit and browsers	
Deer vetch <u>Lotus rigidus</u> Benth. 3221	Rocky slopes, to 5,500 ft	Perennial or annual, to 1 ft	Pod, Feb.-May	Seeds eaten by gamebirds and browsers	
Blazing-star (stickleaf) <u>Mentzelia</u> spp. L. 3221	Dry, sandy, slopes and mesas, 1,000-8,500 ft	Low shrub, to 3 ft	Oblong to linear capsule	Seeds eaten by quail	

continued

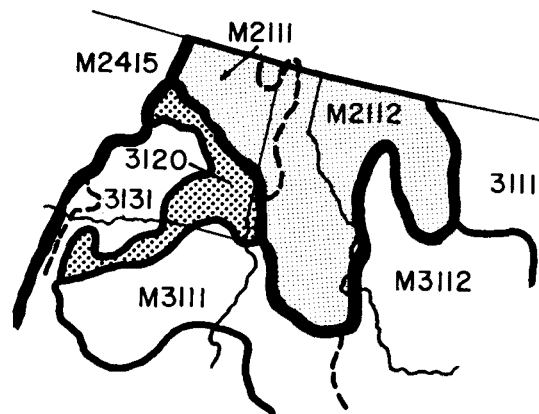
Table 3220-54.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<i>Nemacladus glanduliferus</i> Jeps. 3221, 3222	Ubiquitous, to 5,000 ft	Perennial or annual, to 1 ft	Capsule, Mar.-May		
Evening-primrose (sun-drops) <i>Oenothera multijuga</i> Wats. 3221	Washes and canyons, to 5,500 ft	Herbs, to 1.5 ft	Capsule, Apr.-June	Seeds eaten by browsers	
Reed <i>Phragmites communis</i> Trin. 3221, 3222	Wet places and alkalai sinks, below 5,000 ft	Tall perennial reed, up to 12 ft	Grain, July-Dec.		
Camphor-weed (salt-marsh fleabane) <i>Pluchea camphorata</i> (L.) DC. 3222	Alluvial and saline soils along streams, rivers, marshes	Perennial herb, to 5 ft	Achene, Sept.-Oct.	Cover	
Fremont cottonwood <i>Populus fremontii</i> Wats. 3221, 3222	Moist soils along streams, 150-5,000 ft, sun	Large tree, 50-100 ft with broad, flat open crown	Seed capsule, in catkins	Seeds eaten by game-birds; browsed by rabbit; nest covering for songbirds and raptors	
Pondweed <i>Potamogeton</i> spp. L. 3221	Shallow ponds, lakes, streams	Subsurface pondweed	Drupelet or achene, summer-fall	Plant eaten by water-fowl, muskrat, shore-birds	
Mesquite (velvet mesquite, honey mesquite) <i>Prosopis juliflora</i> (Sw.) DC. 3221, 3222	Sandy alluvial soils, washes, to 5,500 ft	Spiny spreading shrub to tree, 20-50 ft	Pod, Sept.-Oct.	Important for food and cover for numerous species	Resprouts from cut stumps
Screwbean mesquite (tornillo) <i>Prosopis pubescens</i> Benth. 3221, 3222	Bottomlands along desert streams and water holes, up to 4,000 ft	Large shrub or small tree, 6-30 ft	Pod, May	Seeds eaten by dove, quail, numerous other species	
Watercress <i>Rorippa</i> spp. Scop. 3221	Moist soil along streams or in streams, 1,500-9,500 ft, shade	Small prostrate forb, 6-18 in	Globose capsule, spring		
Bonpland willow <i>Salix bonplandiana</i> HBK. 3222	Along streams, 2,500-5,000 ft	Tree to 25 ft, rarely 50 ft	Capsule	Seeds eaten by numerous species of birds, small mammals, browsers	
Goodding willow <i>Salix gooddingii</i> Balt. 3221, 3222	Along streams, rivers, 150-5,000 ft	Tree, 20-50 ft	Capsule, spring	Numerous species of birds, small mammals, browsers	Important for stream-bank protection
Arroyo willow <i>Salix lasiolepis</i> Benth. 3221	Along streams, swamps, 4,000-7,500 ft	Usually shrub but sometimes treelike, to 30 ft	Capsule in catkins	Same as <i>S. bonplandiana</i>	Check soil erosion
Climbing milkweed <i>Sarcostemma</i> spp. R. Br. 3221	Streams, washes, moist places, to 6,000 ft	Stems twining along ground or over bushes	Follicle, Mar.-Oct.		
Salt marsh bulrush <i>Scirpus paludosus</i> L. 3221, 3222	Marshes, saltflats, in mud around lakes and along streams	Erect rush, 1-3.5 ft	Spiked achene, year-round	Plant eaten by water-fowl, shorebirds, quail, songbirds, muskrat	Subspecies of <i>S. maritimus</i>

continued

Table 3220-54.2 [R] (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bulrush <i>Scirpus</i> spp. L. 3221, 3222	Marshes, ponds, streams, rivers, to 9,000 ft	Perennial, to 6 ft	Achene, spring-fall	Plant eaten by waterfowl, marshbirds, muskrats	
Inkweed (Torrey sea-blite, iodine weed) <i>Suaeda torreyana</i> Wats. 3221, 3222	Saline flats with subsurface soil moisture below 5,000 ft	Shrub, 2-3 ft	Utricle enclosed by fleshy perianth		
Saltcedar (tamarisk) <i>Tamarix pentandra</i> Pall. 3221, 3222	Moist soil along streams, up to 5,000 ft	Large shrub, small tree, usually forming dense thickets, 10-25 ft	Capsule in spikes, Mar.-Aug.	Nesting cover for doves	Often grows in saline soil, usually considered undesirable except for erosion control
Arrow-weed <i>Tessaria sericea</i> Nutt. 3221, 3222	Along streams, rivers, marshes	Shrub to 3 ft or more, willow-like	Achene, summer	Cover	
Narrow-leaved cat-tail <i>Typha angustifolia</i> L. 3221, 3222	Marshes, in shallow water and along streams	Slender leaved and erect, up to 5 ft	Tight terminal spike, late summer-fall	Seeds eaten by waterfowl and shorebirds; Nest covering for waterfowl and shorebirds	
Cat-tail <i>Typha</i> spp. L. 3222	Moist soil along streams, ditches, lakes, ponds, to 7,000 ft, sun and shade	Tall perennial herb with round stem, 3-8.5 ft	Fruit and flowers in long, terminal spikes, June-July	Seeds eaten by ducks and geese	
Canyon grape <i>Vitis arizonica</i> Engelm. 3221, 3222	Moist soil along streams, canyons, often climbing on trees, 2,000-7,000 ft, shade	Climbing or trailing woody vine	One-seeded berry, Apr.-July	Fruit eaten by numerous gamebirds and mammals	Vines aid in preventing erosion along streams



Location of province within the United States

Location of sections within the province
Province boundary
Section boundary
State boundary

Figure 55.1 Province M2110, Columbia Forest (Dry Summer); Sections M2111, Douglas-fir Forest, and M2112, Cedar—Hemlock—Douglas-fir Forest

55 PROVINCE M2110 Columbia Forest (Dry Summer)

SECTION M2111, DOUGLAS-FIR FOREST

The Douglas-fir Forest lies primarily in northeastern Washington with a narrow strip in northwestern Idaho. The four main vegetation zones found in this section are determined by elevation; cedar—hemlock and spruce—fir communities are found in Washington; Douglas-fir and ponderosa pine communities are found in eastern Idaho and Montana. The lower elevation ponderosa pine and Douglas-fir forests are included in this section; the higher elevation cedar—hemlock and spruce—fir communities are described in section 56.

The ponderosa pine zone occurs in the driest, low elevation areas in this section; its distribution is closely correlated with available soil moisture. Fire plays a role in maintaining this forest type and has been recommended as a forestry tool to reduce seedling density and retain the more mesic species, Douglas-fir and true firs, where they are capable of invading.

The Douglas-fir zone begins above the ponderosa pine zone, at approximately 4500 feet. This zone is cooler with a higher annual precipitation and more favorable soil moisture conditions.

SECTION M2112 CEDAR—HEMLOCK—DOUGLAS-FIR FOREST

The Cedar—Hemlock—Douglas-fir Forest includes most of northern Idaho and western Montana. The Continental Divide separates the section into eastside and westside community types. Many plant associations are found only on the west or on the east side of the Divide while others are found throughout the entire area. There are four vegetation zones within this section, based on elevation (Daubenmire 1952; Pfister et al. 1974). Only the cedar—hemlock zone and the subalpine fir zone, which are found at higher elevations throughout eastern Washington, northern Idaho, and western Montana, are included here.

The cedar—hemlock zone occurs in what appears to be the most equitable climatic region of all—the interior forest zones. It is above the Douglas-fir zone and in Montana includes grand fir, western redcedar, western hemlock, and spruce communities.

Above this zone, the subalpine fir gains dominance, and Douglas-fir, western larch, and white pine reach their altitudinal limits. The subalpine fir zone has its lower elevation boundary at approximately 3000 to 5200 feet. The coolest and moistest of the forested zones with cool summers, cold winters, and deep winter snowpacks, it is the highest continuous forested zone. At higher elevations, the mosaic of forest and meadows occurs.

Table M2110-55.1 [M2111] Selected Plant Species Common to the Douglas-fir Forest

Growth form	Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained		
(Ponderosa pine--grass communities)		
Tall trees, over 40 ft	<u>Pinus ponderosa</u>	Ponderosa pine
Low trees and tall shrubs, 10-20 ft	<u>Prunus virginiana</u>	Western choke-cherry
Low to medium shrubs, under 10 ft	<u>Physocarpus malvaceus</u> <u>Rosa nutkana</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u>	Mallow ninebark Nootka rose Shinyleaf spiraea Common snowberry
Lesser vegetation	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Balsamorhiza sagittata</u> <u>Bromus tectorum</u> <u>Carex geyeri</u> <u>Collinsia parviflora</u> <u>Epilobium paniculatum</u> <u>Erythronium grandiflorum</u> <u>Festuca idahoensis</u> <u>Fragaria chiloensis</u> <u>Galium aparine</u> <u>Perideridia gairdneri</u> <u>Stellaria nitens</u>	Western yarrow Bluebunch wheatgrass Arrowleaf balsamroot Cheat Elk sedge Littleflower collinsia Autumn willowweed Lamb's-tongue fawn lily Idaho fescue Sand strawberry Cleaver's bedstraw Gairdner yampah Shining chickweed
(Ponderosa pine--shrub communities)		
Tall trees, over 40 ft	<u>Pinus ponderosa</u> <u>Populus tremuloides</u>	Ponderosa pine Quaking aspen
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Prunus virginiana</u>	Serviceberry Western choke-cherry
Low to medium shrubs, under 10 ft	<u>Berberis repens</u> <u>Physocarpus malvaceus</u> <u>Purshia tridentata</u> <u>Rosa nutkana</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u>	Oregon-grape Mallow ninebark Bitterbrush Nootka rose Shinyleaf spiraea Common snowberry
Lesser vegetation	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Arenaria macrophylla</u> <u>Arnica cordifolia</u> <u>Balsamorhiza sagittata</u> <u>Bromus tectorum</u> <u>Bromus vulgaris</u> <u>Carex geyeri</u> <u>Collinsia parviflora</u> <u>Epilobium paniculatum</u> <u>Erythronium grandiflorum</u> <u>Festuca idahoensis</u> <u>Fragaria chiloensis</u> <u>Galium aparine</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Hydrophyllum capitatum</u> <u>Osmorhiza</u> spp. <u>Perideridia gairdneri</u> <u>Stellaria nitens</u> <u>Thalictrum occidentale</u> <u>Trillium petiolatum</u> <u>Viola glabella</u>	Western yarrow Bluebunch wheatgrass Bigleaf sandwort Heartleaf arnica Arrowleaf balsamroot Cheat Columbia brome Elk sedge Littleflower collinsia Autumn willowweed Lamb's tongue fawn lily Idaho fescue Sand strawberry Cleaver's bedstraw Northern bedstraw Sweet-scented bedstraw Baldhead waterleaf Sweetroot Gairdner yampah Shining chickweed Western meadow-rue Purple trillium Wood violet

continued

Table M2110-55.1 [M2111] (Continued)

Growth form	Late Successional plants	
	<u>Dry/excessive (Continued)</u>	
	(Douglas-fir--ninebark communities)	
Tall trees, over 40 ft	<u>Pinus contorta</u> <u>Pinus ponderosa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u>	Lodgepole pine Ponderosa pine Quaking aspen Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Prunus virginiana</u>	Serviceberry Western choke-cherry
Low to medium shrubs, under 10 ft	<u>Berberis repens</u> <u>Physocarpus malvaceus</u> <u>Rosa gymnocarpa</u> <u>Rosa nutkana</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u>	Oregon-grape Mallow ninebark Baldhip rose Nootka rose Shinyleaf spiraea Common snowberry
Lesser vegetation	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Arenaria macrophylla</u> <u>Arnica cordifolia</u> <u>Bromus tectorum</u> <u>Bromus vulgaris</u> <u>Carex geyeri</u> <u>Collinsia parviflora</u> <u>Erythronium grandiflorum</u> <u>Fragaria chiloensis</u> <u>Galium aparine</u> <u>Galium boreale</u> <u>Mitella stauropetala</u> <u>Osmorhiza</u> spp. <u>Smilacina stellata</u> <u>Stellaria nitens</u> <u>Thalictrum occidentale</u> <u>Trillium petiolatum</u> <u>Viola glabella</u>	Western yarrow Bluebunch wheatgrass Bigleaf sandwort Heartleaf arnica Cheat Columbia brome Elk sedge Littleflower collinsia Lamb's-tongue fawn lily Sand strawberry Clever's bedstraw Northern bedstraw Cross-shaped miterwort Sweetroot Starry Solomon plume Shining chickweed Western meadow-rue Purple trillium Wood violet
Habitat conditions: Moist to wet/well-drained to impeded		
	(Rocky Mountain maple communities)	
Tall trees, over 40 ft	<u>Abies grandis</u> <u>Thuja plicata</u>	Grand fir Western redcedar
Low trees and tall shrubs, 10-20 ft	<u>Acer glabrum</u> <u>Juniperus scopulorum</u> <u>Salix fluviatilis</u>	Rocky Mountain maple Rocky Mountain juniper Columbia River willow
Low to medium shrubs, under 10 ft	<u>Clematis columbiana</u> <u>Corylus cornuta</u> <u>Crataegus columbiana</u> <u>Crataegus douglasii</u> <u>Philadelphus lewisii</u> <u>Physocarpus malvaceus</u> <u>Ribes cereum</u> <u>Ribes lacustre</u> <u>Rubus idaeus</u> <u>Rubus leucodermis</u> <u>Rubus parviflorus</u> <u>Salix bebbiana</u> <u>Salix lasianдра</u> <u>Symphoricarpos albus</u> <u>Symphoricarpos occidentalis</u>	Columbia clematis California hazelnut Columbia hawthorn Douglas hawthorn Lewis mock orange Mallow ninebark Wax currant Swamp gooseberry Red raspberry Black raspberry Thimbleberry Bebb willow Pacific willow Common snowberry Western snowberry
Lesser vegetation	<u>Achillea millefolium</u> <u>Agropyron spicatum</u> <u>Antennaria anaphaloides</u> <u>Antennaria dimorpha</u> <u>Antennaria rosea</u>	Western yarrow Bluebunch wheatgrass Tall pussy's-toes Low pussy's-toes Rosy pussy's-toes

continued

Table M2110-55.1 [M2111] (Concluded)

Growth form	Late successional plants	
	<u>Moist/well-drained (Continued)</u>	
	(Douglas maple communities) (Continued)	
Lesser vegetation (Continued)	<u>Aquilegia formosa</u> <u>Arabis glabra</u> <u>Arabis puberula</u> <u>Arceuthobium americanum</u> <u>Arceuthobium douglasii</u> <u>Arenaria macrophylla</u> <u>Arnica cordifolia</u> <u>Artemisia campestris</u> <u>Artemisia frigida</u> <u>Aster foliaceus</u> <u>Balsamorhiza sagittata</u> <u>Bromus carinatus</u> <u>Calypso bulbosa</u> <u>Carex hoodii</u> <u>Cerastium arvense</u> <u>Chimaphila umbellata</u> <u>Corallorhiza maculata</u> <u>Cypripedium calceolus</u> <u>Cypripedium montanum</u> <u>Cystopteris fragilis</u> <u>Deschampsia elongata</u> <u>Elymus glaucus</u> <u>Equisetum arvense</u> <u>Equisetum hyemale</u> <u>Erigeron compositus</u> <u>Erigeron speciosus</u> <u>Galium boreale</u> <u>Goodyera oblongifolia</u> <u>Lathyrus nevadensis</u> <u>Lithophragma parviflora</u> <u>Lomatium dissectum</u> <u>Lomatium macrocarpum</u> <u>Lupinus sericeus</u> <u>Nuphar polysepalum</u> <u>Osmorhiza chilensis</u> <u>Poa ampla</u> <u>Poa scabrella</u> <u>Potentilla gracilis</u> <u>Potentilla norvegica</u> <u>Pyrola picta</u> <u>Sanicula graveolens</u> <u>Selaginella wallacei</u> <u>Senecio integerrimus</u> <u>Smilacina racemosa</u> <u>Solidago canadensis</u> <u>Stellaria calycantha</u> <u>Stellaria nitens</u> <u>Stipa comata</u> <u>Thalictrum occidentale</u> <u>Vicia americana</u> <u>Viola adunca</u> <u>Viola canadensis</u> <u>Viola nuttallii</u> <u>Viola palustris</u>	Red columbine Tower mustard Hoary rockcress American dwarf mistletoe Douglas dwarf mistletoe Bigleaf sandwort Heartleaf arnica Pacific sagebrush Pasture sage Leafy aster Arrowleaf balsamroot California brome Calypso Hood sedge Field chickweed Western prince's-pine Spotted coralroot Yellow lady's-slipper Mountain lady's-slipper Brittle fern Slender hairgrass Blue wild rye Common horsetail Scouring-rush Dwarf mountain fleabane Showy fleabane Northern bedstraw Rattlesnake plantain Nevada peavine Small-flowered fringecup Lace-leaved lomatium Bigseed lomatium Silky lupine Indian pond lily Mountain sweetroot Merrill's bluegrass Pine bluegrass Beauty cinquefoil Norwegian cinquefoil Whitevein pyrola Sierra snakeroot Wallace's selaginella Western groundsel False Solomon's-seal Canada goldenrod Northern starwort Shining chickweed Needle-and-thread Western meadow-rue American vetch Western long-spurred violet Canada violet Upland yellow violet Marsh violet

Table M2110-55.1 [M2112EL] Selected Plant Species Common to the Cedar—Hemlock—Douglas-fir Forest (Eastside Lower Elevation)

Growth form	Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained		
(Scree)		
Tall trees, over 40 ft	<u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u>	Subalpine fir Engelmann spruce White spruce Whitebark pine Lodgepole pine Lumber pine Ponderosa pine Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Prunus virginiana</u>	Serviceberry Common juniper Western choke-cherry
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Juniperus horizontalis</u> <u>Physocarpus malvaceus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u>	Kinnikinnik Oregon-grape Creeping juniper Mallow ninebark Buffaloberry Shinyleaf spiraea Common snowberry Globe huckleberry
Lesser vegetation	<u>Agropyron spicatum</u> <u>Arnica cordifolia</u> <u>Balsamorhiza sagittata</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Clematis pseudoalpina</u> <u>Festuca idahoensis</u> <u>Festuca scabrella</u> <u>Galium boreale</u> <u>Hesperochloa kingii</u> <u>Osmorhiza chilensis</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Thalictrum occidentale</u> <u>Xerophyllum tenax</u>	Bluebunch wheatgrass Heartleaf arnica Arrowleaf balsamroot Pinegrass Elk sedge Climbing purple virgin's-bower Idaho fescue Rough fescue Northern bedstraw Spike fescue Mountain sweetroot False Solomon's-seal Starry Solomon plume Western meadow-rue Bear grass
(Lumber pine communities)		
Tall trees, over 40 ft	<u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u>	Subalpine fir Engelmann spruce White spruce Whitebark pine Lodgepole pine Lumber pine Ponderosa pine Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Prunus virginiana</u>	Serviceberry Common juniper Western choke-cherry
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Artemisia tridentata</u> <u>Berberis repens</u> <u>Juniperus horizontalis</u> <u>Physocarpus malvaceus</u> <u>Purshia tridentata</u> <u>Ribes lacustre</u> <u>Ribes montigenum</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u>	Kinnikinnik Big sagebrush Oregon-grape Creeping juniper Mallow ninebark Bitterbrush Swamp gooseberry Alpine prickly currant Buffaloberry Shinyleaf spiraea Common snowberry

continued

Table M2110-55.1 [M2112EL] (Continued)

Growth form	Late successional plants		
<u>Dry/excessive (Continued)</u>			
(Lumber pine communities) (Continued)			
Lesser vegetation	<u>Agropyron spicatum</u>	Bluebunch wheatgrass	
	<u>Arnica cordifolia</u>	Heartleaf arnica	
	<u>Balsamorhiza sagittata</u>	Arrowleaf balsamroot	
	<u>Clematis pseudoalpina</u>	Climbing purple virgin's-bower	
	<u>Clematis tenuiloba</u>	Matted purple virgin's-bower	
	<u>Coptis occidentalis</u>	Western goldthread	
	<u>Festuca idahoensis</u>	Idaho fescue	
	<u>Festuca scabrella</u>	Rough fescue	
	<u>Galium boreale</u>	Northern bedstraw	
	<u>Hesperochloa kingii</u>	Spike fescue	
	<u>Pyrola secunda</u>	One-sided winter-green	
	<u>Senecio streptanthifolius</u>	Cleftleaf groundsel	
	<u>Smilacina stellata</u>	Starry Solomon plume	
	<u>Thalictrum occidentale</u>	Western meadow-rue	
	<u>(Spruce/twinflower communities)</u>		
	Tall trees, over 40 ft	<u>Abies lasiocarpa</u>	Subalpine fir
<u>Picea engelmannii</u>		Engelmann spruce	
<u>Picea glauca</u>		White spruce	
<u>Pinus albicaulis</u>		Whitebark pine	
<u>Pinus contorta</u>		Lodgepole pine	
<u>Pinus ponderosa</u>		Ponderosa pine	
<u>Pseudotsuga menziesii</u>		Douglas-fir	
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u>	Serviceberry	
	<u>Juniperus communis</u>	Common juniper	
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u>	Kinnikinnik	
	<u>Berberis repens</u>	Oregon-grape	
	<u>Linnaea borealis</u>	Twinflower	
	<u>Menziesia ferruginea</u>	Rusty leaf	
	<u>Ribes lacustre</u>	Swamp gooseberry	
	<u>Rubus parviflorus</u>	Thimbleberry	
	<u>Shepherdia canadensis</u>	Buffaloberry	
	<u>Spiraea betulifolia</u>	Shinyleaf snowberry	
	<u>Symphoricarpos albus</u>	Common	
	<u>Vaccinium globulare</u>	Globe huckleberry	
	<u>Vaccinium scoparium</u>	Grouseberry	
	Lesser vegetation	<u>Arnica cordifolia</u>	Heartleaf arnica
<u>Arnica latifolia</u>		Broadleaf arnica	
<u>Calamagrostis rubescens</u>		Pinegrass	
<u>Carex geyeri</u>		Elk sedge	
<u>Clematis pseudoalpina</u>		Climbing purple virgin's-bower	
<u>Disporum trachycarpum</u>		Wartberry fairybells	
<u>Equisetum arvense</u>		Common horsetail	
<u>Galium boreale</u>		Northern bedstraw	
<u>Galium triflorum</u>		Sweet-scented bedstraw	
<u>Geranium richardsonii</u>		Cranesbill geranium	
<u>Oryzopsis asperifolia</u>		Roughleaf rice-grass	
<u>Osmorhiza chilensis</u>		Mountain sweetroot	
<u>Pyrola secunda</u>		One-sided wintergreen	
<u>Smilacina racemosa</u>		False Solomon's-seal	
<u>Smilacina stellata</u>		Starry Solomon plume	
<u>Thalictrum occidentale</u>		Western meadow-rue	
<u>Viola canadensis</u>	Canada violet		
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>			
<u>(Spruce communities)</u>			
Tall trees, over 40 ft	<u>Abies lasiocarpa</u>	Subalpine fir	
	<u>Picea engelmannii</u>	Engelmann spruce	
	<u>Picea glauca</u>	White spruce	
	<u>Pinus albicaulis</u>	Whitebark pine	

continued

Table M2110-55.1 [M2112EL] (Concluded)

Growth form	Late successional plants	
	Moist/well-drained (Continued)	
	(Spruce communities) (Continued)	
Tall trees -- (Continued)	<u>Pinus contorta</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u>	Lodgepole pine Ponderosa pine Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Prunus virginiana</u>	Serviceberry Common juniper Western choke-cherry
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Ledum groenlandicum</u> <u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Pachystima myrsinites</u> <u>Physocarpus malvaceus</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Bog Labrador-tea Twinflower Rusty leaf Oregon boxwood Mallow ninebark Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Globe huckleberry Grouseberry
Lesser vegetation	<u>Actaea rubra</u> <u>Agropyron spicatum</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Athyrium filix-femina</u> <u>Balsamorhiza sagittata</u> <u>Calamagrostis canadensis</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Clematis pseudoalpina</u> <u>Disporum trachycarpum</u> <u>Equisetum arvense</u> <u>Festuca idahoensis</u> <u>Festuca scabrella</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Geranium richardsonii</u> <u>Oryzopsis asperifolia</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Pyrola uniflora</u> <u>Schizachne purpurascens</u> <u>Senecio streptanthifolius</u> <u>Senecio triangularis</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Viola canadensis</u> <u>Viola orbiculata</u>	Baneberry Bluebunch wheatgrass Heartleaf arnica Broadleaf arnica Lady-fern Arrowleaf balsamroot Bluejoint reedgrass Pinegrass Elk sedge Climbing purple virgin's-bower Wartberry fairybells Common horsetail Idaho fescue Rough fescue Northern bedstraw Sweet-scented bedstraw Cranesbill geranium Roughleaf rice-grass Mountain sweetroot Large pyrola One-sided winter-green Woodnymph False melic Cleftleaf groundsel Arrowleaf groundsel False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Canada violet Round-leaved violet

Table M2110-55.1 [M2112EH] Selected Plant Species Common to the Cedar—Hemlock—Douglas-fir Forest (Eastside Higher Elevation)

Growth form	Late successional plants	
	Habitat conditions: Dry to moist/excessive to well-drained	
	(Alpine fir communities)	
Tall trees, over 40 ft	<u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus flexilis</u> <u>Pseudotsuga menziesii</u>	Subalpine fir Engelmann spruce Whitebark pine Lodgepole pine Limber pine Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u>	Serviceberry Common juniper
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Ledum glandulosum</u> <u>Linnaea borealis</u> <u>Pachystima myrsinites</u> <u>Phyllodoce empetrifomis</u> <u>Ribes lacustre</u> <u>Ribes montigenum</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillus</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Labrador-tea Twinflower Oregon boxwood Red mountain heather Swamp gooseberry Alpine prickly currant Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegetation	<u>Actaea rubra</u> <u>Agropyron spicatum</u> <u>Agrostis scabra</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Balsamorhiza sagittata</u> <u>Calamagrostis canadensis</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Clematis pseudoalpina</u> <u>Disporum trachycarpum</u> <u>Equisetum arvense</u> <u>Festuca idahoensis</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Geranium richardsonii</u> <u>Hieracium gracile</u> <u>Luzula hitchcockii</u> <u>Osmorhiza chilensis</u> <u>Pyrola secunda</u> <u>Senecio streptanthifolius</u> <u>Senecio triangularis</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Thalictrum occidentale</u> <u>Valeriana sitchensis</u> <u>Veratrum viride</u> <u>Viola canadensis</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Baneberry Bluebunch wheatgrass Winter bentgrass Heartleaf arnica Broadleaf arnica Arrowleaf balsamroot Bluejoint reedgrass Pinegrass Elk sedge Climbing purple virgin's-bower Wartberry fairybells Common horsetail Idaho fescue Northern bedstraw Sweet-scented bedstraw Cranesbill geranium Slender hawkweed Woodrush Mountain sweetroot One-sided wintergreen Cleftleaf groundsel Arrowleaf groundsel False Solomon's-seal Starry Solomon plume Western meadow-rue Sitka valerian American false hellebore Canada violet Round-leaved violet Bear grass

Habitat conditions: Moist to wet/well-drained to impeded

(Alpine fir communities)

Tall trees, over 40 ft	<u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Picea glauca</u>	Subalpine fir Engelmann spruce White spruce
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continued

Table M2110-55.1 [M2112EH] (Concluded)

Growth form	Late successional plants	
	Moist/well-drained (Continued)	
	(Alpine fir communities) (Continued)	
Tall trees -- (Continued)	<u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus flexilis</u> <u>Pseudotsuga menziesii</u>	Whitebark pine Lodgepole pine Limber pine Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u>	Serviceberry Common juniper
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Linnaea borealis</u> <u>Pachystima myrsinites</u> <u>Physocarpus malvaceus</u> <u>Ribes lacustre</u> <u>Ribes montigenum</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillus</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Twinflower Oregon boxwood Mallow ninebark Swamp gooseberry Alpine prickly currant Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegeta- tion	<u>Actaea rubra</u> <u>Agropyron spicatum</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Calamagrostis canadensis</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Disporum trachycarpum</u> <u>Festuca idahoensis</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Geranium richardsonii</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola uniflora</u> <u>Senecio streptanthifolius</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Trollius laxus</u> <u>Valeriana sitchensis</u> <u>Veratrum viride</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Baneberry Bluebunch wheatgrass Heartleaf arnica Broadleaf arnica Bluejoint reedgrass Pinegrass Elk sedge Wartberry fairybells Idaho fescue Northern bedstraw Sweet-scented bedstraw Cranesbill geranium Mountain sweetroot Large pyrola Woodnymph Cleflleaf groundsel False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue American globeflower Sitka valerian American false hellebore Round-leaved violet Bear grass

Table M2110-55.1 [M2112WL] Selected Plant Species Common to the Cedar—Hemlock—Douglas-fir Forest (Westside Lower Elevation)

Growth form	Late successional plants	
	Habitat conditions: Dry to moist/excessive to well-drained	
	(Grand fir communities)	
Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u>	Grand fir Subalpine fir

continued

Table M2110-55.1 [M2112WL] (Continued)

Growth form	Late successional plants	
	Dry/excessive (Continued)	
	(Grand fir communities) (Continued)	
Tall trees -- (Continued)	<u>Betula papyrifera</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus contorta</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Paper birch Western larch Engelmann spruce White spruce Lodgepole pine White pine Ponderosa pine Douglas-fir Western redcedar Western hemlock
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Taxis brevifolia</u>	Serviceberry Common juniper Western yew
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Holodiscus discolor</u> <u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Oplopanax horridum</u> <u>Pachystima myrsinites</u> <u>Physocarpus malvaceus</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium caespitosum</u> <u>Vaccinium globulare</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Ocean spray Twinflower Rusty leaf Devil's club Oregon boxwood Mallow ninebark Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Dwarf huckleberry Globe huckleberry Grouseberry
Lesser vegeta- tion	<u>Adenocaulon bicolor</u> <u>Aralia nudicaulis</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Athyrium filix-femina</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Clintonia uniflora</u> <u>Coptis occidentalis</u> <u>Cornus canadensis</u> <u>Disporum trachycarpum</u> <u>Equisetum arvense</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Oryzopsis asperifolia</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Viola canadensis</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Trail plant Wild sarsaparilla Heartleaf arnica Broadleaf arnica Lady-fern Pinegrass Elk sedge Beadlily Western goldthread Bunchberry dogwood Wartberry fairybells Common horsetail Northern bedstraw Sweet-scented bedstraw Roughleaf rice-grass Mountain sweetroot Large pyrola One-sided wintergreen False Solomon's-seal Starry Solomon plume Western meadow-rue Three-leaved coolwort Canada violet Round-leaved violet Bear grass

(Western redcedar communities)

Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Betula papyrifera</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus contorta</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Grand fir Subalpine fir Paper birch Western larch Engelmann spruce White spruce Lodgepole pine White pine Ponderosa pine Douglas-fir Western redcedar Western hemlock
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continued

Table M2110-55.1 [M2112WL] (Continued)

Growth form	Late successional plants	
	<u>Dry/excessive (Continued)</u>	
	(Western redcedar communities) (Continued)	
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Taxus brevifolia</u>	Serviceberry Western yew
Low to medium shrubs, under 10 ft	<u>Berberis repens</u> <u>Holodiscus discolor</u> <u>Linnaea borealis</u> <u>Oplopanax horridum</u> <u>Pachystima myrsinites</u> <u>Physocarpus malvaceus</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium scoparium</u>	Oregon-grape Ocean spray Twinnflower Devil's club Oregon boxwood Mallow ninebark Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Globe huckleberry Grouseberry
Lesser vegetation	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Aralia nudicaulis</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Athyrium filix-femina</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Clintonia uniflora</u> <u>Oxalis occidentalis</u> <u>Cornus canadensis</u> <u>Disporum trachycarpum</u> <u>Equisetum arvense</u> <u>Galium triflorum</u> <u>Gymnocarpium dryopteris</u> <u>Oryzopsis asperifolia</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Pyrola uniflora</u> <u>Senecio triangularis</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Veratrum viride</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Baneberry Trail plant Wild sarsaparilla Heartleaf arnica Broadleaf arnica Lady-fern Pinegrass Elk sedge Beadlily Western goldthread Bunchberry dogwood Wartberry fairybells Common horsetail Sweet-scented bedstraw Oak-fern Roughleaf rice-grass Mountain sweetroot Large pyrola One-sided winter-green Woodnymph Arrowleaf groundsel False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Three-leaved coolwort American false hellebore Round-leaved violet Bear grass

Habitat conditions: Moist to wet/well-drained to impeded

(Spruce communities)

Tall trees, over 40 ft	<u>Abies lasiocarpa</u> <u>Betula papyrifera</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Larix occidentalis</u> <u>Pinus contorta</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u>	Subalpine fir Paper birch Engelmann spruce White spruce Western larch Lodgepole pine White pine Ponderosa pine Douglas-fir Western redcedar
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Prunus virginiana</u> <u>Taxus brevifolia</u>	Serviceberry Common juniper Western choke-cherry Western yew

continued

Table M2110-55.1 [M2112WL] (Continued)

Growth form	Late successional plants	
	<u>Moist/well-drained (Continued)</u>	
	(Spruce communities) (Continued)	
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Pachystima myrsinites</u> <u>Physocarpus malvaceus</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium caespitosum</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillus</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Twinnflower Rusty leaf Oregon boxwood Mallow ninebark Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Dwarf huckleberry Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegetation	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Aralia nudicaulis</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Athyrium filix-femina</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Clintonia uniflora</u> <u>Cornus canadensis</u> <u>Disporum trachycarpum</u> <u>Equisetum arvense</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Gymnocarpium dryopteris</u> <u>Oryzopsis asperifolia</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Viola canadensis</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Baneberry Trail plant Wild sarsaparilla Heartleaf arnica Broadleaf arnica Lady-fern Pinegrass Elk sedge Beadlily Bunchberry dogwood Wartberry fairybells Common horsetail Northern bedstraw Sweet-scented bedstraw Oak-fern Roughleaf rice-grass Mountain sweetroot Large pyrola One-sided wintergreen False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Three-leaved coolwort Canada violet Round-leaved violet Bear grass

(Western hemlock forest)

Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Betula papyrifera</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus contorta</u> <u>Pinus glauca</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Grand fir Alpine fir Paper birch Western larch Engelmann spruce White spruce Lodgepole pine White pine Douglas-fir Western redcedar Western hemlock
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Taxus brevifolia</u>	Serviceberry Common juniper Western yew
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Holodiscus discolor</u> <u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Oplopanax horridum</u> <u>Pachystima myrsinites</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u>	Kinnikinnik Oregon-grape Ocean spray Twinnflower Rusty leaf Devil's club Oregon boxwood Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea

continued

Table M2110-55.1 [M2112WL] (Continued)

Growth form	Late successional plants	
	Moist/well-drained (Continued)	
	(Western hemlock forest) (Continued)	
Low to medium shrubs -- (Continued)	<u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillos</u> <u>Vaccinium scoparium</u>	Common strawberry Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegetation	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Aralia nudiculis</u> <u>Athyrium filix-femina</u> <u>Calamagrostis rubescens</u> <u>Clintonia uniflora</u> <u>Coptis occidentalis</u> <u>Cornus canadensis</u> <u>Equisetum arvense</u> <u>Galium triflorum</u> <u>Gymnocarpium dryopteris</u> <u>Oryzopsis asperifolia</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Pyrola uniflora</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Baneberry Trail plant Wild sarsaparilla Lady-fern Pinegrass Beadlily Western goldthread Bunchberry dogwood Common horsetail Sweet-scented bedstraw Oak-fern Roughleaf rice-grass Mountain sweetroot Large pyrola One-sided wintergreen Woodnymph False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Three-leaved coolwort Round-leaved violet Bear grass

(Western redcedar--devil's club communities)

Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Betula papyrifera</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus monticola</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Grand fir Subalpine fir Paper birch Western larch Engelmann spruce White spruce White pine Douglas-fir Western redcedar Western hemlock
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Taxus brevifolia</u>	Serviceberry Western yew
Low to medium shrubs, under 10 ft	<u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Oplopanax horridum</u> <u>Pachystima myrsinites</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium scoparium</u>	Twinflower Rusty leaf Devil's club Oregon boxwood Swamp gooseberry Thimbleberry Shinyleaf spiraea Common snowberry Globe huckleberry Grouseberry
Lesser vegetation	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Aralia nudicaulis</u> <u>Arnica latifolia</u> <u>Clintonia uniflora</u> <u>Coptis occidentalis</u> <u>Cornus canadensis</u> <u>Disporum trachycarpum</u> <u>Galium triflorum</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u>	Baneberry Trail plant Wild sarsaparilla Broadleaf arnica Beadlily Western goldthread Bunchberry dogwood Wartberry fairybells Sweet-scented bedstraw Mountain sweetroot Large pyrola One-sided wintergreen

continued

Table M2110-55.1 [M2112WL] (Concluded)

Growth form	Late successional plants	
	Moist/well-drained (Continued)	
	(Western redcedar--devil's club communities) (Continued)	
Lesser vegetation (Continued)	<u>Pyrola uniflora</u> <u>Senecio triangularis</u> <u>Smilacina racemosa</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Veratrum viride</u> <u>Viola orbiculata</u>	Woodnymph Arrowleaf groundsel False Solomon's-seal Clasping-leaved twisted-stalk Western meadow-rue Three-leaved coolwort American false hellebore Round-leaved violet

Table M2110-55.1 [M2112WH] Selected Plant Species Common to the Cedar—Hemlock—Douglas-fir Forest (Westside Higher Elevation)

Growth form	Late successional plants	
	Habitat conditions: Dry to moist/excessive to well-drained	
	(Alpine fir communities)	
Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Larix lyallii</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Tsuga mertensiana</u>	Grand fir Subalpine fir Subalpine larch Western larch Engelmann spruce Whitebark pine Lodgepole pine White pine Ponderosa pine Douglas-fir Mountain hemlock
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u>	Serviceberry Common juniper
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Ledum glandulosum</u> <u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Pachystima myrsinites</u> <u>Phyllodoce empetriflora</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillos</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Labrador-tea Twinflower Rusty leaf Oregon boxwood Red mountain heather Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegetation	<u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Calamagrostis canadensis</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Coptis occidentalis</u> <u>Hieracium gracile</u> <u>Luzula hitchcockii</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Senecio triangularis</u>	Heartleaf arnica Broadleaf arnica Bluejoint reedgrass Pinegrass Etk sedge Western goldthread Slender hawkweed Woodrush Mountain sweetroot Large pyrola One-sided wintergreen Arrowleaf groundsel

continued

Table M2110-55.1 [M2112WH] (Continued)

Growth from	Late successional plants	
	<u>Dry/excessive (Continued)</u>	
	(Alpine fir communities) (Continued)	
Lesser vegetation (Continued)	<u>Smilacina racemosa</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Trollius laxus</u> <u>Valeriana sitchensis</u> <u>Veratrum viride</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	False Solomon's-seal Western meadow-rue Three-leaved coolwort American globeflower Sitka valerian American false hellebore Round-leaved violet Bear grass
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>		
	(Alpine fir communities)	
Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Betula papyrifera</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u> <u>Tsuga mertensiana</u>	Grand fir Subalpine fir Paper birch Western larch Engelmann spruce White spruce Whitebark pine Lodgepole pine White pine Ponderosa pine Douglas-fir Western redcedar Western hemlock Mountain hemlock
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Taxus brevifolia</u>	Serviceberry Common juniper Western yew
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Holodiscus discolor</u> <u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Pachystima myrsinites</u> <u>Physocarpus malvaceus</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium caespitosum</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillus</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Ocean spray Twinflower Rusty leaf Oregon boxwood Mallow ninebark Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Dwarf huckleberry Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegetation	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Aralia nudicaulis</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Clematis tenuiloba</u> <u>Clintonia uniflora</u> <u>Coptis occidentalis</u> <u>Cornus canadensis</u> <u>Disporum trachycarpum</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Geranium richardsonii</u> <u>Hieracium gracile</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u>	Baneberry Trail plant Wild sarsaparilla Heartleaf arnica Broadleaf arnica Matted purple virgin's-bower Beadlily Western goldthread Bunchberry dogwood Wartberry fairybells Northern bedstraw Sweet-scented bedstraw Cranesbill geranium Slender hawkweed Mountain sweetroot Large pyrola One-sided winter-green

continued

Table M2110-55.1 [M2112WH] (Concluded)

Growth form	Late successional plants	
<u>Moist/well-drained (Continued)</u>		
(Alpine fir communities) (Continued)		
Lesser vegetation (Continued)	<u>Pyrola uniflora</u> <u>Senecio triangularis</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Valeriana sitchensis</u> <u>Veratrum viride</u> <u>Viola canadensis</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Woodnymph Arrowleaf groundsel False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Three-leaved cool- wort Sitka valerian American false hellebore Canada violet Round-leaved violet Bear grass
(Alpine fir--devil's club communities)		
Tall trees, over 40 ft	<u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Larix occidentalis</u> <u>Pinus monticola</u> <u>Pseudotsuga menziesii</u> <u>Tsuga heterophylla</u>	Subalpine fir Engelmann spruce White spruce Western larch White pine Douglas-fir Western hemlock
Low trees and tall shrubs, 10-20 ft	<u>Taxus brevifolia</u>	Western yew
Low to medium shrubs, under 10 ft	<u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Oplopanax horridum</u> <u>Pachystima myrsinites</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium scoparium</u>	Twinflower Rusty leaf Devil's club Oregon boxwood Swamp gooseberry Thimbleberry Shinyleaf spiraea Common snowberry Globe huckleberry Grouseberry
Lesser vegeta- tion	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Aralia nudicaulis</u> <u>Arnica latifolia</u> <u>Clintonia uniflora</u> <u>Cornus canadensis</u> <u>Galium triflorum</u> <u>Osmorhiza chilensis</u> <u>Pyrola secunda</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Veratrum viride</u> <u>Viola canadensis</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Baneberry Trail plant Wild sarsaparilla Broadleaf arnica Beadlily Bunchberry dogwood Sweet-scented bed- straw Mountain sweetroot One-sided wintergreen False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Three-leaved coolwort American false hellebore Canada violet Round-leaved violet Bear grass

Table M2110-55.1 [M2112TH] Selected Plant Species Common to the Cedar—Hemlock—Douglas-fir Forest (Throughout the Province Higher Elevation Region)

Growth form	Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained		
(Alpine fir communities)		
Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus flexilis</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Tsuga heterophylla</u>	Grand fir Subalpine fir Western larch Engelmann spruce White spruce Whitebark pine Lodgepole pine Limber pine White pine Ponderosa pine Douglas-fir Western hemlock
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u> <u>Taxus brevifolia</u>	Serviceberry Common juniper Western yew
Low to medium shrubs, under 10 ft	<u>Arctostaphylos uva-ursi</u> <u>Berberis repens</u> <u>Ledum glandulosum</u> <u>Linnaea borealis</u> <u>Menziesia ferruginea</u> <u>Pachystima myrsinites</u> <u>Phyllodoce empetrifolmis</u> <u>Physocarpus malvaceus</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium caespitosum</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillus</u> <u>Vaccinium scoparium</u>	Kinnikinnik Oregon-grape Labrador-tea Twinflower Rusty leaf Oregon boxwood Red mountain heather Mallow ninebark Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Dwarf huckleberry Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegeta- tion	<u>Agrostis scabra</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Calamagrostis canadensis</u> <u>Calamagrostis rubescens</u> <u>Carex geveii</u> <u>Clintonia uniflora</u> <u>Cornus canadensis</u> <u>Disporum trachycarpum</u> <u>Equisetum arvense</u> <u>Festuca idahoensis</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Geranium richardsonii</u> <u>Hieracium gracile</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Valeriana sitchensis</u> <u>Veratrum viride</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Winter bentgrass Heartleaf arnica Broadleaf arnica Bluejoint reedgrass Pinegrass Elk sedge Beadlily Bunchberry dogwood Wartberry fairybells Common horsetail Idaho fescue Northern bedstraw Sweet-scented bedstraw Cranesbill geranium Slender hawkweed Mountain sweetroot Large pyrola One-sided wintergreen False Solomon's-seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Sitka valerian American false hellebore Round-leaved violet Bear grass

Table M2110-55.1 [M2112TH] (Concluded)

Growth form	Late successional plants	
Habitat conditions: Moist to wet/well-drained to impeded		
(Alpine fir communities)		
Tall trees, over 40 ft	<u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pseudotsuga menziesii</u>	Subalpine fir Engelmann spruce White spruce Whitebark pine Lodgepole pine Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Juniperus communis</u>	Common juniper
Low to medium shrubs, under 10 ft	<u>Berberis repens</u> <u>Ledum glandulosum</u> <u>Menziesia ferruginea</u> <u>Phyllodoce empetrifolmis</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Vaccinium globulare</u> <u>Vaccinium myrtillus</u> <u>Vaccinium scoparium</u>	Oregon-grape Labrador-tea Rusty leaf Red mountain heather Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Globe huckleberry Dwarf bilberry Grouseberry
Lesser vegeta- tion	<u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Calamagrostis canadensis</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Cornus canadensis</u> <u>Equisetum arvense</u> <u>Galium boreale</u> <u>Geranium richardsonii</u> <u>Hieracium gracile</u> <u>Luzula hitchcockii</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Senecio triangularis</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Tiarella trifoliata</u> <u>Trollius laxus</u> <u>Valeriana sitchensis</u> <u>Veratrum viride</u> <u>Viola canadensis</u> <u>Viola orbiculata</u> <u>Xerophyllum tenax</u>	Heartleaf arnica Broadleaf arnica Bluejoint reedgrass Pinegrass Elk sedge Bunchberry dogwood Common horsetail Northern bedstraw Cranesbill geranium Slender hawkweed Woodrush Mountain sweetroot Large pyrola One-sided winter- green Arrowleaf groundsel Clasping-leaved twisted-stalk Western meadow-rue Three-leaved cool- wort American globeflower Sitka valerian American false hellebore Canada violet Roundleaf violet Bear grass

continued

**Table M2110-55.1 [M2112TL] Selected Plant Species
Common to the Cedar—Hemlock—Douglas-fir Forest
(Throughout the Province Lower Elevation Region)**

Growth form	Late successional plants	
Habitat conditions: Moist to wet/well-drained to impeded		
(Spruce forest)		
Tall trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Betula papyrifera</u> <u>Picea engelmannii</u> <u>Picea glauca</u> <u>Pinus contorta</u> <u>Pseudotsuga menziesii</u>	Grand fir Subalpine fir Paper birch Engelmann spruce White spruce Lodgepole pine Douglas-fir
Low trees and tall shrubs, 10-20 ft	<u>Amelanchier alnifolia</u> <u>Juniperus communis</u>	Serviceberry Common juniper
Low to medium shrubs, under 10 ft	<u>Berberis repens</u> <u>Linnaea borealis</u> <u>Ribes lacustre</u> <u>Rubus parviflorus</u> <u>Shepherdia canadensis</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium globulare</u> <u>Vaccinium scoparium</u>	Oregon-grape Twinflower Swamp gooseberry Thimbleberry Buffaloberry Shinyleaf spiraea Common snowberry Globe huckleberry Grouseberry
Lesser vegeta- tion	<u>Actaea rubra</u> <u>Aralia nudicaulis</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Athyrium filix-femina</u> <u>Calamagrostis canadensis</u> <u>Calamagrostis rubescens</u> <u>Cornus canadensis</u> <u>Equisetum arvense</u> <u>Galium boreale</u> <u>Galium triflorum</u> <u>Geranium richardsonii</u> <u>Osmorhiza chilensis</u> <u>Pyrola asarifolia</u> <u>Pyrola secunda</u> <u>Pyrola uniflora</u> <u>Senecio triangularis</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus amplexifolius</u> <u>Thalictrum occidentale</u> <u>Valeriana sitchensis</u> <u>Viola canadensis</u> <u>Viola orbiculata</u>	Baneberry Wild sarsaparilla Heartleaf arnica Broadleaf arnica Lady-fern Bluejoint reedgrass Pinegrass Bunchberry dogwood Common horsetail Northern bedstraw Sweet-scented bed- straw Cranesbill geranium Mountain sweetroot Large pyrola One-sided winter- green Woodnymph Arrowleaf groundsel False Solomon's- seal Starry Solomon plume Clasping-leaved twisted-stalk Western meadow-rue Sitka valerian Canada violet Round-leaved violet

Table M2110-55.2 Ecological Characteristics of Selected Plant Species Common to the Columbia Forest (Dry Summer)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Grand fir <u>Abies grandis</u> Lindl. M2111, M2112	Stream bottoms, valleys, mountain slopes, best on deep, rich alluvial soils	Evergreen tree, up to 300 ft high	Cone, 40-190 seeds per cone, production poor to fair each year, Sept.-Oct.	Seeds eaten by squirrels, chipmunks, several birds; browsers resort to foliage as part of their winter diet	Lowland trees less resistant to fire than upland trees; provides nesting and roosting cover for birds
Subalpine fir <u>Abies lasiocarpa</u> (Hook.) Nutt. M2112	Subalpine and alpine slopes from 2,500 ft upwards	Evergreen tree, up to 95 ft but often dwarfed and shrub-like, narrow conical crown and dense rigid foliage	Cone, 2.5-4 in long, good crops about every 3 years, Sept.-Oct.	Same as <u>A. grandis</u>	
Rocky Mountain maple <u>Acer glabrum</u> Torr. M2111	Moist slopes	Deciduous shrub or small tree, diameters rarely reaching 12 in, 3-35 ft high	Double samara	Seeds, buds, flowers eaten by songbirds, particularly evening grosbeak; seeds eaten by mice; foliage and twigs eaten by elk	
Western yarrow <u>Achillea millefolium</u> L. M2111	Common, variable, not fully understood	Aromatic perennial herb, stems 1-3 ft high	Achene, without pappus	Sage-scented leaves eaten by a few wildlife species	
Baneberry <u>Actaea rubra</u> L. M2112	Moist woods, widespread	Perennial herb, stem from a stout rootstock, 16-32 in high, leaves all cauline	Elliptical berry, bright red or white, shining	Berry may be eaten by some gamebirds and small mammals	Berries somewhat poisonous to man
Trail plant <u>Adenocaulon bicolor</u> Hook. M2112	Moist, shady woods	Perennial herb, fibrous-rooted, slender, to 3 ft high, leaves mostly near the base	Achene, dark brown or black		
Bluebunch wheatgrass <u>Agropyron spicatum</u> (Pursh) Scribn. & Smith M2111, M2112	Widespread	Perennial grass, rhizomatous, stems 1.5-3.5 ft high	Caryopsis, awnless	Good forage value for wildlife	Considered one of the most valuable native grass species
Winter bentgrass <u>Agrostis scabra</u> Willd. M2112	Moist to dry areas from low elevations to montane or subalpine	Perennial grass; tufted, 8-20 in high, very occasionally with short rhizomes	Caryopsis		Important range grass
Serviceberry <u>Amelanchier alnifolia</u> Nutt. M2111, M2112	Widespread, in open woods	Spreading to erect, large shrub or small tree, 1.5-33 ft high, up to 6 in diameter, deciduous	Berrylike pome, June-July	Juicy, sweet fruit important to songbirds, squirrels, chipmunks, bears; browsers feed on foliage and twigs	
Tall pussy's-toes <u>Antennaria anaphaloides</u> Rydb. M2111	Open places at mid elevations, high grass region	Perennial herb, stems from narrow woody rootstock, slender, solitary or loosely tufted, 4-6 in high	Achene	Several birds and mammals eat tender rosettes of leaves	
Low pussy's-toes <u>Antennaria dimorpha</u> (Nutt.) T. & G. M2111	Open, arid areas in foothills and lowlands, widespread	Perennial herb, low, seldom over 9 in high, matted	Achene, late spring	Same as <u>A. anaphaloides</u>	
Rosy pussy's-toes <u>Antennaria rosea</u> Greene M2111	Dry mountain slopes at low elevations	Stems and short sterile leafy shoots from matted woody rootstock, slender, 6-7.5 in high	Achene, late spring	Same as <u>A. anaphaloides</u>	

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Red columbine <i>Aquilegia formosa</i> Fisch. M2111	Woods and moist meadows to mid montane	Perennial herb, 1.5-4 ft high	Follicle, erect to spreading, many seeded	Slight value because of sparse distribution but preferred by large mammals	
Tower mustard <i>Arabis glabra</i> (L.) Bernh. M2111	Creek banks to light woods, mostly in weedy clearings, low mountain areas	Biennial herb, stems solitary or few from base, 1.5-4 ft high	Silique, 1-4 in long	Some foliage eaten by big game mammals	
Hoary rockcress <i>Arabis puberula</i> Nutt. M2111	Foothills to mid mountain, dry plains	Perennial herb, slightly woody at base, stems slender, erect, often branched, 4-12 in high	Silique, 1-2 in long	Same as <i>A. glabra</i>	
Wild sarsaparilla <i>Aralia nudicaulis</i> L. M2112	Moist shade, woods	Perennial herb, stems up to 10 ft high from fleshy root	Berry, small, 5-seeded, purplish black, about .2 in	Fruit eaten by thrushes, other birds as well as a few mammals	Aggregate value of this plant is low
American dwarf mistletoe <i>Arceuthobium americanum</i> Nutt. ex Engelm. M2111	Parasitic on conifers, chiefly lodgepole pine, reported on whitebark pine	Clustered, fragile yellowish stems and leaves, stems slender, 1-2 in long, leaves scale-like	Berry, ovoid, greenish to bluish, sticky, late fall-winter	Berries relished by songbirds	Birds play important role in seed dispersal
Douglas dwarf mistletoe <i>Arceuthobium douglasii</i> Engelm. M2111	Parasitic on conifers, chiefly on Douglas-fir	Very dwarf, .2-1 in high, sparingly branched	Berry, ovoid, purplish, .1-.2 in long, sticky, late fall-winter	Same as <i>A. americanum</i>	Birds play important role in seed dispersal
Kinnikkinnik <i>Arctostaphylos uva-ursi</i> (L.) Sprang. M2112	Widespread, especially in mountains, generally in sandy or gravelly sites	Evergreen shrub, stems long and creeping, small ascending branches, 4-16 in long	Berrylike, bright red, smooth, about .33 in diameter	Fruit eaten by bear and gamebirds; leathery leaves browsed by deer	Excellent ground cover, especially for dry banks
Bigleaf sandwort <i>Arenaria macrophylla</i> Hook. M2111	Moist to dry, shaded to open places, meadows to montane slopes, common	Perennial herb, stems from slender rootstocks, 2.5-6.5 ft high	Capsule, 1-celled		
Heartleaf arnica <i>Arnica cordifolia</i> Hook. M2111, M2112	Woodlands, foothills to high elevations in the mountains	Perennial, to 2 ft tall, from long, naked rhizomes	Achene, hairy and glandular, pappus whitish		
Broadleaf arnica <i>Arnica latifolia</i> Bong. M2112	Common, variable, high elevations	Perennial herb, stems from short matted rootstocks, 1-2 ft high	Achene	Good elk forage during summer but sparsely distributed; also eaten by pika and ground squirrels	
Pacific sagebrush <i>Artemisia campestris</i> L. M2111	Open places, often in sandy soil, sandy riverbanks	Perennial herb, stems several on mature plants, erect or ascending, 4-20 in high, herbaceous on a stout, woody base	Achene	Foliage and flower clusters constitute most of the diet of the sage grouse; twigs are primary food for mule deer; seeds eaten by small mammals	Furnishes essential cover for many small animals
Pasture sage <i>Artemisia frigida</i> Willd. M2111	Dry, open plains and foothills	Subshrub, mat-forming, 4-16 in high	Achene	Same as <i>A. campestris</i>	Same as <i>A. campestris</i>
Big sagebrush <i>Artemisia tridentata</i> Nutt. M2111, M2112	Dry plains and hills, to timberline in mountains	Erect or ascending shrub, 1.5-16.5 ft high, often arborescent but abundantly branched	Achene	Same as <i>A. campestris</i>	Same as <i>A. campestris</i>

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Leafy aster <u>Aster foliaceus</u> Lindl. M2111	Widespread in lowland to mid-elevations	Perennial herb, densely and softly hairy, leaves large	Achene, 4-angled, without pappus	Plants eaten by deer during fall, winter, spring	
Lady-fern <u>Athyrium filix-femina</u> (L.) Roth M2112	Moist woods, meadows, swamps, very common, lowlands to montane	Fern, up to 5 ft high	Sori	Browsed by ungulates in winter	
Arrowleaf balsamroot <u>Balsamorhiza sagittata</u> (Pursh) Nutt. M2111, M2112	Widespread in lowland to mid-elevation in mountains	Perennial herb, dense and softly hairy, leaves large	Achenes, without pappus	Plant eaten by deer	
Oregon-grape <u>Berberis repens</u> Lindl. M2111, M2112	Foothills to lower montane forests, dry woods and canyons	Subshrub, evergreen, stems very short, from long branching rootstock	Berry, globose to oblong, blue	Plant freely eaten by hoofed browsers; fleshy fruit eaten by birds to only a limited extent	
Paper birch <u>Betula papyrifera</u> Marsh. M2112	Moist, open to dense woods of lowland or low mountains	Deciduous tree, up to 60 ft high and 20 in diameter	Catkin with a winged nutlet, good seed bears every year, seeds light, Aug.-Sept.	Catkins, buds, seeds eaten by grouse; seeds eaten by songbirds; twigs and foliage browsed by mammals	
California brome <u>Bromus carinatus</u> H. & A. M2111	Dry, open ground	Annual or short-lived perennial grass, 2-3.5 ft high	Caryopsis, awns about .33 in long	Good-sized seeds eaten by a number of birds and rodents; leaves consumed by ungulates	
Cheat <u>Bromus tectorum</u> L. M2111	Common in waste or disturbed (especially overgrazed) areas throughout province	Annual grass, culms .5-3.5 ft high	Caryopsis, lemmas narrow, awns rough	Same as <u>B. carinatus</u>	Perhaps the most common of all the grasses in the region
Columbia brome <u>Bromus vulgaris</u> (Hook.) Shear M2111	Shaded or open woods, moist or dry banks from lowlands to dry rocky slopes, up to 6,000 ft	Perennial grass, culms 2.5-4 ft high	Caryopsis	Plant eaten by gray partridge, ring-necked pheasant, chipmunks, small rodents; young plant eaten by Canada goose	
Bluejoint reedgrass <u>Calamagrostis canadensis</u> (Michx.) Beauv. M2112	Wet places and woods from low to fairly high elevations	Perennial grass, culms from horizontal rootstocks, 2-4 ft high	Caryopsis, awned from below middle	Good forage for deer and elk	Plants are most palatable and nutritious but seldom particularly abundant
Pinegrass <u>Calamagrostis rubescens</u> Buckl. M2112	Mostly in open conifer woods	Perennial grass, culms from horizontal rootstocks, slender, 2-3.5 ft high	Caryopsis	Eaten by deer and elk	
Calypso <u>Calypso bulbosa</u> (L.) Oakes M2111	Deep shade of cool, moist forest, low to mid-mountain	Low perennial herb, subglobose corm, 1 green leaf and short scape, 2-8 in high	Capsule		
Elk sedge <u>Carex geyeri</u> Boott M2111, M2112	Woodland, open slopes and dry meadows, foothills to mid-montane	Perennial sedge, clustered, erect, from tough, woody rootstocks, 4-18 in high	Achene, perigynia obovoid, 2-keeled, about .2 in long, beakless	Seeds eaten by many kinds of wildlife	Provides cover for many species
Hood sedge <u>Carex hoodii</u> Boott M2111	Open or thinly wooded slopes, dry to moderately moist meadows, forest openings	Perennial sedge, tufted from slender rootstock, erect, 1-2 ft high	Achene, perigynia about .13 in long	Same as <u>C. geyeri</u>	

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Field chickweed <i>Cerastium arvense</i> L. M2111	Cliffs and slopes, rocky areas, low to subalpine	Perennial herb, stem slender and lax, 10-20 in long	Capsule, 1-celled		
Western prince's-pine <i>Chimaphila umbellata</i> (L.) Bart. M2111	Woods, mostly under conifers, moderate elevations	Evergreen, perennial herbs, stems from shallow rootstocks, erect or decumbent, 8-12 in high	Capsule	Browsed occasionally by ungulates	
Columbia clematis <i>Clematis columbiana</i> (Nutt.) T. & G. M2111	Foothills to lower mountains, open woods	Perennial herb, creeping to climbing, 3-13 ft long	Follicle, 1-5 seeded	Seeds probably eaten by birds	Nesting cover for birds
Climbing purple virgin's-bower <i>Clematis pseudoalpina</i> (Ktze.) A. Nels. M2112	Montane	Perennial vine	Follicle, 1-5 seeded	Same as <i>C. columbiana</i>	Same as <i>C. columbiana</i>
Matted purple virgin's-bower <i>Clematis tenuiloba</i> M2112	Calcareous ridges and slopes in foothills and lower mountains	Perennial herb, small mats	Follicle, 1-5 seeded	Same as <i>C. columbiana</i>	
Beadlily <i>Clintonia uniflora</i> (Schult.) Kunth M2112	Conifer forest, often where rather moist, foothills to mid mountain	Perennial herb, widely rhizomatous, leafy at or near base	Berry, blue, globose or pear-shaped, about .5 in long		
Littleflower collinsia <i>Collinsia parviflora</i> Lindl. M2111	Widespread in areas that are moist in the spring	Slender annual, often decumbent, bent or reclining, 4-16 in high	Capsule, with many seeds		
Western goldthread <i>Coptis occidentalis</i> (Nutt.) T. & G. M2112	Moist woods	Perennial herb, evergreen, naked scape, 4-8 in high	Follicle, several seeded		
Spotted coralroot <i>Corallorhiza maculata</i> Raf. M2111	Moist to fairly dry woods	Perennial herb, without chlorophyll, stem 8-20 in high	Capsule, dry		
Bunchberry dogwood <i>Cornus canadensis</i> L. M2112	Moist woods, mountains at mid elevations	Low trailing shrub, 2-8 in high	Berrylike drupe, coral red, about .25 in, 2-seeded pit	Fruit eaten by songbirds and gamebirds; buds eaten by gamebirds	May be useful ground cover in moist, cool areas
California hazelnut <i>Corylus cornuta</i> Marsh. M2111	Widespread, lower elevations, on well-drained soils	Tall, usually clustered shrub, up to 16 ft high	Nut, 1-seeded	Nuts eaten by squirrels, chipmunks and other rodents; bark, foliage, twigs browsed by rabbits and deer; catkins eaten by grouse	Useful nesting and cover sites
Columbia hawthorn <i>Crataegus columbiana</i> Sarg. M2111	Often in disturbed areas	Shrub or small tree, up to 15 ft high, spines 1-2.5 in long	Pome, small, with 1-seeded nutlet, dark red, ovoid, about .5 in long	Fruit eaten by a few species of songbirds	Favorite nesting sites for many birds
Douglas hawthorn <i>Crataegus douglasii</i> Lindl. M2111	Woods and thickets	Small tree, up to 20 ft high, stout spines, .25-.5 in long	Pome, small, with 1-seeded nutlet, .25-.33 in long, nearly black	Small, applelike fruit eaten by a few species of songbirds	Favorite nesting sites for many birds

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Yellow lady's-slipper <i>Cypripedium calceolus</i> (Salisb.) Fern. M2111	Moist woods and bogs	Perennial herb, stems from short rootstocks, 1-2 ft high, large leaves	Capsule, 1-chambered, with innumerable minute seeds		
Mountain lady's-slipper <i>Cypripedium montanum</i> Dougl. ex Lindl. M2111	Dry to moist, shrub or forest covered valleys and mountain sides	Perennial herb, stems from a branching rootstock, stout, 12-20 in high, leaves large	Capsule, 1-chambered, with innumerable minute seeds		
Brittle fern <i>Cystopteris fragilis</i> Bernh. M2111	Moist to moderately dry, often rocky places, lowland to above timberline	Fern, fronds, 4-10 in high	Sori		
Slender hairgrass <i>Deschampsia elongata</i> (Hook.) Munro ex Benth. M2111	Generally moist banks and slopes or borders of streams or lakes, sometimes in woods	Perennial grass, slender, tufted, 8-32 in high	Caryopsis, awns straight, twice as long as the glume	Minor browse species for ungulates	
Wartberry fairybells <i>Disporum trachycarpum</i> (Wats.) Benth. & Hook. M2112	Wooded slopes, often near streams	Perennial herb, rhizomatous, stem 1-2 ft high, leafy stems	Ovoid berry, 6-15 seeded, .3-.4 in broad		
Blue wild rye <i>Elymus glaucus</i> Buckl. M2111	Prairies, open woods, dry to moist hillsides, lowland to mid-mountain	Perennial grass, culms 2-5 ft high	Caryopsis	May be used as winter forage	May be a good sand stabilizer
Autumn willowweed <i>Epilobium paniculatum</i> Nutt. ex T. & G. M2111	Mostly on dry soil, in open to wooded areas, often in Ponderosa pine woodlands	Tall, annual herb, 1-8 ft high, usually copiously branched, leaves linear	Capsule, seeds at least .05 in	Valuable browse for ungulates, seeds eaten by some small mammals	Potentially bad weed; valuable honey plant for bee keepers
Common horsetail <i>Equisetum arvense</i> L. M2111, M2112	Moist to moderately dry places, often weedy, common	Aerial stems annual, fertile and sterile stems unlike, sterile green, fertile whitish or brownish	Sporangia	Rootstocks and stems eaten by waterfowl	
Scouring-rush <i>Equisetum hyemale</i> L. M2111	Streambanks and other moist or wet places, lowlands to mid-mountain	Aerial stems perennial, evergreen, simple, 1.5-6.5 ft high	Sporangia	Same as <i>E. arvense</i>	
Dwarf mountain fleabane <i>Erigeron compositus</i> Pursh M2111	Widespread, dry mountain slopes	Perennial herb, caudex stout, surmounting a taproot, woody freely branched, up to 3 in long, cushion-like	Achene	Highly preferred summer forage for ungulates	
Showy fleabane <i>Erigeron speciosus</i> (Lindl.) DC. M2111	Widespread, open woods and clearings in foothills and mid-elevations	Perennial herb, stems erect, simple, mostly clustered from short, stout rootstock, 1-8 ft high	Achene	Same as <i>E. compositus</i>	
Lamb's-tongue fawn lily <i>Erythronium grandiflorum</i> Pursh M2111	Sagebrush slopes to montane forest, sometimes upward to timberline	Perennial herb, deep-seated, elongated corm, basal pair of leaves, stem 3-14 in high	Capsule		

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Idaho fescue <i>Festuca idahoensis</i> Elmer M2111, M2112	Grassland and sagebrush desert to dry and rocky mountain slopes and meadows up to 12,000 ft	Perennial grass, truly caespitose, non-rhizomatous, basal leaves, .5-3.5 ft high	Caryopsis, awns .1-.2 in, lemmas strongly involute and rigid	Seeds and foliage considered valuable food for gophers and mule deer	
Rough fescue <i>Festuca scabrella</i> Torr. M2112	Dry areas, woods and low mountain slopes	Perennial grass, densely tufted, 1-3 ft high, thick mats of persistent sheaths and culm bases	Caryopsis, lemmas about .33 in, acute only rarely awn tipped	Same as <i>F. idahoensis</i>	
Sand strawberry <i>Fragaria chiloensis</i> (L.) Duchesne M2111	Mostly on sand dunes, rare inland	Perennial herb, stoloniferous	Achene, borne on enlarged, fleshy juicy receptacle	Tender leaves and berries eaten by upland gamebirds; berries eaten by songbirds	
Cleaver's bedstraw <i>Galium aparine</i> L. M2111	Common, weedy species, thickets and open woods	Herbaceous annual, stem weak, ascending, 1-5 ft high	Dry capsule, clothed with hooked bristles		
Northern bedstraw <i>Galium boreale</i> L. M2111, M2112	Common and widespread, moist thickets and open woods	Perennial herb, stems prostrate or ascending, 10-24 in high	Dry capsule, short, hairy		
Sweet-scented bedstraw <i>Galium triflorum</i> Michx. M2111, M2112	Common, wide-spread, woods	Perennial herb, stem slender and lax, 16-40 in long	Dry capsule, bristles about .05 in		
Cranesbill geranium <i>Geranium richardsonii</i> Fisch. & Trautv. M2112	Widespread, from foothills into mountains, moist places	Perennial herb, stems in small clusters, 1.5-2.5 ft high	Capsule, several to many seeded	Seeds eaten by birds and rodents	
Rattlesnake plantain <i>Goodyera oblongifolia</i> Raf. M2111	Dry to moist woods or forest	Perennial herb, leaves all basal, scapes 4-12 in high	Dry capsule	Eaten slightly in spring by ungulates	
Oak-fern <i>Gymnocarpium dryopteris</i> (L.) Newm. M2112	Moist woods, streambanks, wet cliffs, low to moderate elevations	Delicate fern, slender rhizomes, fronds, 1-2 ft long	Sori	Eaten in winter by ungulates	
Spike fescue <i>Hesperochloa kingii</i> (Wats.) Rydb. M2112	Moist to generally dry grassland or rolling hills and open ridges or talus slopes up to 11,000 ft	Perennial grass, strongly caespitose, 1-2 ft high, large dense clumps of persistent old stems and sheaths	Caryopsis	Not specifically known but may be similar to <i>Festuca</i> spp.	
Slender hawkweed <i>Hieracium gracile</i> Hook. M2112	Moist places in mountains	Perennial herb, stems slender, clustered, scape, 4-12 in high, leaves in a nearly basal cluster	Achene	Basal leaves eaten by several wildlife species	
Ocean spray <i>Holodiscus discolor</i> (Pursh) Maxim. M2112	Moist woods to dry, open areas	Shrub, erect, 1.5-10 ft high, deciduous	Follicle, 5 carpels, 1-seeded	Browsed by ungulates with heavy use on winter range	
Baldhead waterleaf <i>Hydrophyllum capitatum</i> Doug. ex Benth. M2111	Widespread, rocky banks and gravelly slopes at moderate to high elevations	Perennial herb, branching from base, 2-10 in high	Capsule, 1-4 seeded	Deer and elk may eat plants during spring	

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Common juniper <i>Juniperus communis</i> L. M2112	Lowland woods to mountain valleys, open rocky alpine slopes	Evergreen shrub, mostly decumbent, seldom higher than 6 ft	Cone, berrylike, seeds wingless	Berries eaten by birds	
Creeping juniper <i>Juniperus horizontalis</i> Moench M2112	Foothills to dry montane ridges	Evergreen shrub, stems decumbent, plants nearly or quite prostrate, rarely as high as 12 in	Cone, berrylike, seed wingless	Same as <i>J. communis</i>	
Rocky Mountain juniper <i>Juniperus scopulorum</i> Sarg. M2111	Inland valleys and lower mountains, exposed dry areas, calcareous or somewhat alkaline soils favored	Small tree, evergreen, stems erect, up to 35 ft high	Cone, berrylike, 1-several seeded, seeds angled, some seed every year with heavy crops at 2-5 year intervals, Nov.-Dec.	Same as <i>J. communis</i>	Wood durable and used chiefly for fence posts
Subalpine larch <i>Larix lyallii</i> Parl. M2112	Generally near timberline, often on north facing slopes	Deciduous needle-leaf tree, 30-45 ft high	Cone, 1.5-2 in long, seeds with thin wings	Leaves and buds eaten by gamebirds; seeds eaten by songbirds	
Western larch <i>Larix occidentalis</i> Nutt. M2112	Foothills to mid-mountain, often where swampy	Deciduous conifer tree, up to 250 ft high	Cones, about 1 in long, seeds about .2 in long	Needles and buds eaten by grouse; seeds eaten by some birds but use is not impressive	
Nevada peavine <i>Lathyrus nevadensis</i> Wats. M2111	Mostly in woods	Perennial herb, rhizomatous, tendril-bearing	Pod, 1-celled		
Labrador-tea <i>Ledum glandulosum</i> Nutt. M2112	High elevations	Evergreen shrub, clustered, erect or ascending, 1-2 ft high	Capsule		
Bog Labrador-tea <i>Ledum groenlandicum</i> Oeder M2112	Mostly in swamps and bogs	Evergreen shrub, leathery leaves, 2-4 ft high	Capsule, splitting by 5 valves		
Twinflower <i>Linnaea borealis</i> L. M2112	Woods	Creeping evergreen, herblike shrub, leafy stems generally less than 4 in	Dry capsule		
Small-flowered fringe cup <i>Lithophragma parviflora</i> (Hook.) Nutt. ex T. & G. M2111	Sagebrush desert and grassland to lower montane forest in moist places	Perennial herb, slender, .5-1.5 ft high	Capsule, 3-peaked, seed about .2 in		
Lace-leaved lomatium <i>Lomatium dissectum</i> (Nutt.) Math. & Const. M2111	Open, often rocky slopes and dry meadows, lowland to mid-mountain	Perennial herb, robust, 1.5-10 ft high	Dry schizocarp, .3-.7 in	Seeds eaten by some gamebirds	
Bigseed lomatium <i>Lomatium macrocarpum</i> (Nutt.) Coult. & Rose M2111	Open, rocky hills and plains, scarcely montane	Perennial herb, .5-1.5 ft high, large, fleshy taproot	Dry schizocarp, about .4-.8 in	Same as <i>L. dissectum</i>	
Silky lupine <i>Lupinus sericeus</i> Pursh M2111	Sagebrush desert to lower montane forest	Perennial herb, stem erect, stout, freely branching 1-2.5 ft high	Pod, flattened, 1-1.5 in long, hairy, seeds 4+ per pod	Seeds are valuable to several upland gamebirds	Some lupines are poisonous to livestock
Woodrush <i>Luzula hitchcockii</i> M2112	Montane forests to subalpine or alpine meadows and slopes	Perennial herb, grasslike, leaves with closed, sheathing base	Capsule, 3-seeded	Browsed lightly by ungulates	

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Rusty leaf <i>Menziesia ferruginea</i> Smith M2112	Moist woods and streambanks	Deciduous shrub, erect, 3-6 ft high	Capsule, fleshy, about .25 in long	May provide browse for grouse	
Cross-shaped miterwort <i>Mitella stauropetala</i> Piper M2111	Open to dense, moist woods	Perennial herb, rhizomatous, leafless flower stem, 10-20 in high	Capsule, 1-chambered, seeds blackish and shining		
Indian pond lily <i>Nuphar polysepalum</i> Engelm. M2111	Aquatic, common lowland into mountains, in ponds and shallow lakes	Perennial herb, fleshy rhizome, long petioled floating leaves	Leathery capsule, 2-4 in long, seeds about .13 in	Seeds eaten by ducks to a limited extent	
Devil's club <i>Oplopanax horridum</i> (J. E. Sm.) Miq. M2112	Moist woods, especially near streams	Thick-stemmed, deciduous shrub, fiercely armed, .2-.7 in spines, large palmately lobed leaves	Berry, bright red, 2-3 seeded, about .25 in	Highly preferred ungulate forage	Interesting and attractive plant for bog garden
Roughleaf rice-grass <i>Oryzopsis asperifolia</i> Michx. M2112	Mostly in open coniferous woods	Perennial grass, caespitose	Caryopsis	Seeds eaten by upland gamebirds, songbirds, small mammals; browsed by deer	Palatable and nutritious but seldom abundant
Sweetroot <i>Osmorhiza</i> spp. Raf. M2111	Common in woodlands, lowlands to mid-montane	Caulescent, thick-rooted perennial herb	Dry schizocarp		
Mountain sweetroot <i>Osmorhiza chilensis</i> H. & A. M2111, M2112	Common in woodlands, lowlands to mid-montane	Caulescent, thick-rooted perennial herb	Dry schizocarp		
Oregon boxwood <i>Pachystima myrsinites</i> (Pursh) Raf. M2112	Mostly mid-montane	Evergreen shrub, glossy, leathery leaves, .5-2 ft high	Capsule, 1-2 seeded, about .17 in long, seeds dark brown	Browsed by ungulates	One of the nicest ornamental shrubs of the Northwest; easily grown
Gairdner Yampah <i>Perideridia gairdneri</i> (H. & A.) Math. M2111	Woodland and dry to wet meadows, lowland to mid-montane	Perennial herb, thickened edible, fascicled roots	Dry schizocarp		
Lewis mock orange <i>Philadelphus lewisii</i> Pursh M2111	Along water-courses and on cliffs, talus slopes and rocky hillsides of sagebrush desert to Ponderosa pine or Douglas-fir forests	Erect to spreading deciduous shrub, 4-10 ft high	Woody capsule	Forage of ungulates	
Red mountain heather <i>Phyllodoce empetrifomis</i> (Sw.) D. Don M2112	Montane to alpine meadows and slopes	Dwarf, evergreen shrub, with linear leaves	Capsule	Minor ungulate use; winter forage for rodents	Attractive ornamental shrub but nearly impossible to grow and get to flower
Mallow ninebark <i>Physocarpus malvaceus</i> (Greene) Ktze. M2111, M2112	Canyons and hillsides, grassland to Ponderosa pine and Douglas-fir forest	Deciduous shrub, 1.5-7 ft high	Several seeded follicle	Browsed by mountain goat	
Engelmann spruce <i>Picea engelmannii</i> Parry ex Engelm. M2112	Montane, generally in swampy areas, mostly above 3,000 ft	Spirelike conifer tree, up to 160 ft high but trunk rarely over 3.5 ft in diameter, thin bark, short, rigid needles	Cone, 1.5-2.5 in long, seeds 2 per scale, heavy crop every 4 years, winter	Grouse obtain much of their food from spruce needles; foliage and twigs browsed extensively by rabbits and deer in winter; small seeds eaten by birds, squirrels, chipmunks	Provides excellent cover in winter; nesting and roosting cover for birds

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
White spruce <u>Picea glauca</u> Moench M2112	Lowland swamps to montane slopes	Evergreen tree, stunted to deformed to erect, up to 80 ft	Cone, 1-1.5 in, seeds 2 per scale, strongly winged, good seed year every 2-6 years, Aug.-Sept.	Same as <u>P. engelmannii</u>	Provides excellent cover in winter; nesting and roosting cover for birds
Whitebark pine <u>Pinus albicaulis</u> Engelm. M2112	At or near timberline	Evergreen tree, thin bark	Cone, 2-3 in long, tend to stay closed and shed seeds slowly	Very important; seeds eaten by many birds and mammals; needles eaten by grouse and hoofed browsers; bark and wood eaten by porcupines and rodents	Valuable cover for gamebirds, fur bearers, hoofed browsers and other ground animals
Lodgepole pine <u>Pinus contorta</u> Dougl. M2111, M2112	Dry mountain slopes, occasionally to timberline, often in pure stands in burned areas	Evergreen tree, 30-110 ft high	Cone, 1.5-2.5 in long, long persistent on tree, good crops 1-3 year intervals, Aug.-Sept.	Same as <u>P. albicaulis</u>	Same as <u>P. albicaulis</u>
Limber pine <u>Pinus flexilis</u> James M2112	At or near timberline in mostly semi-arid ranges	Evergreen tree, leaves needle-like	Deciduous cone, 3-10 in long, seeds almost wingless	Same as <u>P. albicaulis</u>	Same as <u>P. albicaulis</u>
White pine <u>Pinus monticola</u> Dougl. M2112	Moist valleys to somewhat dry slopes	Evergreen tree, up to 250 ft high, leaves needle-like	Cone, 6-10 in long, seed wings acute, good crops every 3-4 years, Aug.-Sept.	Same as <u>P. albicaulis</u>	Same as <u>P. albicaulis</u>
Ponderosa pine <u>Pinus ponderosa</u> Laws. M2111, M2112	Lower levels, mostly where rather dry, often in open pure stands	Evergreen tree, up to 220 ft, bark becoming thick with age, leaves needlelike and persistent	Cone, 3-5.5 in long, deciduous when mature, Aug.-Sept.	Same as <u>P. albicaulis</u>	Same as <u>P. albicaulis</u>
Merrill's bluegrass <u>Poa ampla</u> Merr. M2111	Sagebrush areas, often where alkaline	Perennial grass	Caryopsis	Seeds eaten by several kinds of songbirds and rodents; leaves grazed by rabbits and big game	Great value as range forage
Pine bluegrass <u>Poa scabrella</u> Thurb. M2111	Sagebrush desert to montane forests and ridges	Perennial grass, caespitose, over 1.5 ft high, non-rhizomatous	Caryopsis	Same as <u>P. ampla</u>	
Quaking aspen <u>Populus tremuloides</u> Michx. M2111	Not confined to streambanks and lake shores	Deciduous tree, up to 100 ft high	2-carpellate capsule, good crops every 4-5 years, June	Buds and catkins valuable winter and spring food for various grouse; bark, twigs, foliage eaten by rabbits and hoofed browsers; wood and bark relished by beavers and porcupines	
Beauty cinquefoil <u>Potentilla gracilis</u> Hook. M2111	Grassland and moist areas in deserts to sub-alpine meadows	Perennial herb, less than 15 in	Achene	Little food value; eaten by upland gamebirds, songbirds, small mammals to a small extent	
Norwegian cinquefoil <u>Potentilla norvegica</u> L. M2111	Mostly in moist waste areas	Annual or biennial herb, stems stiffly hirsute	Achene	Same as <u>P. gracilis</u>	Weedy

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western choke-cherry <i>Prunus virginiana</i> L. M2111, M2112	Widespread	Tree or shrub, with firm, but not leathery, deciduous leaves	Drupe, 1-seeded, red to black	One of the most important wildlife foods; fruit eaten by birds, fur and game mammals, small mammals; twigs, foliage, bark eaten by hoofed browsers and rabbits	Fruit sweet but astringent
Douglas-fir <i>Pseudotsuga menziesii</i> (Mirb.) Franco M2111, M2112	Moist to dry areas, low elevations to near timberline	Evergreen tree, up to 280 ft	Cone, with broadly winged seeds, heavy seed crops at 5-7 year intervals (Sept.)	Seeds eaten by western squirrels and other rodents; foliage and twigs eaten by several kinds of browsers; needles and cones winter food of blue grouse	Important commercial tree
Bitterbrush <i>Purshia tridentata</i> (Pursh) DC. M2111, M2112	Sagebrush desert to Ponderosa pine forests	Rigidly bushy shrub with deciduous leaves, 3-6 ft high	Achene, 1-seeded, about .25 in long, Aug.	Important to wildlife; seeds eaten by small rodents; good browse plant, particularly by mule deer	Grazed by livestock; fair ornamental
Large pyrola <i>Pyrola asarifolia</i> Michx. M2112	Moist ground in woodlands to forest	Perennial herb, slender rhizome and rosette of green leaves, 6-16 in high	Dry capsule	Little value though browsed by ruffed grouse	
Whitevein pyrola <i>Pyrola picta</i> Sm. M2111	Coniferous forest	Perennial herb, slender rhizome and rosette of deep green leaves mottled on upper surface, flower stem 3-10 in high	Dry capsule	Same as <i>P. asarifolia</i>	
One-sided wintergreen <i>Pyrola secunda</i> L. M2112	Mostly in coniferous woods	Perennial herb, slender rhizomes, 2-6 in high	Dry capsule	Same as <i>P. asarifolia</i>	
Woodnymph <i>Pyrola uniflora</i> L. M2112	Light to deep woods, especially where moist or on rotting wood, lowlands to montane	Perennial herb, slender rhizome, rosette of green leaves, 1-6 in long	Dry capsule	Same as <i>P. asarifolia</i>	
Wax currant <i>Ribes cereum</i> Lindl. M2111	Grassland, sagebrush desert	Deciduous shrub	Berry, dull to bright red, several-seeded	Fruit eaten by songbirds, chipmunks, squirrels	Berry unpalatable
Swamp gooseberry <i>Ribes lacustre</i> (Pers.) Poir. M2111, M2112	Moist woods and streambanks to forest slopes and subalpine ridges	Deciduous shrub, 3.5-5 ft high	Berry, dark purple, not prickly	Same as <i>R. cereum</i>	
Alpine prickly currant <i>Ribes montigenum</i> McClat. M2112	Subalpine to alpine slopes and rocky bluffs	Deciduous shrub, strongly glabrous and glandular, 8-20 in high	Berry, reddish, not prickly	Same as <i>R. cereum</i>	
Baldhip rose <i>Rosa gymnocarpa</i> Nutt. M2111	Moist to dry woods, lowlands to mid-montane	Prickly, to nearly unarmed shrub, 1-4 ft high	Achene, 12 or fewer bony, enclosed in fleshy, glabrous, bright red hypanthium	Achenes and hips important to upland gamebirds in winter; fruits, twigs, foliage eaten by mammals and hoofed browsers	Thickets make excellent nesting sites and protective cover for gamebirds and songbirds
Nootka rose <i>Rosa nutkana</i> Presl M2111	Wooded or moist areas, often montane	Woody vine	Achene, berry-like, enclosed within fleshy hypanthium	Same as <i>R. gymnocarpa</i>	Widespread cordilleran species

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Red raspberry <u>Rubus idaeus</u> L. M2111	Wet or dry woods, to open and rocky mountain slopes	Perennial shrub, deciduous, main prickles not hooked or flat	Drupelet, yellow- ish or red	Important summer food; fruit eaten by grouse, ring-necked pheasant, quail, raccoons, chip- munks, squirrels; stems and leaves eaten by deer and rabbits	Valuable cover
Black raspberry <u>Rubus leucodermis</u> T. & G. M2111	Fields, canyons, lower mountains	Perennial shrub or vine, stems often trailing or arch- ing, prickles flat and often hooked, leaves deciduous and prickly be- neath	Succulent, fine- ly tomentose, drupelet, often black	Same as <u>R. idaeus</u>	Valuable cover
Thimbleberry <u>Rubus parviflorus</u> Nutt. M2111, M2112	Moist to dry wooded to open places from low- lands to sub- alpine	Unarmed erect shrub, 1.5 ft high	Aggregation of weakly coherent drupelets	Same as <u>R. idaeus</u>	Effective cover
Bebb willow <u>Salix bebbiana</u> Sarg. M2111	Lowlands to mid- mountain	Deciduous tree	Capsule	Buds and twigs eaten by several species of grouse; twigs, foliage, bark eaten by rabbits and hoofed browsers	No running roots
Columbia River willow <u>Salix fluviatilis</u> Nutt. M2111	Banks of Columbia River	Deciduous tree, 7-26 ft high	Capsule	Same as <u>S. bebbiana</u>	Often colonial by running roots
Pacific willow <u>Salix lasiandra</u> Benth. M2111	Lowlands to mid- montane	Arborescent shrub or small tree, 7-38 ft high	Capsule	Same as <u>S. bebbiana</u>	Widespread
Sierra snakeroot <u>Sanicula graveolens</u> Poepp. ex DC. M2111	Widespread, open slopes and flats, lowland to mid- montane	Biennial herb, erect, taprooted	Carpophore		
False melic <u>Schizachne</u> <u>purpurascens</u> (Torr.) Swall. M2112	Open grassy or wooded, moist to dry and rocky areas	Perennial grass, tufted, culms hollow, 2-3.5 ft high	Caryopsis		
Wallace's selaginella <u>Selaginella wallacei</u> Hieron. M2111	Moist locations	Low creeping herb, less than 1 in tall	Spore		Frequently grows on tree bark
Western groundsel <u>Senecio integerrimus</u> Nutt. M2111	Open places from valleys to near timberline	Perennial herb, fibrous roots from a very short, erect, short- lived crown	Achene, Aug.- Sept.		
Cleftleaf groundsel <u>Senecio streptanthifolius</u> Greene M2112	Woods and moist to moderately dry open places at mid to high ele- vations	Perennial herb, evident, long- lived, woody, ascending rhi- zome	Achene, Sept.		
Arrowleaf groundsel <u>Senecio triangularis</u> Hook. M2112	Widespread, stream- banks and other moist places, up- per and mid eleva- tions	Perennial herb, fibrous rooted, 1-5 ft high	Achene, Sept.		
Canada buffaloberry <u>Shepherdia canadensis</u> (L.) Nutt. M2112	Open to wooded areas	Deciduous shrub, branches unarmed, 3-13 ft high	Berry, fleshy, not greatly hardened, yellow-red		Fruit bitter; of little horticultur- al importance

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
False Solomon's-seal <i>Smilacina racemosa</i> (L.) Desf. M2111, M2112	Moist woods and streambanks to open forests, lowlands to mid elevations	Perennial herb, widely rhizomatous erect, leafy flower stems	Berry, few seeded, greenish to red	Fruit eaten by few species of birds and rodents	
Starry Solomon plume <i>Smilacina stellata</i> L. M2111, M2112	Moist woods and streambanks to rocky, well-drained, often fully exposed sidehills	Perennial herb, widely rhizomatous, erect, leafy, flower stems	Berry, few seeded, greenish to red	Same as <i>S. racemosa</i>	
Canada goldenrod <i>Solidago canadensis</i> L. M2111	Generally on moist soils	Fibrous-rooted, perennial herb, rhizomatous, 1.5-3 ft high	Achene		Transcontinental
Shinyleaf spiraea <i>Spiraea betulifolia</i> Pall. M2111, M2112	Wet places to open hillsides, lowlands to 10,000 ft	Deciduous shrub	Follicle		
Northern starwort <i>Stellaria calycantha</i> (Ledeb.) Bong. M2111	Widespread	Perennial herb, rhizomatous	Many seeded, capsule		
Shining chickweed <i>Stellaria nitens</i> Nutt. M2111	Gravelly meadows to grassy hillsides often where moist	Annual herb	Many seeded capsule		Common
Needle-and-thread <i>Stipa comata</i> Trin. & Rupr. M2111	Plains and prairies to montane forests, generally on rocky soil	Caespitose perennial grass	Caryopsis	Important food for songbirds and rodents; also eaten by hoofed browsers	Injurious to livestock
Clasping-leaved twisted-stalk <i>Streptopus amplexifolius</i> (L.) DC. M2112	Moist forests, streambanks and mountain thickets	Perennial herb, widely rhizomatous, 1.5-4 ft high	Berry, greenish-red		
Common snowberry <i>Symphoricarpos albus</i> (L.) Blake M2111, M2112	Widespread, thickets, woods, open slopes, lowlands to mid elevations	Erect shrub, 3-6.5 ft high	Nutlet, about .2 in	Fruit eaten by grouse and songbirds; foliage and twigs eaten by deer	Useful as nesting and protective cover for gamebirds, rabbits and other animals
Western snowberry <i>Symphoricarpos occidentalis</i> Hook. M2111	Open prairies, moist low ground	Erect shrub, 1-3.5 ft high	White, berrylike	Same as <i>S. albus</i>	
Western yew <i>Taxus brevifolia</i> Nutt. M2112	Moist forest, especially along streams	Evergreen tree, 13-35 ft high, erect and straight to contorted trunk, bark thin	Hardened seed surrounded by fleshy, reddish aril, .2-.25 in	Highly preferred browse by ungulates	Hard, durable, attractive wood
Western meadow-rue <i>Thalictrum occidentale</i> Gray M2111, M2112	Common	Rhizomatous perennial herb	Achene	Slightly browsed by deer and elk	
Western redcedar <i>Thuja plicata</i> Donn M2111, M2112	Mainly where moist or swampy	Evergreen tree, up to 225 ft, scale-like leaves, bark thin	Cone, about .5 in, seeds with narrow lateral wings, good crops every 4 years, Aug.-Sept.	Seeds eaten by pine siskin; foliage and twigs useful to white-tailed deer; slight value to other species	Dead spike tops provide useful perching and nesting sites

continued

Table M2110-55.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Three-leaved coolwort <i>Tiarella trifoliata</i> L. M2112	Damp woods	Perennial herb, rhizomatous, .5-1.5 ft high	Capsules, few- seeded		
Purple trillium <i>Trillium petiolatum</i> Pursh M2111	Streambanks and moist thickets or meadows	Perennial herb, short, thick rhi- zome	A many seeded berrylike capsule		Rather easily grown from seed
American globeflower <i>Trollius laxus</i> Salisb. M2112	Swamps to alpine meadows	Perennial herb, 4-12 in high	Follicle, about .38 in, several seeded		Generally blossom- ing near snow
Western hemlock <i>Tsuga heterophylla</i> (Raf.) Sarg. M2112	Moist to well- drained sites, sea level to 5,000 ft ele- vation	Tree, to 150 ft tall, narrow crown	Cone, seeds shed Sept.-Oct.	Eaten by blue grouse, white- and black- tailed deer; survival food for Olympic wapiti	Easily injured
Mountain hemlock <i>Tsuga mertensiana</i> (Bong.) Carr. M2112	Subalpine to alpine, 4,000- 7,000 ft, often to timberline	Evergreen tree, graceful, short needles, up to 225 ft high and 4 ft diameters, but often dwarfed at high elevations	Pendent cone, seeds small with large, broadly oblong wing, seed crops every 3-4 years, Sept.- Oct.	Seeds eaten by variety of songbirds and ro- dents; bark and wood eaten by porcupines	Dense low foliage makes excellent winter cover for grouse, deer and other wildlife spe- cies
Dwarf huckleberry <i>Vaccinium caespitosum</i> Michx. M2112	Montane meadows and slopes to above timberline	Deciduous shrub, 8-12 in high	Berry, mostly dark blue to blackish	Berries eaten by grouse, songbirds, black bear, chipmunks; browsed by deer and rabbits	Nice ornamental
Globe huckleberry <i>Vaccinium globulare</i> Rydb. M2112	Lower and mid elevations	Deciduous shrub, 1.5-6.5 ft high	Berry, .25-.38 in thick, bluish purple	Same as <i>V. caespitosum</i>	Nice ornamental
Dwarf bilberry <i>Vaccinium myrtillus</i> L. M2112	Montane to sub- alpine	Deciduous shrub, 4-12 in high	Berry, dark red to bluish	Same as <i>V. caespitosum</i>	
Grouseberry <i>Vaccinium scoparium</i> Leib. M2112	Subalpine to alpine woods to open slopes	Deciduous shrub, low and matted, 3-12 in high, copiously branch- ed	Berry, many- seeded, bright red, .13-.2 in thick	Important to wildlife; berries eaten by grouse, songbirds, black bear, chipmunks; browsed by deer and rabbits	Nice ornamental
Sitka valerian <i>Valeriana sitchensis</i> Bong. M2112	Moist places at mid and upper elevations	Robust perennial herb, 1-4 ft high, fibrous, rhizome roots	Achene	Highly preferred browse by all mam- mals	Has a characteristic odor
American false hellebore <i>Veratrum viride</i> Ait. M2112	Wet thickets, swamps, lowlands to montane mead- ows	Tall perennial herb, from thick rhizomes, stem simple	Capsule, many seeded	Browsed by deer and elk	
American vetch <i>Vicia americana</i> Muhl. ex Willd. M2111	Widespread	Perennial herb, mostly less than 3 ft high with trailing to climb- ing stems	Flat pod, 2- several seeded	Seeds and foliage eaten to a limited extent by birds and rodents	
Western long-spurred violet <i>Viola adunca</i> Sm. M2111	Dry to moist meadows, woods, open ground	Perennial herb	Capsule, 3-valved, explosively de- hiscent	Seeds eaten by several upland gamebirds; tuberous roots relish- ed by some gamebirds	Ornamental

continued

Table M2110-55.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Canada violet <i>Viola canadensis</i> L. M2111, M2112	Moist woodlands, generally on loamy soils	Perennial herb, stems 4-16 in high	Capsule, 3-valved	Seeds eaten by several upland gamebirds; tuberous roots relish- ed by some gamebirds	Ornamental
Wood violet <i>Viola glabella</i> Nutt. M2111	Moist woods or stream edges	Perennial herb, naked, aerial stems and large, thin leaves	Capsule, 3-valved, explosively de- hiscent	Same as <i>V. canadensis</i>	Ornamental
Upland yellow violet <i>Viola nuttallii</i> Pursh M2111	Dry sites	Perennial herb	Capsule, 3-valved, exploding de- hiscent	Same as <i>V. canadensis</i>	
Marsh violet <i>Viola palustris</i> L. M2111	Moist meadows and streambanks	Perennial herb	Capsule, 3-valved, exploding de- hiscent	Same as <i>V. canadensis</i>	
Round-leaved violet <i>Viola orbiculata</i> Gey. ex Hook. M2112	Montane to al- pine	Perennial herb, leaves withering during winter	Capsule, 3-valved, exploding de- hiscent	Same as <i>V. canadensis</i>	Choice ornamental
Bear grass <i>Xerophyllum tenax</i> (Pursh) Nutt. M2112	Open woods and clearings	Perennial herb, short thick rhi- zome, basal leaves in large clumps, .5-2 ft high	Capsule, .2-.3 in	Browsed by deer and elk	

56 PROVINCE M2410 Pacific Forest

SECTION M2411 SITKA SPRUCE—CEDAR—HEMLOCK FOREST

The Sitka Spruce—Cedar—Hemlock Forest adjoins the Pacific Ocean along the whole length of Washington and Oregon. This forest occupies only a narrow coastal strip, a few miles wide, except where it extends along river valleys or where there is a coastal plain, as on the Olympic Peninsula. It has probably the mildest climate of any vegetation zone in the Pacific Northwest. Temperatures are mediated by the ocean and the average annual precipitation of 118 inches is added to by frequent fog and fog drip. This vegetation zone has excellent soils, deep and finely textured, high in organic matter and total nitrogen.

Special types in the forest zones are the Olympic Rainforest and the Redwood Forest of Oregon, as well as forested swamps and prairies.

Abundant cryptogams, especially epiphytic ones, characterize the moister areas of this zone.

SECTION M2412, REDWOOD FOREST

The Redwood Forest Section includes coastal strand, coastal marshes, coastal brushfields, coastal hardwood forests, woodland-prairies, and coniferous forest (Yocum and Dasmann 1969) that extend from sea level to over 2000 feet elevation. Rainfall averages from 15 inches in the southern part to over 100 inches in the northern coastal mountains near Oregon. Much dense dripping fog occurs in the normally rainless summer months.

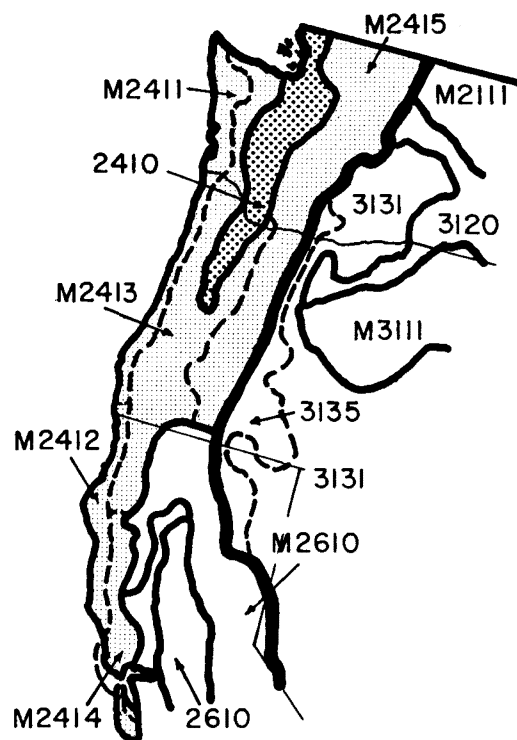
Growing seasons range from 6 to 12 months with 200 to 365 frost-free days. Temperatures are mild and change little diurnally or seasonally. Soil types are many and scattered because of the exposures caused by mountain drainage systems.

SECTION M2413 CEDAR—HEMLOCK—DOUGLAS-FIR FOREST

The major portion of the Cedar—Hemlock—Douglas-fir Forest is in western Washington and Oregon, along the lower slopes on the east side of the Coast Range and the western slopes of the Cascade Mountains. The elevational range varies from sea level to 3000 feet in the Cascades of central Oregon and from sea level to 3500 feet on the eastern slopes of the Olympic Mountains. This area has a wet, mild, maritime climate, and although the soils are derived from a wide variety of parent materials, they tend to have common general features.

In southwestern Oregon and northern California, the Klamath Mountains form a complex of ranges. This area of rugged, deeply dissected terrain of pre-Tertiary rocks is set apart from the other mountain ranges in Oregon. The most northerly portion of this range in Oregon is the Siskiyou Mountain Range.

The vegetation in the Siskiyou Mountains reflects the complex soil-climate relationships. Extremely dry oak woodlands are found in some valley systems; the very dry Jeffrey pine communities on serpentine soils. At the other end of the moisture spectrum are the Port-Orford cedar communities found in the cool, mesic narrow valley systems. This climate, soil, and vegetation sets the Siskiyou Mountains apart from the other mountain ranges in this section.



Location of province
within the United States



Location of sections
within the province



Province boundary



Section boundary



State boundary

Figure 56.1 Province M2410, Pacific Forest; Sections M2411, Sitka Spruce—Cedar—Hemlock Forest; M2412, Redwood Forest; M2413, Cedar—Hemlock—Douglas-fir Forest; M2414, California Mixed Evergreen Forest; and M2415, Silver Fir—Douglas-fir Forest.

SECTION M2414**CALIFORNIA MIXED EVERGREEN FOREST**

The California Mixed Evergreen Forest Section extends along the east edge of the California Redwood Section from southern Humboldt County, California to the Pacific coast north of San Francisco Bay near Bodega Head and south along the west side of San Francisco Bay to San Jose, California. Elevations range from near sea level to about 4000 feet inland. Temperatures are much the same as those for the Redwood Forest but may fluctuate more at the higher elevations. Growing seasons are from 6 to 12 months; rainfall varies from 15 to over 100 inches annually. Snow occurs at the higher elevations; fog is common at the lower elevations. Plant communities found in this section, according to Munz and Keck (1970), are the southern part of the Douglas-fir Forest, Northern Oak Woodland, North Coast Coniferous Forest and Mixed Evergreen Forest.

SECTION M2415**SILVER FIR—DOUGLAS-FIR FOREST**

The Silver Fir—Douglas-fir Forest Section stretches the

length of the Cascade Mountains from the Canadian border to southern Oregon. It encompasses both eastside and westside communities and like most mountain ranges has an elevational zonation. In the northern portions, on the west side, the lower elevations are similar to Section M2413. The dominant species are western hemlock and Douglas-fir. At higher elevations (over 3000 feet), Pacific silver fir becomes the dominant species.

In Oregon, the Pacific silver fir zones occur on the west slopes of the Cascades above the Cedar—Hemlock and Douglas-fir forests. Areas in Washington and Oregon where Pacific silver fir communities are found usually have a short, cool growing season with a significant snowpack. This section is cooler and wetter than the lower elevation Cedar—Hemlock—Douglas-fir Section.

Communities on the east side of the Cascade Mountains are much drier. Grand fir communities form the most extensive mid-slope forest zone in the Oregon and southern Washington Cascades, generally occurring at 3700 to 4500 feet. The next lower vegetation zone is the Douglas-fir Forest which is drier and warmer than the area of grand fir.

Table M2410-56.1 [M2411] Selected Plant Species Common to the Sitka Spruce—Cedar—Hemlock Forest

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
(Sitka spruce forest communities)				
Tall-growing trees, over 40 ft	<u>Alnus rubra</u> <u>Picea sitchensis</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Red alder Sitka spruce Douglas-fir Western redcedar Western hemlock	<u>Abies amabilis</u> <u>Abies grandis</u> <u>Picea sitchensis</u> <u>Pinus contorta</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Pacific silver fir Grand fir Sitka spruce Lodgepole pine Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Alnus rubra</u> <u>Sambucus racemosa</u>	Vine maple Red alder Red elderberry	<u>Acer circinatum</u> <u>Oplopanax horridum</u> <u>Rhododendron macrophyllum</u> <u>Sambucus racemosa</u> <u>Vaccinium ovatum</u> <u>Vaccinium parvifolium</u>	Vine maple Devil's club Pacific rhododendron Red elderberry Evergreen blueberry Red huckleberry
Low to medium shrubs, 2-20 ft	<u>Gaultheria shallon</u>	Salal	<u>Gaultheria shallon</u>	Salal
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Blechnum spicant</u> <u>Digitalis purpurea</u> <u>Holcus lanatus</u> <u>Montia sibirica</u> <u>Oxalis oregana</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Stachys mexicana</u> <u>Stellaria media</u>	Deer fern Foxglove Velvet grass Indian lettuce Oregon oxalis Sword fern Bracken fern Great hedge-nettle Common chickweed	<u>Disporum smithii</u> <u>Maianthemum dilatatum</u> <u>Montia sibirica</u> <u>Oxalis oregana</u> <u>Polystichum munitum</u> <u>Tiarella trifoliata</u> <u>Viola glabella</u> <u>Viola sempervirens</u>	Smith's fairybells False lily-of-the-valley Indian lettuce Oregon oxalis Sword fern Three-leaved coolwort Wood violet Evergreen violet
(Redwood forest/southwestern Oregon communities)				
Tall-growing trees, over 40 ft			<u>Acer macrophyllum</u> <u>Lithocarpus densiflora</u> <u>Picea sitchensis</u> <u>Pseudotsuga menziesii</u> <u>Sequoia sempervirens</u> <u>Tsuga heterophylla</u> <u>Umbellularia californica</u>	Bigleaf maple Tanbark-oak Sitka spruce Douglas-fir Redwood Western hemlock California-laurel
Low-growing trees and tall shrubs, 20-40 ft			<u>Acer circinatum</u> <u>Rhododendron macrophyllum</u> <u>Vaccinium ovatum</u>	Vine maple Pacific rhododendron Evergreen blueberry

continued

Table M2410-56.1 [M2411] (Concluded)

Growth form	Early successional plants		Late successional plants	
Low to medium shrubs, 2-20 ft	<u>Rubus ursinus</u>	Trailing blackberry	<u>Gaultheria shallon</u>	Salal
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Blechnum spicant</u> <u>Oxalis oregana</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u>	Deer fern Oregon oxalis Sword fern Bracken fern	<u>Athyrium filix-femina</u> <u>Disporum smithii</u> <u>Maianthemum dilatatum</u> <u>Montia sibirica</u> <u>Oxalis oregana</u> <u>Polystichum munitum</u> <u>Tiarella trifoliata</u> <u>Viola sempervirens</u>	Lady-fern Smith's fairybells False lily-of-the-valley Indian lettuce Oregon oxalis Sword fern Three-leaved coolwort Evergreen violet
Habitat conditions: Moist to wet/well-drained to impeded				
(Olympic rainforest communities)				
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Alnus rubra</u> <u>Populus trichocarpa</u>	Bigleaf maple Red alder Black cottonwood	<u>Picea sitchensis</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Sitka spruce Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft			<u>Acer circinatum</u> <u>Oplopanax horridum</u> <u>Vaccinium parvifolium</u>	Vine maple Devil's club Red huckleberry
Low to medium shrubs, 2-20 ft			<u>Rubus pedatus</u> <u>Rubus ursinus</u> <u>Vaccinium ovalifolium</u>	Strawberry-leaf blackberry Trailing blackberry Ovalleaf huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Athyrium filix-femina</u> <u>Carex deweyana</u> <u>Dryopteris austriaca</u> <u>Gymnocarpium dryopteris</u> <u>Maianthemum dilatatum</u> <u>Montia sibirica</u> <u>Oxalis oregana</u> <u>Polystichum munitum</u> <u>Tiarella unifoliata</u> <u>Trisetum cernuum</u>	Lady-fern Dewey sedge Mountain wood fern Oak-fern False lily-of-the-valley Indian lettuce Oregon oxalis Sword fern Coolwort foamflower Nodding trisetum	<u>Athyrium filix-femina</u> <u>Carex deweyana</u> <u>Dryopteris austriaca</u> <u>Gymnocarpium dryopteris</u> <u>Maianthemum dilatatum</u> <u>Montia sibirica</u> <u>Oxalis oregana</u> <u>Polystichum munitum</u> <u>Tiarella unifoliata</u> <u>Trisetum cernuum</u>	Lady-fern Dewey sedge Mountain wood fern Oak-fern False lily-of-the-valley Indian lettuce Oregon oxalis Sword fern Coolwort foamflower Nodding trisetum
(Forested swamps communities)				
Tall-growing trees, over 40 ft	<u>Alnus rubra</u>	Red alder	<u>Alnus rubra</u> <u>Picea sitchensis</u> <u>Pinus monticola</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Red alder Sitka spruce White pine Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft			<u>Vaccinium alaskaense</u> <u>Vaccinium ovatum</u>	Alaska blueberry Evergreen blueberry
Low to medium shrubs, 2-20 ft	<u>Cornus canadensis</u> <u>Gaultheria shallon</u> <u>Salix hookeriana</u> <u>Spiraea douglasii</u>	Bunchberry dogwood Salal Coast willow Douglas spiraea		
Lesser vegetation - grasses, herbs, ferns, mosses			<u>Athyrium filix-femina</u> <u>Blechnum spicant</u> <u>Carex obnupta</u> <u>Lysichiton americanum</u> <u>Maianthemum dilatatum</u> <u>Mitella</u> spp. <u>Oenanthe sarmentosa</u> <u>Stachys mexicana</u>	Lady-fern Deer fern Slough sedge Skunk cabbage False lily-of-the-valley Miterwort Water parsley Great hedge-nettle
(Prairie communities)				
Low to medium shrubs, 2-20 ft			<u>Empetrum nigrum</u> <u>Kalmia polifolia</u> <u>Ledum groenlandicum</u> <u>Vaccinium oxycoccos</u>	Crowberry Pale laurel Bog Labrador-tea Wild cranberry
Lesser vegetation - grasses, herbs, ferns, mosses			<u>Achillea millefolium</u> <u>Anthoxanthum odoratum</u> <u>Fragaria vesca</u> <u>Holcus lanatus</u> <u>Hypericum perforatum</u> <u>Prunella vulgaris</u>	Western yarrow Sweet vernal grass Strawberry Velvet grass Common St. John's-wort Common selfheal

Table M2410-56.1 [M2412] Selected Plant Species Common to the Redwood Forest

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Arbutus menziesii</u> <u>Populus trichocarpa</u> <u>Salix</u> spp. <u>Umbellularia californica</u>	Bigleaf maple Madrone Black cottonwood Willow California-laurel	<u>Castanopsis chrysophylla</u> <u>Cupressus macrocarpa</u> <u>Pinus radiata</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Sequoia sempervirens</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Giant chinquapin Monterey cypress Monterey pine Douglas-fir Canyon live oak Redwood Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Arbutus menziesii</u> <u>Ceanothus thyrsiflorus</u> <u>Garrya elliptica</u> <u>Myrica californica</u> <u>Rhamnus purshiana</u>	Madrone Blue-blossom ceanothus Silk-tassel Wax-myrtle Cascara	<u>Cupressus pygmaea</u> <u>Pinus contorta</u> <u>Pinus muricata</u> <u>Rhododendron macrophyllum</u> <u>Sambucus racemosa</u>	Mendocino cypress Lodgepole pine Bishop pine Pacific rhododendron Red elderberry
Low to medium shrubs, 2-20 ft	<u>Arctostaphylos columbiana</u> <u>Baccharis pilularis</u> <u>Ceanothus velutinus</u> <u>Heteromeles arbutifolia</u> <u>Holodiscus discolor</u> <u>Lonicera involucrata</u> <u>Myrica californica</u> <u>Rhus diversiloba</u> <u>Ribes menziesii</u>	Hairy manzanita Coyote bush Tobacco brush Christmas berry Ocean spray Black-fruited honeysuckle Wax-myrtle Poison oak Canyon gooseberry	<u>Gaultheria shallon</u> <u>Holodiscus discolor</u> <u>Ribes menziesii</u> <u>Rubus parviflorus</u> <u>Vaccinium ovatum</u>	Salal Ocean spray Canyon gooseberry Thimbleberry Evergreen blueberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Abronia latifolia</u> <u>Achillea millefolium</u> <u>Brodiaea Ida-Maia</u> <u>Bromus vulgaris</u> <u>Calamagrostis nutkaensis</u> <u>Castilleja latifolia</u> <u>Danthonia californica</u> <u>Epilobium angustifolium</u> <u>Festuca occidentalis</u> <u>Fragaria chiloensis</u> <u>Heracleum lanatum</u> <u>Holcus lanatus</u> <u>Pteridium aquilinum</u> <u>Solidago spathulata</u>	Sand verbena Western yarrow Fire-cracker flower Columbia brome Pacific reedgrass Seaside painted-cup California danthonia Fireweed Western fescue Sand strawberry Cow parsnip Velvet grass Bracken fern Coastal goldenrod	<u>Asarum caudatum</u> <u>Aster chilensis</u> <u>Clintonia andrewsiana</u> <u>Dicentra formosa</u> <u>Equisetum</u> spp. <u>Hierochloa occidentalis</u> <u>Oxalis oregana</u> <u>Smilacena racemosa</u> <u>Vancouveria hexandra</u>	Wild ginger Chilian aster Red beadlily Bleeding-heart Horsetail Vanilla grass Oregon oxalis False Solomon's-seal White inside-out flower
Habitat conditions: Moist to wet/well-drained to impeded				
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Alnus rubra</u> <u>Arbutus menziesii</u> <u>Populus trichocarpa</u> <u>Salix</u> spp. <u>Salix lasiandra</u> <u>Umbellularia californica</u>	Bigleaf maple Red alder Madrone Black cottonwood Willow Pacific willow California-laurel	<u>Abies grandis</u> <u>Chamaecyparis lawsoniana</u> <u>Picea sitchensis</u> <u>Pseudotsuga menziesii</u>	Grand fir Port-Orford cedar Sitka spruce Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Arbutus menziesii</u> <u>Corylus cornuta</u> <u>Myrica californica</u> <u>Sambucus racemosa</u>	Vine maple Madrone California hazelnut Wax-myrtle Red elderberry	<u>Pinus contorta</u> <u>Sambucus racemosa</u>	Lodgepole pine Red elderberry
Low to medium shrubs, 2-20 ft	<u>Lonicera involucrata</u> <u>Mimulus aurantiacus</u> <u>Myrica californica</u>	Black-fruited honeysuckle Bush monkey-flower Wax-myrtle	<u>Lupinus arboreus</u> <u>Rhododendron occidentale</u> <u>Ribes sanguineum</u> <u>Rubus parviflorus</u> <u>Sambucus racemosa</u> <u>Vaccinium ovatum</u> <u>Vaccinium parvifolium</u>	Tree lupine Western azalea Red flowering currant Thimbleberry Red elderberry Evergreen blueberry Red huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Carex</u> spp. <u>Glyceria</u> spp. <u>Lysichitum americanum</u> <u>Mimulus guttatus</u> <u>Nuphar polysepalum</u> <u>Polygonum</u> spp. <u>Sagittaria</u> spp. <u>Scirpus</u> spp. <u>Sparganium</u> spp. <u>Triglochin maritimus</u> <u>Typha latifolia</u>	Sedge Manna grass Skunk cabbage Yellow monkey-flower Indian pond lily Smartweed Arrowhead Bulrush Bur-reed Shore podgrass Common cat-tail	<u>Adiantum pedatum</u> <u>Blechnum spicant</u> <u>Disporum smithii</u> <u>Distichlis spicata</u> <u>Lilium columbianum</u> <u>Montia sibirica</u> <u>Polystichum munitum</u> <u>Salicornia</u> spp. <u>Trillium ovatum</u>	Maidenhair fern Deer fern Smith's fairybells Saltgrass Columbia lily Indian lettuce Sword fern Pickweed White trillium

Table M2410-56.1 [M2413] Selected Plant Species Common to the Cedar—Hemlock—Douglas-fir Forest (Siskiyou Mountain Region)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Moist to wet/well-drained to impeded (low elevation dioritic soils)		
(Port-Orford cedar--Douglas-fir communities)		
Tall-growing trees, over 40 ft	<u>Abies concolor</u> <u>Acer macrophyllum</u> <u>Alnus rhombifolia</u> <u>Alnus rubra</u> <u>Arbutus menziesii</u> <u>Castanopsis chrysophylla</u> <u>Chamaecyparis lawsoniana</u> <u>Lithocarpus densiflorus</u> <u>Pinus lambertiana</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Quercus kelloggii</u>	White fir Bigleaf maple White alder Red alder Madrone Giant chinquapin Port-Orford cedar Tanbark-oak Sugar pine Douglas-fir Canyon live oak California black oak
Low-growing trees and tall shrubs, 20-40 ft	<u>Cornus nuttallii</u> <u>Taxus brevifolia</u>	Pacific dogwood Western yew
Medium shrubs, 6-20 ft	<u>Acer circinatum</u> <u>Corylus cornuta</u> <u>Holodiscus discolor</u> <u>Philadelphus lewisii</u> <u>Rhododendron macrophyllum</u> <u>Rubus ursinus</u> <u>Salix</u> spp. <u>Vaccinium parvifolium</u>	Vine maple California hazelnut Ocean spray Lewis mock orange Pacific rhododendron Trailing blackberry Willow Red huckleberry
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Gaultheria shallon</u> <u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u> <u>Rubus parviflorus</u>	Oregon-grape Salal Poison oak Baldhip rose Thimbleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Adenocaulon bicolor</u> <u>Adiantum pedatum</u> <u>Anemone deltoidea</u> <u>Apocynum pumilum</u> <u>Asarum caudatum</u> <u>Campanula scouleri</u> <u>Chimaphila menziesii</u> <u>Chimaphila umbellata</u> <u>Clintonia uniflora</u> <u>Coptis laciniata</u> <u>Disporum hookeri</u> <u>Equisetum hyemale</u> <u>Galium triflorum</u> <u>Heuchera micrantha</u> <u>Hieracium albiflorum</u> <u>Iris chrysophylla</u> <u>Lathyrus pauciflorus</u> <u>Linnaea borealis</u> <u>Lonicera hispidula</u> <u>Montia spathulata</u> <u>Phlox adsurgens</u> <u>Pteridium aquilinum</u> <u>Pyrola picta</u> <u>Senecio bolanderi</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Tiarella unifoliata</u> <u>Trientalis latifolia</u> <u>Trillium ovatum</u> <u>Vancouveria hexandra</u> <u>Viola sempervirens</u> <u>Whipplea modesta</u>	Trail plant Maidenhair fern Threelobed anemone Low dogbane Wild ginger Scouler bellflower Little prince's-pine Western prince's-pine Beadlily Cutleaf goldthread Hooker's fairybells Scouring-rush Sweet-scented bedstraw Small-leaf alumroot White hawkweed Slender-tubed iris Few-flowered peavine Twinflower Honeysuckle Miner's lettuce Periwinkle phlox Bracken fern Whitevein pyrola Bolander's groundsel False Solomon's-seal Starry Solomon plume Coolwort foamflower Star-flower White trillium White inside-out flower Evergreen violet Yerba De Selva

Habitat conditions: Dry to moist/excessive to well-drained (low elevation dioritic soils)

(Douglas-fir--schlerophyll forest)

Tall-growing trees, over 40 ft	<u>Abies concolor</u> <u>Acer macrophyllum</u> <u>Arbutus menziesii</u>	White fir Bigleaf maple Madrone
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Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
Dry/Excessive (low elevation diorite soils) (Continued)		
(Douglas-fir--Schlerophyll Communities)		
Tall-growing trees (Continued)	<u>Castanopsis chrysophylla</u> <u>Cornus nuttallii</u> <u>Libocedrus decurrens</u> <u>Lithocarpus densiflora</u> <u>Pinus lambertiana</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Quercus kelloggii</u>	Giant chinquapin Pacific dogwood Incense-cedar Tanbark-oak Sugar pine Douglas-fir Canyon live oak California black oak
Low-growing trees and tall shrubs, 20-40 ft	<u>Amelanchier alnifolia</u> <u>Taxus brevifolia</u>	Serviceberry Western yew
Medium shrubs, 6-20 ft	<u>Acer circinatum</u> <u>Corylus cornuta</u> <u>Holodiscus discolor</u> <u>Philadelphus lewisii</u> <u>Rubus ursinus</u> <u>Salix</u> spp. <u>Vaccinium parvifolium</u>	Vine maple California hazelnut Ocean spray Lewis mock orange Trailing blackberry Willow Red huckleberry
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Gaultheria shallon</u> <u>Pachystima myrsinites</u> <u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u> <u>Rubus parviflorus</u>	Oregon-grape Salal Oregon boxwood Poison oak Baldhip rose Thimbleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Adenocaulon bicolor</u> <u>Allotropa virgata</u> <u>Anemone deltoidea</u> <u>Apocynum pumilum</u> <u>Arenaria macrophylla</u> <u>Boschniakia hookeri</u> <u>Campanula prenanthoides</u> <u>Campanula scouleri</u> <u>Chimaphila menziesii</u> <u>Chimaphila umbellata</u> <u>Collomia heterophylla</u> <u>Corallorhiza maculata</u> <u>Cynoglossum grande</u> <u>Cypripedium fasciculatum</u> <u>Disporum hookeri</u> <u>Epilobium minutum</u> <u>Fragaria vesca</u> <u>Galium triflorum</u> <u>Goodyera oblongifolia</u> <u>Habenaria unalascensis</u> <u>Hieracium albiflorum</u> <u>Iris chrysophylla</u> <u>Lathyrus pauciflorus</u> <u>Linnaea borealis</u> <u>Lonicera hispidula</u> <u>Montia perfoliata</u> <u>Osmorhiza chilensis</u> <u>Phlox adsurgens</u> <u>Polystichum munitum</u> <u>Psoralea physodes</u> <u>Pteridium aquilinum</u> <u>Pyrola picta</u> <u>Pyrola secunda</u> <u>Senecio bolanderi</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Trientalis latifolia</u> <u>Trillium ovatum</u> <u>Vancouveria hexandra</u> <u>Viola sempervirens</u>	Trail plant Sugarstick Threelobe anemone Low dogbane Bigleaf sandwort Ground-cone California harebell Scouler bellflower Little prince's-pine Western prince's-pine Varied-leaved collomia Spotted coralroot Great houndstongue Lady's-slipper Hooker's fairybells Small-flowered willowweed Strawberry Sweet-scented bedstraw Rattlesnake plantain Alaska rein orchid White hawkweed Slender-tubed iris Few-flowered peavine Twinflower Honeysuckle Miner's lettuce Mountain sweetroot Periwinkle phlox Sword fern California tea Bracken fern Whitevein pyrola One-sided wintergreen Bolander's groundsel False Solomon's-seal Starry Solomon plume Star-flower White trillium White inside-out flower Evergreen violet
(Schlerophyll--Douglas-fir communities)		
Tall-growing trees, over 40 ft	<u>Arbutus menziesii</u> <u>Castanopsis chrysophylla</u> <u>Libocedrus decurrens</u>	Madrone Giant chinquapin Incense-cedar

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (low elevation diorite soils) (Continued)</u>		
(Schlerophyll--Douglas-fir Communities)		
Tall-growing trees (Continued)	<u>Lithocarpus densiflora</u> <u>Pinus lambertiana</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u>	Tanbark-oak Sugar pine Ponderosa pine Douglas-fir Canyon live oak
Low-growing trees and tall shrubs, 20-40 ft	<u>Amelanchier alnifolia</u> <u>Cornus nuttallii</u>	Serviceberry Pacific dogwood
Medium shrubs, 6-20 ft	<u>Corylus cornuta</u> <u>Rubus ursinus</u>	California hazelnut Trailing blackberry
Low shrubs, 2-6 ft	<u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u>	Poison oak Baldhip rose
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Apocynum pumilum</u> <u>Boschniakia hookerii</u> <u>Campanula prenanthoides</u> <u>Collomia heterophylla</u> <u>Disporum hookeri</u> <u>Goodyera oblongifolia</u> <u>Hieracium albiflorum</u> <u>Lathyrus pauciflorus</u> <u>Lonicera hispidula</u> <u>Psoralea physodes</u> <u>Pteridium aquilinum</u> <u>Tauschia kelloggii</u> <u>Trientalis latifolia</u>	Low dogbane Ground-cone California harebell Varied-leaved collomia Hooker's fairybells Rattlesnake plantain White hawkweed Few-flowered peavine Honeysuckle California tea Bracken fern Kellogg's tauschia Star-flower
<u>Habitat conditions: Moist to wet/well-drained to impeded (low elevations on gabbro)</u>		
(Port-Orford cedar--Douglas-fir communities)		
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Alnus rhombifolia</u> <u>Alnus rubra</u> <u>Arbutus menziesii</u> <u>Chamaecyparis lawsoniana</u> <u>Libocedrus decurrens</u> <u>Lithocarpus densiflora</u> <u>Pinus lambertiana</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Umbellularia californica</u>	Bigleaf maple White alder Red alder Madrone Port-Orford cedar Incense-cedar Tanbark-oak Sugar pine Ponderosa pine Douglas-fir Canyon live oak California-laurel
Low-growing trees and tall shrubs, 20-40 ft	<u>Amelanchier alnifolia</u> <u>Arctostaphylos cinerea</u> <u>Cornus nuttallii</u> <u>Salix</u> spp.	Serviceberry Gray manzanita Pacific dogwood Willow
Medium shrubs, 6-20 ft	<u>Holodiscus discolor</u> <u>Rubus ursinus</u>	Ocean spray Trailing blackberry
Low shrubs, 2-6 ft	<u>Garrya fremontii</u> <u>Gaultheria shallon</u> <u>Rhamnus californica</u> <u>Rhododendron occidentale</u> <u>Rhus diversiloba</u> <u>Rubus parviflorus</u> <u>Vaccinium ovatum</u>	Freemont silk-tassel Salal Coffeeberry Western azalea Poison oak Thimbleberry Evergreen blueberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Adiantum pedatum</u> <u>Boykinia elata</u> <u>Boykinia major</u> <u>Darlingtonia californica</u> <u>Epipactis gigantea</u> <u>Galium aparine</u> <u>Goodyera oblongifolia</u> <u>Habenaria sparsiflora</u> <u>Iris chrysophylla</u> <u>Lonicera hispidula</u>	Maidenhair fern Slender boykinia Large-flowered boykinia California pitcher-plant Giant helleborine Cleaver's bedstraw Rattlesnake plantain Canyon bog orchid Slender-tubed iris Honeysuckle

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
Moist/well-drained (low elevations on gabbro) (Continued)		
(Port-Orford cedar--Douglas-fir communities) (Continued)		
Lesser vegetation - (Continued)	<u>Lotus oblongifolius</u> <u>Luina hypoleuca</u> <u>Polygala californica</u> <u>Polystichum munitum</u> <u>Pyrola dentata</u> <u>Rudbeckia californica</u> <u>Smilacina racemosa</u> <u>Tofieldia glutinosa</u> <u>Trientalis latifolia</u> <u>Woodwardia fimbriata</u>	Torrey's lotus Silverback luina California milkwort Sword fern Toothed pyrola California coneflower False Solomon's-seal Tofieldia Star-flower Chain fern
Habitat conditions: Dry to moist/excessive to well-drained (low elevations on gabbro)		
(Douglas-fir--sugar pine communities)		
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Arbutus menziesii</u> <u>Libocedrus decurrens</u> <u>Lithocarpus densiflorus</u> <u>Pinus attenuata</u> <u>Pinus lambertiana</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Quercus kelloggii</u> <u>Umbellularia californica</u>	Bigleaf maple Madrone Incense-cedar Tanbark-oak Knobcone pine Sugar pine Ponderosa pine Douglas-fir Canyon live oak California black oak California-laurel
Low-growing trees and tall shrubs, 20-40 ft	<u>Amelanchier alnifolia</u> <u>Arctostaphylos cinerea</u> <u>Cornus nuttallii</u>	Serviceberry Gray manzanita Pacific dogwood
Medium shrubs, 6-20 ft	<u>Ceanothus integerrimus</u> <u>Holodiscus discolor</u>	Deer brush Ocean spray
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Garrya fremontii</u> <u>Gaultheria shallon</u> <u>Holodiscus dumosus</u> <u>Rhamnus californica</u> <u>Rhododendron occidentale</u> <u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u> <u>Rubus parviflorus</u> <u>Vaccinium ovatum</u>	Oregon-grape Freemont silk-tassel Salal Ocean spray Coffeeberry Western azalea Poison oak Baldhip rose Thimbleberry Evergreen blueberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Arenaria macrophylla</u> <u>Boschniakia hookerii</u> <u>Campanula prenanthoides</u> <u>Iris chrysophylla</u> <u>Lonicera hispidula</u> <u>Polygala californica</u> <u>Sedum oregonense</u> <u>Smilacina racemosa</u> <u>Trientalis latifolia</u> <u>Whipplea modesta</u>	Bigleaf sandwort Ground-cone California harebell Slender-tubed iris Honeysuckle California milkwort Creamy stonewort False Solomon's-seal Star-flower Yerba De Selva
(Pine woodlands)		
Tall-growing trees, over 40 ft	<u>Libocedrus decurrens</u> <u>Lithocarpus densiflorus</u> <u>Pinus lambertiana</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Quercus kelloggii</u> <u>Umbellularia californica</u>	Incense-cedar Tanbark-oak Sugar pine Ponderosa pine Douglas-fir Canyon live oak California black oak California-laurel
Low-growing trees and tall shrubs, 20-40 ft	<u>Arctostaphylos cinerea</u> <u>Cornus nuttallii</u>	Gray manzanita Pacific dogwood
Medium shrubs, 6-20 ft	<u>Ceanothus integerrimus</u>	Deer brush

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (low elevations on gabbro) (Continued)</u>		
(Pine woodlands) (Continued)		
Low shrubs, 2-6 ft	<u>Garrya fremontii</u> <u>Rhamnus californica</u> <u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u> <u>Vaccinium ovatum</u>	Freemont silk-tassel Coffeeberry Poison oak Baldhip rose Evergreen blueberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Campanula prenanthoides</u> <u>Galium ambiguum</u> <u>Iris chrysophylla</u> <u>Lonicera hispidula</u> <u>Monardella odoratissima</u> <u>Polygala californica</u> <u>Pteridium aquilinum</u> <u>Sidalcea virgata</u> <u>Whipplea modesta</u>	California harebell Obscure bedstraw Slender-tubed iris Honeysuckle Monardella California milkwort Bracken fern Rose checkermallow Yerba De Selva
<u>Habitat conditions: Moist to wet/well-drained to impeded (low elevation on serpentine)</u>		
(Port-Orford cedar--pine communities)		
Tall-growing trees, over 40 ft	<u>Arbutus menziesii</u> <u>Chamaecyparis lawsoniana</u> <u>Libocedrus decurrens</u> <u>Pinus attenuata</u> <u>Pinus jeffreyi</u> <u>Pinus lambertiana</u> <u>Pinus monticola</u> <u>Pseudotsuga menziesii</u> <u>Umbellularia californica</u>	Madrone Port-Orford cedar Incense-cedar Knobcone pine Jeffrey pine Sugar pine White pine Douglas-fir California-laurel
Low-growing trees and tall shrubs, 20-40 ft	<u>Arctostaphylos viscida</u>	White-leaved manzanita
Medium shrubs, 6-20 ft	<u>Physocarpus capitatus</u> <u>Salix spp.</u> <u>Vaccinium parvifolium</u>	Ninebark Willow Red huckleberry
Low shrubs, 2-6 ft	<u>Rhamnus californica</u> <u>Rhododendron occidentale</u> <u>Rosa gymnocarpa</u>	Coffeeberry Western azalea Baldhip rose
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Angelica arguta</u> <u>Castilleja miniata</u> <u>Chimaphila umbellata</u> <u>Darlingtonia californica</u> <u>Disporum hookeri</u> <u>Fritillaria atropurpurea</u> <u>Galium ambiguum</u> <u>Galium multiflorum</u> <u>Habenaria sparsiflora</u> <u>Habenaria unalascensis</u> <u>Helenium bigelovii</u> <u>Hieracium cynoglossoides</u> <u>Ligusticum apifolium</u> <u>Lomatium howellii</u> <u>Lomatium triternatum</u> <u>Lonicera hispidula</u> <u>Lotus oblongifolius</u> <u>Phlox speciosa</u> <u>Polygala californica</u> <u>Pryola dentata</u> <u>Rudbeckia californica</u> <u>Schoenolirion album</u> <u>Smilacina racemosa</u> <u>Tofieldia glutinosa</u> <u>Trientalis latifolia</u> <u>Whipplea modesta</u>	Shining angelica Scarlet paintbrush Western prince's-pine California pitcher-plant Hooker's fairybells Chocolate lily Obscure bedstraw Shrubby bedstraw Canyon bog orchid Alaska rein orchid Bigelow's sneezeweed Houndstongue hawkweed Parsleyleaf licoriceroot Howell's desert parsley Nineleaf lomatium Honeysuckle Torrey's lotus Showy phlox California milkwort Toothed pyrola California coneflower White-flowered rush lily False Solomon's-seal Tofieldia Star-flower Yerba De Selva

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Dry to moist/excessive to well-drained (low elevation on serpentine)		
(Mixed Conifer forest)		
Tall-growing trees, over 40 ft	<u>Arbutus menziesii</u> <u>Castanopsis chrysophylla</u> <u>Chamaecyparis lawsoniana</u> <u>Libocedrus decurrens</u> <u>Pinus attenuata</u> <u>Pinus contorta</u> <u>Pinus jeffreyi</u> <u>Pinus monticola</u> <u>Pseudotsuga menziesii</u> <u>Quercus garryana</u> <u>Umbellularia californica</u>	Madrone Giant chinquapin Port-Orford cedar Incense-cedar Knobcone pine Lodgepole pine Jeffrey pine White pine Douglas-fir Oregon white oak California-laurel
Low-growing trees and tall shrubs, 20-40 ft	<u>Arctostaphylos viscida</u>	White-leaved manzanita
Medium shrubs, 6-20 ft	<u>Ceanothus cuneatus</u> <u>Holodiscus discolor</u> <u>Rhododendron macrophyllum</u> <u>Rubus ursinus</u> <u>Vaccinium parvifolium</u>	Common buckbrush Ocean spray Pacific rhododendron Trailing blackberry Red huckleberry
Low shrubs, 2-6 ft	<u>Gaultheria shallon</u> <u>Juniper communis</u> <u>Rhamnus californica</u> <u>Rhododendron occidentale</u> <u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u>	Salal Common juniper Coffeeberry Western azalea Poison oak Baldhip rose
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Angelica arguta</u> <u>Balsamorhiza deltoidea</u> <u>Campanula prenanthoides</u> <u>Chimaphila umbellata</u> <u>Cordylanthus viscidus</u> <u>Disporum hookeri</u> <u>Erigeron foliosus</u> <u>Eriophyllum lanatum</u> <u>Galium ambiguum</u> <u>Haplopappus racemosus</u> <u>Hieracium cynoglossoides</u> <u>Iris bracteata</u> <u>Liquisticum apiifolium</u> <u>Linnaea borealis</u> <u>Lomatium howellii</u> <u>Lomatium triternatum</u> <u>Penstemon laetus</u> <u>Phlox speciosa</u> <u>Polygala californica</u> <u>Polystichum munitum</u> <u>Pyrola dentata</u> <u>Sanicula peckiana</u> <u>Schoenolirion album</u> <u>Smilacina racemosa</u> <u>Tauschia glauca</u> <u>Trientalis latifolia</u> <u>Viola lobata</u> <u>Whipplea modesta</u> <u>Xerophyllum tenax</u> <u>Zigadenus micranthus</u>	Shining angelica Deltoid balsamroot California harebell Western prince's-pine Slender bird's-beak Hooker's fairybells Threadleaf fleabane Common woolly sunflower Obscure bedstraw Goldenweed Houndstongue hawkweed Siskiyou iris Parsleyleaf licoriceroot Twinflower Howell's desert parsley Nineleaf lomatium Gay penstemon Showy phlox California milkwort Sword fern Toothed pyrola Peck's snakeroot White-flowered rush lily False Solomon's-seal Glaucous tauschia Star-flower Pine violet Yerba De Selva Bear grass Small-flowered deathcamas
(Jeffrey pine community)		
Tall-growing trees, over 40 ft	<u>Arbutus menziesii</u> <u>Libocedrus decurrens</u> <u>Pinus jeffreyi</u> <u>Quercus chrysolepis</u> <u>Umbellularia californica</u>	Madrone Incense-cedar Jeffrey pine Canyon live oak California-laurel
Low-growing trees and tall shrubs, 20-40 ft	<u>Arctostaphylos viscida</u>	White-leaved manzanita
Low shrubs, 2-6 ft	<u>Rhamnus californica</u>	Coffeeberry

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (low elevation on serpentine) (Continued)</u>		
(Jeffrey pine community) (Continued)		
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Balsamorhiza deltoidea</u> <u>Blepharipappus scaber</u> <u>Calochortus tolmiei</u> <u>Erigeron bloomeri</u> <u>Eriogonum nudum</u> <u>Eriophyllum lanatum</u> <u>Hieracium cynoglossoides</u> <u>Lomatium macrocarpum</u> <u>Lomatium triternatum</u> <u>Phlox speciosa</u> <u>Schoenolirion album</u> <u>Viola lobata</u>	Deltoid balsamroot Blepharipappus Tolmie's mariposa lily Bloomer fleabane Barestem buckwheat Common woolly sunflower Houndstongue hawkweed Bigseed lomatium Nineleaf lomatium Showy phlox White-flowered rush lily Pine violet
(Meadow communities)		
Low shrubs, 2-6 ft	<u>Arctostaphylos nevadensis</u> <u>Ceanothus prostratus</u>	Pine-mat manzanita Dwarf ceanothus
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Collinsia parviflora</u> <u>Cryptogramma densa</u> <u>Gilia capitata</u> <u>Lomatium nudicaule</u> <u>Navarretia divaricata</u> <u>Perideridia bolanderi</u> <u>Polygonum majus</u> <u>Sanicula graveolens</u> <u>Sitanion hystrix</u> <u>Stipa lemmonii</u> <u>Stipa occidentalis</u>	Littleflower collinsia Oregon cliff-brake Globe gilia Barestem lomatium Short-stemmed navarretia Mountain false-caraway Wing knotweed Sierra snakeroot Bottlebrush squirreltail Lemmon needlegrass Western needlegrass
<u>Habitat conditions: Moist to wet/well-drained to impeded (high elevation diorite soils)</u>		
(Port-Orford cedar--Douglas-fir community)		
Tall-growing trees, over 40 ft	<u>Abies concolor</u> <u>Acer macrophyllum</u> <u>Alnus rhombifolia</u> <u>Alnus rubra</u> <u>Arbutus menziesii</u> <u>Castanopsis chrysophylla</u> <u>Chamaecyparis lawsoniana</u> <u>Lithocarpus densiflora</u> <u>Pinus lambertiana</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Quercus kelloggii</u>	White fir Bigleaf maple White alder Red alder Madrone Giant chinquapin Port-Orford cedar Tanbark-oak Sugar pine Douglas-fir Canyon live oak California black oak
Low-growing trees and tall shrubs, 20-40 ft	<u>Cornus nuttallii</u> <u>Taxus brevifolia</u>	Pacific dogwood Western yew
Medium shrubs, 6-20 ft	<u>Acer circinatum</u> <u>Corylus cornuta</u> <u>Holodiscus discolor</u> <u>Philadelphus lewisii</u> <u>Rhododendron macrophyllum</u> <u>Rubus ursinus</u> <u>Salix</u> spp. <u>Vaccinium parvifolium</u>	Vine maple California hazelnut Ocean spray Lewis mock orange Pacific rhododendron Trailing blackberry Willow Red huckleberry
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Gaultheria shallon</u> <u>Rhus diversiloba</u> <u>Rosa gymnocarpa</u> <u>Rubus parviflorus</u>	Oregon-grape Salal Poison oak Baldhip rose Thimbleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Adenocaulon bicolor</u> <u>Adiantum pedatum</u> <u>Anomone deltoidea</u> <u>Apocynum pumilum</u> <u>Asarum caudatum</u> <u>Campanula scouleri</u> <u>Chimaphila menziesii</u> <u>Chimaphila umbellata</u>	Trail plant Maidenhair fern Threleaf anomone Low dogbane Wild ginger Scouler bellflower Little prince's-pine Western prince's-pine

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
<u>Moist/well-drained (high elevation diorite soils) (Continued)</u>		
<u>(Port-Orford cedar--Douglas-fir community) (Continued)</u>		
Lesser vegetation - (Continued)	<u>Clintonia uniflora</u> <u>Coptis laciniata</u> <u>Disporum hookeri</u> <u>Equisetum hyemale</u> <u>Galium triflorum</u> <u>Goodyera oblongifolia</u> <u>Heuchera micrantha</u> <u>Hieracium albiflorum</u> <u>Iris chrysophylla</u> <u>Lathyrus pauciflorus</u> <u>Linnaea borealis</u> <u>Lonicera hispidula</u> <u>Montia spathulata</u> <u>Phlox adsurgens</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Pyrola picta</u> <u>Senecio bolanderi</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Tiarella unifoliata</u> <u>Trientalis latifolia</u> <u>Trillium ovatum</u> <u>Vancouveria hexandra</u> <u>Viola sempervirens</u> <u>Whipplea modesta</u>	Beadlily Cutleaf goldthread Hooker's fairybells Scouring-rush Sweet-scented bedstraw Rattlesnake plantain Small-leaf alumroot White hawkweed Slender-tubed iris Few-flowered peavine Twinflower Honeysuckle Miner's lettuce Periwinkle phlox Sword fern Bracken fern Whitevein pyrola Bolander's groundsel False Solomon's-seal Starry Solomon plume Coolwort foamflower Star-flower White trillium White inside-out flower Evergreen violet Yerba De Selva
<u>Habitat conditions: Dry to moist/excessive to well-drained (high elevations diorite soils)</u>		
<u>(Montane forests)</u>		
Tall-growing trees, over 40 ft	<u>Abies concolor</u> <u>Chamaecyparis lawsoniana</u> <u>Libocedrus decurrens</u> <u>Pseudotsuga menziesii</u>	White fir Port-Orford cedar Incense-cedar Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer glabrum</u> var. <u>douglasii</u>	Douglas maple
Medium shrubs, 6-20 ft	<u>Corylus cornuta</u> <u>Holodiscus discolor</u> <u>Rubus ursinus</u>	California hazelnut Ocean spray Trailing blackberry
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Rosa gymnocarpa</u>	Oregon-grape Baldhip rose
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Adenocaulon bicolor</u> <u>Anemone deltoidea</u> <u>Arenaria macrophylla</u> <u>Campanula scouleri</u> <u>Clintonia uniflora</u> <u>Fragaria vesca</u> <u>Galium triflorum</u> <u>Hieracium albiflorum</u> <u>Phacelia heterophylla</u> <u>Trientalis latifolia</u> <u>Trillium ovatum</u> <u>Vancouveria hexandra</u>	Trail plant Threeleaf anemone Bigleaf sandwort Scouler bellflower Beadlily Strawberry Sweet-scented bedstraw White hawkweed Varileaf phacelia Star-flower White trillium White inside-out flower
<u>(Montane meadows)</u>		
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Agastache urticifolia</u> <u>Bromus vulgaris</u> <u>Elymus glaucus</u> <u>Hackelia jessicae</u> <u>Ligusticum apifolium</u> <u>Ligusticum grayi</u> <u>Lupinus</u> spp. <u>Melica spectabilis</u> <u>Mertensia ciliata</u> <u>Orthocarpus imbricatus</u> <u>Phleum alpinum</u>	Nettleleaf giant hyssop Columbia brome Blue wild rye Jessica stickseed Parsleyleaf licoriceroot Gray's lovage Lupine Showy oniongrass Broad-leaved lungwort Mountain owlclover Alpine timothy

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (high elevations diorite soils) (Continued)</u>		
(Montane meadows) (Continued)		
Lesser vegetation - (Continued)	<u>Polygonum bistortoides</u> <u>Rudbeckia occidentalis</u> <u>Veratrum californicum</u>	American bistort Western coneflower California false hellebore
(Subalpine forests)		
Tall-growing trees, over 40 ft	<u>Abies amabilis</u> <u>Abies concolor</u> <u>Abies procera</u> <u>Libocedrus decurrens</u> <u>Picea engelmannii</u> <u>Pinus contorta</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Tsuga mertensiana</u>	Pacific silver fir White fir Noble fir Incense-cedar Englemann spruce Lodgepole pine White pine Ponderosa pine Douglas-fir Mountain hemlock
Medium shrubs, 6-20 ft	<u>Castanopsis chrysophylla</u> <u>Vaccinium ovalifolium</u> <u>Vaccinium scoparium</u>	Giant chinquapin Ovalleaf huckleberry Grouseberry
Low shrubs, 2-6 ft	<u>Arctostaphylos nevadensis</u> <u>Arctostaphylos patula</u> <u>Berberis nervosa</u> <u>Ribes binominatum</u> <u>Ribes lobbii</u> <u>Ribes marshallii</u> <u>Ribes viscosissimum</u> <u>Rubus parviflorus</u> <u>Rubus ursinus</u> <u>Symphoricarpos albus</u> <u>Vaccinium membranaceum</u>	Pine-mat manzanita Greenleaf manzanita Oregon-grape Siskiyou gooseberry Pioneer gooseberry Hupa gooseberry Sticky currant Thimbleberry Trailing blackberry Common snowberry Big huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Anemone deltoidea</u> <u>Anemone oregana</u> <u>Arenaria macrophylla</u> <u>Arnica cordifolia</u> <u>Arnica latifolia</u> <u>Campanula scouleri</u> <u>Chimaphila menziesii</u> <u>Coralorrhiza maculata</u> <u>Galium triflorum</u> <u>Hieracium albiflorum</u> <u>Montia spathulata</u> <u>Osmorhiza chilensis</u> <u>Phlox adsurgens</u> <u>Polemonium pulcherrimum</u> <u>Pyrola picta</u> <u>Pyrola secunda</u> <u>Stellaria crispa</u> <u>Trillium ovatum</u> <u>Valeriana sitchensis</u>	Threeleaf anemone Oregon anemone Bigleaf sandwort Heartleaf arnica Broadleaf arnica Scouler bellflower Little prince's-pine Spotted coralroot Sweet-scented bedstraw White hawkweed Miner's lettuce Mountain sweetroot Periwinkle phlox Skunkleaf polemonium Whitevein pyrola One-sided wintergreen Crisped starwort White trillium Sitka valerian
(Subalpine brushfields and meadows)		
Medium shrubs, 6-20 ft	<u>Cercocarpus ledifolius</u>	Curlleaf mountain- mahogany
Low shrubs, 2-6 ft	<u>Arctostaphylos patula</u> <u>Ceanothus velutinus</u> <u>Vaccinium membranaceum</u>	Greenleaf manzanita Tobacco brush Big huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Bromus carinatus</u> <u>Carex pensylvanica</u> <u>Haplopappus bloomeri</u> <u>Lupinus latifolius</u> <u>Sitanion hystrix</u> <u>Stipa occidentalis</u>	California brome Long-stoloned sedge Bloomer's haplopappus Broadleaf lupine Bottlebrush squirreltail Western needlegrass

continued

Table M2410-56.1 [M2413] (Continued)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Moist to wet/well-drained to impeded (high elevation serpentine soils)		
(Port-Orford cedar--pine communities)		
Tall-growing trees, over 40 ft	<u>Arbutus menziesii</u> <u>Chamaecyparis lawsoniana</u> <u>Libocedrus decurrens</u> <u>Pinus attenuata</u> <u>Pinus jeffreyi</u> <u>Pinus lambertiana</u> <u>Pinus monticola</u> <u>Psuedotsuga menziesii</u> <u>Umbellularia californica</u>	Madrone Port-Orford cedar Incense-cedar Knobcone pine Jeffrey pine Sugar pine White pine Douglas-fir California-laurel
Low-growing trees and tall shrubs, 20-40 ft	<u>Arctostaphylos viscida</u>	White-leaved manzanita
Medium shrubs, 6-20 ft	<u>Physocarpus capitatus</u> <u>Salix</u> spp. <u>Vaccinium parvifolium</u>	Ninebark Willow Red huckleberry
Low shrubs, 2-6 ft	<u>Rhamnus californica</u> <u>Rhododendron occidentale</u> <u>Rosa gymnocarpa</u>	Coffeeberry Western azalea Baldhip rose
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Angelica arguta</u> <u>Castilleja miniata</u> <u>Chimaphila umbellata</u> <u>Darlingtonia californica</u> <u>Disporum hookeri</u> <u>Fritillaria atropurpurea</u> <u>Galium ambiguum</u> <u>Galium multiflorum</u> <u>Habenaria sparsiflora</u> <u>Habenaria unalascensis</u> <u>Helenium bigelovii</u> <u>Hieracium cynoglossoides</u> <u>Ligusticum apiifolium</u> <u>Lomatium howellii</u> <u>Lomatium triternatum</u> <u>Lonicera hispidula</u> <u>Phlox speciosa</u> <u>Polygala californica</u> <u>Pyrola dentata</u> <u>Rudbeckia californica</u> <u>Schoenolirion album</u> <u>Smilacina racemosa</u> <u>Tofieldia glutinosa</u> <u>Trientalis latifolia</u> <u>Whipplea modesta</u>	Shining angelica Scarlet paintbrush Western prince's-pine California pitcher-plant Hooker's fairybells Chocolate lily Obscure bedstraw Shrubby bedstraw Canyon bog orchid Alaska rein orchid Bigelow's sneezeweed Houndstongue hawkweed Parsleyleaf licoriceroot Howell's desert parsley Nineleaf lomatium Honeysuckle Showy phlox California milkwort Toothed pyrola California coneflower White-flowered rush lily False Solomon's-seal Tolfieldia Star-flower Yerba De Selva
Habitat conditions: Dry to moist/excessive to well-drained (high elevation serpentine soils)		
(White fir--Douglas-fir communities)		
Tall-growing trees, over 40 ft	<u>Abies concolor</u> <u>Abies procera</u> <u>Libocedrus decurrens</u> <u>Pinus jeffreyi</u> <u>Pseudotsuga menziesii</u>	White fir Noble fir Incense-cedar Jeffrey pine Douglas-fir
Medium shrubs, 20-40 ft	<u>Ceanothus cuneatus</u> <u>Quercus chrysolepis</u>	Common buckbrush Canyon live oak
Low shrubs, 2-6 ft	<u>Arctostaphylos nevadensis</u> <u>Chrysothamnus nauseosus</u> <u>Holodiscus dumosus</u>	Pine-mat manzanita Rabbit brush Ocean spray
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Achillea millefolium</u> <u>Arenaria macrophylla</u> <u>Astragalus whitneyi</u> <u>Bromus carinatus</u> <u>Calochortus elegans</u> <u>Castilleja miniata</u> <u>Erigeron aliceae</u> <u>Eriogonum nudum</u>	Western yarrow Bigleaf sandwort Balloon milk-vetch California brome Elegant mariposa lily Scarlet paintbrush Alice fleabane Barestem buckwheat

continued

Table M2410-56.1 [M2413] (Concluded)

Growth form	Early successional plants	Late successional plants
Dry/excessive (high elevation serpentine soils) (Continued)		
(White fir--Douglas-fir communities) (Continued)		
Lesser vegetation - (Continued)	<u>Eriogonum umbellatum</u> <u>Eriophyllum lanatum</u> <u>Erysimum asperum</u> <u>Festuca ovina</u> <u>Iris chrysophylla</u> <u>Linum perenne</u> <u>Lupinus leucophyllus</u> <u>Machaeranthera shastensis</u> <u>Pedicularis racemosa</u> <u>Phlox diffusa</u> <u>Polystichum scopulinum</u> <u>Senecio integerrimus</u> <u>Sitanion hystrix</u> <u>Trisetum canescens</u> <u>Vicia americana</u> <u>Xerophyllum tenax</u>	Sulfur buckwheat Common woolly sunflower Rough wallflower Sheep fescue Slender-tubed iris Wild blue flax Velvet lupine Shasta aster Leafy lousewort Spreading phlox Rock sword fern Western groundsel Bottlebrush squirreltail Tall trisetum American vetch Bear grass

Table M2410-56.1 [M2414] Selected Plant Species Common to the California Mixed Evergreen Forest

Growth form	Early successional plants	Late successional plants
Habitat conditions: Dry to moist/excessive to well-drained		
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Arbutus menziesii</u> <u>Populus trichocarpa</u> <u>Salix</u> spp. <u>Umbellularia californica</u>	Bigleaf maple Madrone Black cottonwood Willow California-laurel
		<u>Castanopsis chrysophylla</u> <u>Libocedrus decurrens</u> <u>Lithocarpus densiflora</u> <u>Pinus sabiniana</u> <u>Pseudotsuga menziesii</u> <u>Quercus agrifolia</u> <u>Quercus chrysolepis</u> <u>Quercus garryana</u> <u>Quercus kelloggii</u>
		Giant chinquapin Incense-cedar Tanbark-oak Digger pine Douglas-fir Coastal live oak Canyon live oak Oregon white oak California black oak
Low-growing trees and tall shrubs, 20-40 ft	<u>Arbutus menziesii</u> <u>Garrya fremontii</u> <u>Salix</u> spp. <u>Sambucus cerulea</u>	Madrone Fremont silk-tassel Willow Blue elderberry
		<u>Aesculus californica</u> <u>Cornus nuttallii</u> <u>Corylus cornuta</u>
		Horse chestnut Pacific dogwood California hazelnut
Low to medium shrubs, 2-20 ft	<u>Baccharis pilularis</u> <u>Ceanothus integerrimus</u> <u>Ceanothus velutinus</u> <u>Garrya fremontii</u> <u>Heteromeles arbutifolia</u>	Coyote bush Deer brush Tobacco brush Fremont silk-tassel Christmas berry
		<u>Arctostaphylos columbiana</u> <u>Ceanothus velutinus</u> <u>Gaultheria shallon</u> <u>Holodiscus discolor</u> <u>Lonicera hispidula</u> <u>Prunus emarginata</u> <u>Prunus virginiana</u> <u>Rhamnus californica</u> <u>Rhamnus crocea</u> <u>Rhododendron macrophyllum</u> <u>Rhododendron occidentale</u> <u>Rhus trilobata</u> <u>Rosa gymnocarpa</u> <u>Symphoricarpos</u> spp.
		Hairy manzanita Tobacco brush Salal Ocean spray Honeysuckle Bitter cherry Western choke-cherry Coffeeberry Hollyleaf buckthorn Pacific rhododendron Western azalea Squawbush Baldhip rose Snowberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Achillea millefolium</u> <u>Anaphalis margaritacea</u> <u>Chrysanthemum leucanthemum</u> <u>Danthonia californica</u> <u>Epilobium angustifolium</u> <u>Festuca idahoensis</u> <u>Holcus lanatus</u> <u>Lupinus formosus</u> <u>Pteridium aquilinum</u> <u>Sanicula arctopoides</u> <u>Whipplea modesta</u>	Western yarrow Pearly everlasting Ox-eye-daisy California danthonia Fireweed Idaho fescue Velvet grass Lupine Bracken fern Yellow mats Yerba De Selva
		<u>Brodiaea ida-maia</u> <u>Brodiaea pulchella</u> <u>Calochortus luteus</u> <u>Chrysopsis villosa</u> var. <u>bolanderi</u> <u>Equisetum</u> spp. <u>Grindelia hirsutula</u> <u>Sisyrinchium bellum</u> <u>Smilacina racemosa</u> <u>Tellima grandiflora</u> <u>Vancouveria hexandra</u>
		Fire-cracker flower Purplehead brodiaea Mariposa lily Goldaster Horsetail Gumweed Blue-eyed grass False Solomon's-seal Alaska fringe-cup White inside-out flower

continued

Table M2410-56.1 [M2414] (Concluded)

Growth form	Early successional plants		Late successional plants	
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>				
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Populus trichocarpa</u> <u>Salix</u> spp. <u>Umbellularia californica</u>	Bigleaf maple Black cottonwood Willow California-laurel	<u>Pseudotsuga menziesii</u>	Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft	<u>Rhamnus purshiana</u> <u>Salix</u> spp. <u>Sambucus racemosa</u>	Cascara Willow Red elderberry	<u>Acer circinatum</u>	Vine maple
Low to medium shrubs, 2-20 ft	<u>Ribes californicum</u> <u>Ribes menziesii</u> <u>Rubus leucodermis</u> <u>Rubus procerus</u> <u>Sambucus racemosa</u>	Gooseberry Canyon gooseberry Western raspberry Himalaya-berry Red elderberry	<u>Physocarpus capitatus</u> <u>Prunus virginiana</u> <u>Rhododendron occidentale</u> <u>Rubus parviflorus</u> <u>Symphoricarpos mollis</u> <u>Vaccinium parvifolium</u>	Ninebark Western choke-cherry Western azalea Thimbleberry Snowberry Red huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Nuphar polysepalum</u> <u>Ranunculus californicus</u> <u>Typha latifolia</u>	Indian pond lily California buttercup Cat-tail	<u>Dentaria californica</u> <u>Dicentra formosa</u> <u>Iris douglasiana</u> <u>Montia sibirica</u> <u>Polystichum munitum</u> <u>Sisyrinchium californicum</u> <u>Trillium ovatum</u>	Toothwort Bleeding-heart Wild iris Indian lettuce Sword fern Golden blue-eyed grass White trillium

Table M2410-56.1 [M2415NCM] Selected Plant Species Common to the Silver Fir—Douglas-fir Forest (Northern Cascade Mountain Region)

Growth form	Early successional plants	Late successional plants
<u>Habitat conditions: Dry to moist/excessive to well-drained (lower elevations)</u>		
(Nonforested)		
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Alnus rubra</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Bigleaf maple Red alder Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Cornus nuttallii</u> <u>Prunus emarginata</u> <u>Rhamnus purshiana</u> <u>Salix</u> spp. <u>Sambucus racemosa</u> <u>Taxus brevifolia</u>	Vine maple Pacific dogwood Bitter cherry Cascara Willow Red elderberry Western yew
Low shrubs, 2-6 ft	<u>Gaultheria shallon</u> <u>Rubus leucodermis</u> <u>Rubus parviflorus</u> <u>Rubus pedatus</u> <u>Rubus ursinus</u> <u>Spiraea douglasii</u> <u>Vaccinium parvifolium</u>	Salal Western raspberry Thimbleberry Strawberry-leaf blackberry Trailing blackberry Douglas spiraea Red huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Anaphalis margaritacea</u> <u>Aruncus sylvestris</u> <u>Athyrium filix-femina</u> <u>Blechnum spicant</u> <u>Carex</u> spp. <u>Cerastium vulgatum</u> <u>Cirsium arvense</u> <u>Deschampsia elongata</u> <u>Epilobium angustifolium</u> <u>Erigeron annuus</u> <u>Galium triflorum</u> <u>Holcus lanatus</u>	Pearly everlasting Goat's-beard Lady-fern Deer fern Sedge Common chickweed Common thistle Slender hairgrass Fireweed Annual fleabane Sweet-scented bedstraw Velvet grass

continued

Table M2410-56.1 [M2415NCM] (Continued)

Growth form	Early successional plants	Late successional plants
<u>Dry/excessive (lower elevations) (Continued)</u>		
(Nonforested) (Continued)		
Lesser vegetation - (Continued)	<u>Hypochaeris radicata</u> <u>Juncus effusus</u> <u>Lactuca muralis</u> <u>Linnaea borealis</u> <u>Luzula divaricata</u> <u>Poa palustris</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Senecio vulgaris</u> <u>Streptopus amplexifolius</u> <u>Tiarella trifoliata</u> <u>Trillium ovatum</u>	Spotted catsear Common rush Wall lettuce Twinflower Spreading woodrush Fowl bluegrass Sword fern Bracken fern Common groundsel Claspingleaved twisted-stalk Three-leaved coolwort White trillium
(Douglas-fir--salal communities)		
Tall-growing tr-es, over 40 ft	<u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u>	Vine maple
Low shrubs, 2-6 ft	<u>Corylus cornuta</u> <u>Gaultheria shallon</u> <u>Holodiscus discolor</u> <u>Rosa gymnocarpa</u> <u>Rubus ursinus</u> <u>Vaccinium parvifolium</u>	California hazelnut Salal Ocean spray Baldhip rose Trailing blackberry Red huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Chimaphila menziesii</u> <u>Goodyera oblongifolia</u> <u>Linnaea borealis</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Trientalis latifolia</u> <u>Trillium ovatum</u> <u>Viola sempervirens</u>	Little prince's-pine Rattlesnake plantain Twinflower Sword fern Bracken fern Star-flower White trillium Evergreen violet
<u>Habitat conditions: Moist to wet/well-drained to impeded (lower elevations)</u>		
(Douglas-fir--sword fern communities)		(Western hemlock community types)
Tall-growing ttees, over 40 ft	<u>Acer macrophyllum</u> <u>Alnus rubra</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Bigleaf maple Red alder Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Cornus nuttallii</u> <u>Prunus emarginata</u>	<u>Acer circinatum</u> <u>Taxus brevifolia</u>
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Corylus cornuta</u> <u>Gaultheria shallon</u> <u>Holodiscus discolor</u> <u>Oplopanax horridum</u> <u>Sambucus racemosa</u> <u>Vaccinium parvifolium</u>	Oregon-grape California hazelnut Salal Ocean spray Devil's club Red elderberry Red huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Actaea rubra</u> <u>Asarum caudatum</u> <u>Athyrium filix-femina</u> <u>Blechnum spicant</u> <u>Circaea alpina</u> <u>Corallorhiza maculata</u> <u>Dryopteris austriaca</u>	Baneberry Wild ginger Lady-fern Deer fern Alpine circaea Spotted coralroot Mountain wood fern
		<u>Abies amabilis</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u> <u>Acer circinatum</u> <u>Taxus brevifolia</u> <u>Berberis nervosa</u> <u>Gaultheria shallon</u> <u>Rubus lasiococcus</u> <u>Rubus pedatus</u> <u>Rubus ursinus</u> <u>Sambucus racemosa</u> <u>Vaccinium alaskaense</u> <u>Vaccinium membranaceum</u> <u>Vaccinium ovalifolium</u> <u>Vaccinium parvifolium</u> <u>Athyrium filix-femina</u> <u>Chimaphila menziesii</u> <u>Clintonia uniflora</u> <u>Corallorhiza maculata</u> <u>Cornus canadensis</u> <u>Gaultheria ovatifolia</u> <u>Goodyera oblongifolia</u>
		Pacific silver fir Douglas-fir Western redcedar Western hemlock Vine maple Western yew Oregon-grape Salal Dwarf bramble Strawberry-leaf blackberry Trailing blackberry Red elderberry Alaska blueberry Big huckleberry Ovalleaf huckleberry Red huckleberry Lady-fern Little prince's-pine Beadlily Spotted coralroot Bunchberry dogwood Wintergreen Rattlesnake plantain

continued

Table M2410-56.1 [M2415NCM] (Continued)

Growth form	Early successional plants		Late successional plants	
	Moist/well-drained (lower elevations) (Continued)			
	(Douglas-fir--sword fern communities) (Continued)		(Western hemlock community types) (Continued)	
Lesser vegetation - (Continued)	<u>Galium triflorum</u> <u>Goodyera oblongifolia</u> <u>Hieracium albiflorum</u> <u>Linnaea borealis</u> <u>Maianthemum dilatatum</u> <u>Montia sibirica</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Smilacina stellata</u> <u>Tiarella unifoliata</u> <u>Trillium ovatum</u> <u>Viola sempervirens</u>	Sweet-scented bedstraw Rattlesnake plantain White hawkweed Twinflower False lily-of-the-valley Indian lettuce Sword fern / Bracken fern Starry Solomon plume Coolwort foamflower White trillium Evergreen violet	<u>Hypopitys monotropa</u> <u>Linnaea borealis</u> <u>Listera borealis</u> <u>Listera cordata</u> <u>Maianthemum dilatatum</u> <u>Trientalis latifolia</u> <u>Xerophyllum tenax</u>	Pinesap Twinflower Northern twayblade Northwest listera False lily-of-the-valley Star-flower Bear grass
	(Alder--sword fern communities)			
Tall-growing trees, over 40 ft	<u>Acer macrophyllum</u> <u>Alnus rubra</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u>	Bigleaf maple Red alder Douglas-fir Western redcedar		
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Cornus nuttallii</u> <u>Prunus emarginata</u>	Vine maple Pacific dogwood Bitter cherry		
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Gaultheria shallon</u> <u>Oplopanax horridum</u> <u>Rubus ursinus</u> <u>Sambucus racemosa</u>	Oregon-grape Salal Devil's club Trailing blackberry Red elderberry		
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Asarum caudatum</u> <u>Athyrium filix-femina</u> <u>Blechnum spicant</u> <u>Circaea alpina</u> <u>Dicentra formosa</u> <u>Galium triflorum</u> <u>Maianthemum dilatatum</u> <u>Montia sibirica</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Smilacina stellata</u> <u>Tiarella unifoliata</u> <u>Trillium ovatum</u>	Wild ginger Lady-fern Deer fern Alpine circaea Bleeding-heart Sweet-scented bedstraw False lily-of-the-valley Indian lettuce Sword fern Bracken fern Starry Solomon plume Coolwort foamflower White trillium		
	Habitat conditions: Dry to moist/excessive to well-drained (higher elevations)			
	(Western hemlock--Pacific silver fir communities)		(Pacific silver fir--western hemlock communities)	
Tall-growing trees, over 40 ft	<u>Abies amabilis</u> <u>Abies procera</u> <u>Pseudotsuga menziesii</u> <u>Tsuga heterophylla</u>	Pacific silver fir Noble fir Douglas-fir Western hemlock	<u>Abies amabilis</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Pacific silver fir Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Sorbus sitchensis</u>	Vine maple Sitka mountain-ash		
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Gaultheria shallon</u> <u>Pachystima myrsinites</u> <u>Rhododendron albiflorum</u> <u>Rubus lasiococcus</u> <u>Rubus pedatus</u> <u>Sambucus racemosa</u> <u>Vaccinium alaskaense</u> <u>Vaccinium deliciosum</u> <u>Vaccinium membranaceum</u> <u>Vaccinium parvifolium</u>	Oregon-grape Salal Oregon boxwood White rhododendron Dwarf bramble Strawberry-leaf blackberry Red elderberry Alaska blueberry Delicious blueberry Big huckleberry Red huckleberry	<u>Rubus lasiococcus</u> <u>Rubus pedatus</u> <u>Vaccinium alaskaense</u> <u>Vaccinium membranaceum</u> <u>Vaccinium ovalifolium</u> <u>Vaccinium scoparium</u>	Dwarf bramble Strawberry-leaf blackberry Alaska blueberry Big huckleberry Ovalleaf huckleberry Grouseberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Chimphila menziesii</u> <u>Clintonia uniflora</u> <u>Corallorhiza maculata</u>	Little prince's-pine Beadlily Spotted coralroot	<u>Athyrium filix-femina</u> <u>Chimaphila menziesii</u> <u>Clintonia uniflora</u>	Lady-fern Little prince's-pine Beadlily

continued

Table M2410-56.1 [M2415NCM] (Concluded)

Growth form	Early successional plants		Late successional plants	
Dry/excessive (higher elevations) (Continued)				
(Western hemlock--Pacific silver fir communities) (Pacific silver fir--western hemlock communities) (Cont'd)				
Lesser vegetation - (Continued)	<u>Cornus canadensis</u> <u>Gaultheria ovatifolia</u> <u>Goodyera oblongifolia</u> <u>Linnaea borealis</u> <u>Pteridium aquilinum</u> <u>Veratrum californicum</u> <u>Xerophyllum tenax</u>	Bunchberry dogwood Wintergreen Rattlesnake plantain Twinflower Bracken fern California false hellebore Bear grass	<u>Cornus canadensis</u> <u>Gaultheria ovatifolia</u> <u>Listera cordata</u> <u>Maianthemum dilatatum</u> <u>Xerophyllum tenax</u>	Bunchberry dogwood Wintergreen Northwest listera False lily-of-the-valley Bear grass
(Noble fir--Pacific silver fir communities) (Pacific silver fir communities)				
Tall-growing trees, over 40 ft	<u>Abies amabilis</u> <u>Abies procera</u>	Pacific silver fir Noble fir	<u>Abies amabilis</u> <u>Tsuga mertensiana</u>	Pacific silver fir Mountain hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u>	Vine maple		
Low shrubs, 2-6 ft	<u>Sambucus racemosa</u> <u>Vaccinium membranaceum</u>	Red elderberry Big huckleberry	<u>Pachystima myrsinites</u> <u>Rhododendron albiflorum</u> <u>Rubus lasiococcus</u> <u>Rubus pedatus</u> <u>Sambucus racemosa</u> <u>Vaccinium alaskaense</u> <u>Vaccinium membranaceum</u> <u>Vaccinium ovalifolium</u> <u>Vaccinium scoparium</u>	Oregon boxwood White rhododendron Dwarf bramble Strawberry-leaf blackberry Red elderberry Alaska blueberry Big huckleberry Ovalleaf huckleberry Grouseberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Athyrium filix-femina</u> <u>Clintonia uniflora</u> <u>Veratrum californicum</u> <u>Xerophyllum tenax</u>	Lady-fern Beadlily California false hellebore Bear grass	<u>Clintonia uniflora</u> <u>Gaultheria ovatifolia</u> <u>Hypopitys monotropa</u> <u>Veratrum californicum</u> <u>Viola sempervirens</u> <u>Xerophyllum tenax</u>	Beadlily Wintergreen Pinesap California false hellebore Evergreen violet Bear grass
<u>Habitat conditions: Moist to wet/well-drained to impeded (higher elevations)</u>				
(Pacific silver fir--mountain hemlock communities)				
Tall-growing trees, over 40 ft			<u>Abies amabilis</u> <u>Abies procera</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u> <u>Tsuga mertensiana</u>	Pacific silver fir Noble fir Douglas-fir Western redcedar Western hemlock Mountain hemlock
Low-growing trees and tall shrubs, 20-40 ft			<u>Sorbus sitchensis</u>	Sitka mountain-ash
Low shrubs, 2-6 ft			<u>Gaultheria shallon</u> <u>Oplopanax horridum</u> <u>Rhododendron albiflorum</u> <u>Rubus lasiococcus</u> <u>Rubus pedatus</u> <u>Sambucus racemosa</u> <u>Vaccinium alaskaense</u> <u>Vaccinium delicosum</u> <u>Vaccinium membranaceum</u> <u>Vaccinium ovalifolium</u> <u>Vaccinium parvifolium</u> <u>Vaccinium scoparium</u>	Salal Devil's club White rhododendron Dwarf bramble Strawberry-leaf blackberry Red elderberry Alaska blueberry Delicious blueberry Big huckleberry Ovalleaf huckleberry Red huckleberry Grouseberry
Lesser vegetation - grasses, herbs, ferns, mosses			<u>Athyrium filix-femina</u> <u>Chimaphila menziesii</u> <u>Clintonia uniflora</u> <u>Cornus canadensis</u> <u>Gaultheria ovatifolia</u> <u>Hypopitys monotropa</u> <u>Maianthemum dilatatum</u> <u>Tiarella trifoliata</u> <u>Veratrum californicum</u> <u>Xerophyllum tenax</u>	Lady-fern Little prince's-pine Beadlily Bunchberry dogwood Wintergreen Pinesap False lily-of-the-valley Three-leaved coolwort California false hellebore Bear grass

Table M2410-56.1 [M2415WCM] Selected Plant Species Common to the Silver Fir—Douglas-fir Forest (Westside Cascade Mountain Region)

Growth form	Early successional plants	Late successional plants
Habitat conditions: Dry to moist/excessive to well-drained		
(Pacific silver fir--mountain hemlock communities)		
Tall-growing trees, over 40 ft	<u>Abies amabilis</u> <u>Abies procera</u> <u>Pinus contorta</u> <u>Pinus monticola</u> <u>Pseudotsuga menziesii</u> <u>Tsuga mertensiana</u>	Pacific silver fir Noble fir Lodgepole pine White pine Douglas-fir Mountain hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Amelanchier alnifolia</u>	Vine maple Serviceberry
Medium shrubs, 6-20 ft	<u>Rhododendron macrophyllum</u> <u>Sorbus sitchensis</u> <u>Vaccinium membranaceum</u> <u>Vaccinium scoparium</u>	Pacific rhododendron Sitka mountain-ash Big huckleberry Grouseberry
Low shrubs, 2-6 ft	<u>Anemone deltoidea</u> <u>Anemone oregana</u> <u>Bromus</u> spp. <u>Campanula scouleri</u> <u>Carex</u> spp. <u>Chimaphila menziesii</u> <u>Chimaphila umbellata</u> <u>Clintonia uniflora</u> <u>Fragaria vesca</u> <u>Goodyera oblongifolia</u> <u>Hieracium albiflorum</u> <u>Hypopitys monotropa</u> <u>Ligusticum grayi</u> <u>Listera caurina</u> <u>Lupinus</u> spp. <u>Pedicularis racemosa</u> <u>Polystichum munitum</u> <u>Pyrola secunda</u> <u>Smilacina stellata</u> <u>Trillium ovatum</u> <u>Viola sempervirens</u> <u>Xerophyllum tenax</u>	Threelobed anemone Oregon anemone Brome Scouler bellflower Sedge Little prince's-pine Western prince's-pine Beadlily Strawberry Rattlesnake plantain White hawkweed Pinesap Gray's lovage Western twayblade Lupine Leafy lousewort Sword fern One-sided wintergreen Starry Solomon plume White trillium Evergreen violet Bear grass
(Pacific silver fir communities)		
Tall-growing trees, over 40 ft	<u>Abies amabilis</u> <u>Abies procera</u> <u>Chamaecyparis nootkatensis</u> <u>Pinus monticola</u> <u>Pseudotsuga menziesii</u> <u>Tsuga heterophylla</u> <u>Tsuga mertensiana</u>	Pacific silver fir Noble fir Alaska cedar White pine Douglas-fir Western hemlock Mountain hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Acer glabrum</u> var. <u>douglasii</u> <u>Castanopsis chrysophylla</u> <u>Cornus nuttallii</u> <u>Taxus brevifolia</u>	Vine maple Douglas maple Giant chinquapin Pacific dogwood Western yew
Medium shrubs, 6-20 ft	<u>Corylus cornuta</u> <u>Rhododendron macrophyllum</u> <u>Rubus parviflorus</u> <u>Vaccinium membranaceum</u> <u>Vaccinium parvifolium</u>	California hazelnut Pacific rhododendron Thimbleberry Big huckleberry Red huckleberry
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Holodiscus discolor</u> <u>Pachystima myrsinites</u> <u>Rosa gymnocarpa</u> <u>Rubus lasiococcus</u> <u>Rubus ursinus</u> <u>Symphoricarpos mollis</u> <u>Vaccinium alaskaense</u>	Oregon-grape Ocean spray Oregon boxwood Baldhip rose Dwarf bramble Trailing blackberry Snowberry Alaska blueberry

continued.

Table M2410-56.1 [M2415WCM] (Continued)

Growth form	Early successional plants	Late successional plants
Dry/excessive (Continued)		
Lesser vegetation - grasses, herbs, ferns, mosses		(Pacific Silver fir communities) (Continued)
	<u>Adenocaulon bicolor</u> <u>Anemone deltoidea</u> <u>Anemone lyallii</u> <u>Anemone oregana</u> <u>Arenaria macrophylla</u> <u>Arnica latifolia</u> <u>Asarum caudatum</u> <u>Campanula scouleri</u> <u>Carex</u> spp. <u>Chimaphila menziesii</u> <u>Chimaphila umbellata</u> <u>Clintonia uniflora</u> <u>Coptis laciniata</u> <u>Coralorrhiza mertensiana</u> <u>Cornus canadensis</u> <u>Disporum hookeri</u> <u>Fragaria vesca</u> <u>Galium triflorum</u> <u>Goodyera oblongifolia</u> <u>Hieracium albiflorum</u> <u>Lathyrus nevadensis</u> <u>Listera caurina</u> <u>Pedicularis racemosa</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Pyrola asarifolia</u> <u>Pyrola picta</u> <u>Pyrola secunda</u> <u>Senecio bolanderi</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus roseus</u> <u>Tiarella unifoliata</u> <u>Trillium ovatum</u> <u>Trisetum cernuum</u> <u>Valeriana sitchensis</u> <u>Vancouveria hexandra</u> <u>Veratrum viride</u> <u>Viola glabella</u> <u>Viola sempervirens</u> <u>Whipplea modesta</u> <u>Xerophyllum tenax</u>	Trail plant Threelobed anemone Lyal anemone Oregon anemone Bigleaf sandwort Broadleaf arnica Wild ginger Scouler bellflower Sedge Little prince's-pine Western prince's-pine Beadlily Cutleaf goldthread Merten's coralroot Bunchberry dogwood Hooker's fairybells Strawberry Sweet-scented bedstraw Rattlesnake plantain White hawkweed Nevada peavine Western twayblade Leafy lousewort Sword fern Bracken fern Large pyrola Whitevein pyrola One-sided wintergreen Bolander's groundsel False Solomon's-seal Starry Solomon plume Purple twisted-stalk Coolwort foamflower White trillium Nodding trisetum Sitka valerian White inside-out flower American false hellebore Wood violet Evergreen violet Yerba De Selva Bear grass
Habitat conditions: Moist to wet/well-drained to impeded		
Tall growing trees, over 40 ft		(Pacific silver fir communities)
	<u>Abies amabilis</u> <u>Abies grandis</u> <u>Abies procera</u> <u>Picea engelmannii</u> <u>Pinus monticola</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Pacific silver fir Grand fir Noble fir Engelmann spruce White pine Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Taxus brevifolia</u>	Vine maple Western yew
Medium shrubs, 6-20 ft	<u>Oplopanax horridum</u> <u>Pachystima myrsinites</u> <u>Rhododendron macrophyllum</u> <u>Ribes lacustre</u> <u>Vaccinium alaskaense</u> <u>Vaccinium membranaceum</u> <u>Vaccinium parvifolium</u>	Devil's club Oregon boxwood Pacific rhododendron Swamp gooseberry Alaska blueberry Big huckleberry Red huckleberry
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Gaultheria ovatifolia</u> <u>Linnaea borealis</u> <u>Rosa gymnocarpa</u>	Oregon-grape Wintergreen Twinflower Baldhip rose

continued

Table M2410-56.1 [M2415WCM] (Continued)

Growth form	Early successional plants	Late successional plants
Moist/well-drained (Continued)		
(Pacific silver fir communities) (Continued)		
Low shrubs - (Continued)	<u>Rubus lasiococcus</u> <u>Rubus nivalis</u> <u>Rubus ursinus</u> <u>Symphoricarpos mollis</u>	Dwarf bramble Snow dewberry Trailing blackberry Snowberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Anemone deltoidea</u> <u>Anemone lyallii</u> <u>Anemone oregana</u> <u>Asarum caudatum</u> <u>Athyrium filix-femina</u> <u>Campanula scouleri</u> <u>Chimaphila menziesii</u> <u>Chimaphila umbellata</u> <u>Clintonia uniflora</u> <u>Coptis laciniata</u> <u>Corallorhiza mertensiana</u> <u>Cornus canadensis</u> <u>Disporum hookeri</u> <u>Fragaria vesca</u> <u>Galium triflorum</u> <u>Goodyera oblongifolia</u> <u>Hieracium albiflorum</u> <u>Lathyrus nevadensis</u> <u>Listera aurina</u> <u>Pedicularis racemosa</u> <u>Polystichum munitum</u> <u>Pteridium aquilinum</u> <u>Pyrola asarifolia</u> <u>Pyrola picta</u> <u>Pyrola secunda</u> <u>Senecio bolanderi</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus roseus</u> <u>Tiarella unifoliata</u> <u>Trillium ovatum</u> <u>Trisetum cernuum</u> <u>Valeriana sitchensis</u> <u>Vancouveria hexandra</u> <u>Veratrum viride</u> <u>Viola glabella</u> <u>Viola sempervirens</u> <u>Whipplea modesta</u> <u>Xerophyllum tenax</u>	Baneberry Trail plant Threelobed anemone Lyall anemone Oregon anemone Wild ginger Lady-fern Scouler bellflower Little prince's-pine Western prince's-pine Beadlily Cutleaf goldthread Merten's coralroot Bunchberry dogwood Hooker's fairybells Strawberry Sweet-scented bedstraw Rattlesnake plantain White hawkweed Nevada peavine Western twayblade Leafy lousewort Sword fern Bracken fern Large pyrola Whitevein pyrola One-sided wintergreen Bolander's groundsel False Solomon's-seal Starry Solomon plume Purple twisted-stalk Coolwort foamflower White trillium Nodding trisetum Sitka valerian White inside-out flower American false hellebore Wood violet Evergreen violet Yerba De Selva Bear grass
(Alaska cedar communities)		
Tall-growing trees, over 40 ft	<u>Abies amabilis</u> <u>Abies procera</u> <u>Chamaecyparis nootkatensis</u> <u>Pseudotsuga menziesii</u> <u>Thuja plicata</u> <u>Tsuga heterophylla</u>	Pacific silver fir Noble fir Alaska cedar Douglas-fir Western redcedar Western hemlock
Low-growing trees and tall shrubs, 20-40 ft	<u>Acer circinatum</u> <u>Acer glabrum</u> var. <u>douglasii</u> <u>Taxus brevifolia</u>	Vine maple Douglas maple Western yew
Medium shrubs, 6-20 ft	<u>Oplopanax horridum</u> <u>Rhododendron macrophyllum</u> <u>Ribes lacustre</u> <u>Vaccinium alaskaense</u> <u>Vaccinium membranaceum</u>	Devil's club Pacific rhododendron Swamp gooseberry Alaska blueberry Big huckleberry
Low shrubs, 2-6 ft	<u>Berberis nervosa</u> <u>Linnaea borealis</u> <u>Rosa gymnocarpa</u> <u>Rubus lasiococcus</u> <u>Rubus ursinus</u>	Oregon-grape Twinflor Baldhip rose Dwarf bramble Trailing blackberry

continued

Table M2410-56.1 [M2415WCM] (Concluded)

Growth form	Early successional plants	Late successional plants
<u>Moist/well-drained (Continued)</u>		
(Alaska cedar communities) (Continued)		
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Actaea rubra</u> <u>Adenocaulon bicolor</u> <u>Anemone deltoidea</u> <u>Asarum caudatum</u> <u>Athyrium filix-femina</u> <u>Bromus</u> spp. <u>Campanula scouleri</u> <u>Chimaphila menziesii</u> <u>Circaea alpina</u> <u>Clintonia uniflora</u> <u>Corallorhiza mertensiana</u> <u>Cornus canadensis</u> <u>Dicentra formosa</u> <u>Disporum hookeri</u> <u>Dryopteris austriaca</u> <u>Galium triflorum</u> <u>Goodyera oblongifolia</u> <u>Montia sibirica</u> <u>Polystichum munitum</u> <u>Pyrola picta</u> <u>Pyrola secunda</u> <u>Senecio bolanderi</u> <u>Smilacina racemosa</u> <u>Smilacina stellata</u> <u>Streptopus roseus</u> <u>Tiarella unifoliata</u> <u>Trillium ovatum</u> <u>Vancouveria hexandra</u> <u>Viola glabella</u> <u>Viola sempervirens</u> <u>Xerophyllum tenax</u>	Baneberry Trail plant Threelobed anemone Wild ginger Lady-fern Brome Scouler bellflower Little prince's-pine Alpine circaea Beadlily Merten's coralroot Bunchberry dogwood Bleeding-heart Hooker's fairybells Mountain wood fern Sweet-scented bedstraw Rattlesnake plantain Indian lettuce Sword fern Whitevein pyrola One-sided wintergreen Bolander's groundsel False Solomon's-seal Starry Solomon plume Purple twisted-stalk Coolwort foamflower White trillium White inside-out flower Wood violet Evergreen violet Bear grass

Table M2410-56.1 [M2415ECM] Selected Plant Species Common to the Silver Fir—Douglas-fir Forest (Eastside Cascade Mountain Region)

Growth form	Early successional plants	Late successional plants
<u>Habitat conditions: Dry to moist/excessive to well-drained</u>		
(Douglas-fir communities)		
Tall-growing trees, over 40 ft	<u>Larix occidentalis</u> <u>Libocedrus decurrens</u> <u>Quercus garryana</u> <u>Pinus contorta</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u>	Western larch Incense-cedar Oregon white oak Lodgepole pine Ponderosa pine Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft	<u>Amelanchier alnifolia</u>	Serviceberry
Low shrubs, 2-6 ft	<u>Agropyron spicatum</u> <u>Arnica latifolia</u> <u>Calamagrostis rubescens</u> <u>Carex concinnoides</u> <u>Carex geyeri</u> <u>Festuca idahoensis</u> <u>Poa sandbergii</u> <u>Stipa occidentalis</u>	Bluebunch wheatgrass Broadleaf arnica Pinegrass Northwestern sedge Elk sedge Idaho fescue Sandberg bluegrass Western needlegrass
(Grand fir communities)		
Tall-growing trees, over 40 ft	<u>Abies grandis</u> <u>Abies lasiocarpa</u> <u>Abies magnifica</u> <u>Larix occidentalis</u> <u>Libocedrus decurrens</u>	Grand fir Subalpine fir Shasta red fir Western larch Incense-cedar

continued

Table M2410-56.1 [M2415ECM] (Concluded)

Growth form	Early successional plants	Late successional plants
	<u>Dry/excessive (Continued)</u>	
		(Grand fir communities) (continued)
Tall-growing trees (continued)	<u>Picea engelmannii</u> <u>Pinus lambertiana</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u> <u>Tsuga mertensiana</u>	Engelmann spruce Sugar pine White pine Ponderosa pine Douglas-fir Mountain hemlock
Low shrubs, 2-6 ft	<u>Linnaea borealis</u> <u>Pachystima myrsinites</u> <u>Ribes lacustre</u> <u>Rosa gymnocarpa</u> <u>Rubus lasiococcus</u> <u>Spiraea betulifolia</u> <u>Symphoricarpos albus</u> <u>Vaccinium membranaceum</u>	Twinflower Oregon boxwood Swamp gooseberry Baldhip rose Dwarf bramble Shinyleaf spiraea Common snowberry Big huckleberry
Lesser vegetation - grasses, herbs, ferns, mosses	<u>Adenocaulon bicolor</u> <u>Anemone lyallii</u> <u>Anemone piperi</u> <u>Arenaria macrophylla</u> <u>Arnica cordifolia</u> <u>Asarum caudatum</u> <u>Bromus vulgaris</u> <u>Calamagrostis rubescens</u> <u>Carex concinnoides</u> <u>Carex geyeri</u> <u>Chimaphila menziesii</u> <u>Chimaphila umbellata</u> <u>Clintonia uniflora</u> <u>Corallorhiza maculata</u> <u>Galium triflorum</u> <u>Hieracium albiflorum</u> <u>Hypopitys monotropa</u> <u>Lupinus latifolius</u> <u>Mitella stauropetala</u> <u>Pyrola asarifolia</u> <u>Pyrola picta</u> <u>Pyrola secunda</u> <u>Smilacina stellata</u> <u>Thalictrum occidentale</u> <u>Trillium ovatum</u> <u>Viola glabella</u>	Trail plant Lyall anemone Piper anemone Bigleaf sandwort Heartleaf arnica Wild ginger Columbia brome Pinegrass Northwestern sedge Elk sedge Little prince's-pine Western prince's-pine Beadlily Spotted coralroot Sweet-scented bedstraw White hawkweed Pinesap Broadleaf lupine Cross-shaped miterwort Large pyrola Whitevein pyrola One-sided wintergreen Starry Solomon plume Western meadow-rue White trillium Wood violet

Table M2410-56.2 Ecological Characteristics of Selected Plant Species Common to the Pacific Forest

Species	Habitat	Form	Fruit	General wildlife use	Notes
Pacific silver fir <i>Abies amabilis</i> (Dougl.) Forbes M2411, M2413, M2415	Montane forests, 1,000-4,000 ft elevation, intolerant of shade	Tree, to 200 ft tall, needles lustrous green	Cone, ripe in Sept.	Seeds eaten by porcupine, squirrels, rodents	
White fir <i>Abies concolor</i> (Gord. & Glend.) Lindl. M2413	Well-drained, sunny or shade, 2,000-5,000 ft elevation	Tree, to over 240 ft tall, needles pale bluish-green	Cone, matures in Sept., soon breaks up	Outstanding browse for mule deer and grouse	
Grand fir <i>Abies grandis</i> Lindl. M2411, M2412, M2415	Low hills, valleys, and moist sites near the coast	125-150 ft high tree, 2-4 ft thick, bark gray to reddish brown, post fire non-sprouter	Seeds, .25 in long and brown; green cylindrical cone 2-4 in long, stand upright on branches	Seeds eaten by songbirds, chickarees, other rodents; browsed by deer and elk; needles eaten by blue grouse in winter	Attractive evergreen tree; cover for songbirds
Subalpine fir <i>Abies lasiocarpa</i> (Hook.) Nutt. M2415	Subalpine to alpine slopes, down to 2,500 ft but usually above 4,000 ft elevation to timberline	Small tree, to 60 ft, narrow crown, short stiff branches	Cone, matures in Sept.	Seeds eaten by blue grouse, squirrels; browsed by mule deer	Intolerant of shade
Shasta red fir <i>Abies magnifica</i> Murr. M2415	Well-drained, sunny sites	Tree, to 200 ft tall, short branches	Cone, matures in Aug., breaks up in Sept.	Seeds eaten by grouse and songbirds; browsed by mule deer	
Noble fir <i>Abies procera</i> Rehder M2413, M2415	Deep forests of the cascades, 2,000-5,000 ft elevation, intolerant of shade	Tall, symmetrical tree, to 120 ft tall, branches short stiff	Seeds about .2 in long	Seeds eaten by blue grouse and Douglas chickaree; browsed by white-tailed deer	
Sand verbenia <i>Abronia latifolia</i> Hook. M2412	Coastal streams, sandy, seaside dune soils	Perennial herb; stout, fleshy glandular, creeping prostrate stems, 1-2 ft long	Seed, May-Oct., dry, .25 in long, born at ends of stalks in many-flowered head	Seeds eaten by songbirds	Good sand stabilizer with its long roots
Vine maple <i>Acer circinatum</i> Pursh M2411, M2412, M2413, M2414, M2415	Well-drained, moist, sun and shade	Shrub or small tree, to 25 ft tall, propagates vegetatively as well as with seed	Samara, available Sept.	Browsed by elk and beaver	
Douglas maple <i>Acer glabrum</i> var. <i>douglasii</i> (Hook.) Dipp. M2413, M2415	Along shores, tidal meadows, or bogs	Small deciduous tree, 20-30 ft, leaves paired, ovate, 3-lobed	Samaras, paired, winged, 1-seeded, .75-1 in long, July-Aug.		
Bigleaf maple <i>Acer macrophyllum</i> Pursh M2411, M2412, M2413, M2414, M2415	Common along stream sides and shaded canyons, below 500 ft	Deciduous tree, 30-100 ft high, broad-crowned with large 5-lobed leaves 4-10 in broad	Samara, Aug.-Oct., body of samara short-bristle-hairy, wings 1.5-2 in long, diverging at an acute angle	Seeds eaten by tree squirrel and some songbirds; due to growing habits, fair to poor browse for deer when and where foliage is available	Post fire sprouter attractive fall coloring tree, with leaves turning yellow brown
Western yarrow <i>Achillea millefolium</i> L. M2411, M2412, M2413, M2414	Meadows and open hillsides	Perennial aromatic herb, 4-40 in high, leaves divided into many fine segments	Achene, June-Aug., born in terminal flower heads	The sage-scented leaves are eaten to a small extent by a few wildlife species	Leaves steeped in hot water were long considered useful for stopping bleeding in cuts and wounds
Baneberry <i>Actaea rubra</i> (Ait.) Willd. M2415	Moist woods, streambanks	One to several stems, to 3 ft tall	Berry, white or red, to .38 in long		

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Trail plant <i>Adenocaulon bicolor</i> Hook. M2413, M2415	Moist, shady woods, moderate to low elevations	Perennial, to 3 ft tall, leaves mostly basal	Achene		
Maindenhair fern <i>Adiantum pedatum</i> L. M2412, M2413, M2414	Damp, moist can- yons, woods, and swampy shaded areas, from sea level to 10,000 ft	8 in to 3 ft, rhizomes short, thick, creeping	Spore		An attractive fern sought after by people
Horse chestnut <i>Aesculus californica</i> (Spach) Nutt. M2414	Dry canyon slopes and low hills, below 4,000 ft	Deciduous tree, 15-40 ft tall with broad open crown, post-fire sprouter, 5-7 leaflets	Capsule, Aug.-Oct., pearshaped, 1.5-2 in long, 3-valved with one or two large shiny, brown seeds	Newly fallen and early growing green leaves are excellent to good browse for deer	Fruits and leafage are said to be poisonous to live- stock, honeybees, and humans; candle- stick-like white flower panicles
Nettleleaf giant hyssop <i>Agastache urticifolia</i> Ktze. M2413	Open slopes and draws, foothills to high elevations in the mountains	Fibrous rooted per- ennial, stem num- erous, to 5 ft tall, simple or often branched			
Bluebunch wheatgrass <i>Agropyron spicatum</i> (Pursh) Scribn. & Smith M2415	Middle elevations in drier mountains onto the plains	Perennial, non- rhizomatous, form- ing clumps to 6 in, broad culms erect, to 3 ft tall	Available June- Aug.	Seeds eaten by a wide variety of birds and mammals	
Sugarstick <i>Ailotropa virgata</i> T. & G. ex Gray M2413	Lower elevations of coniferous forest, in deep humus	Plant to 1.5 ft tall, stems white and pink striped			
White alder <i>Alnus rhombifolia</i> Nutt. M2413	Along streams, shade	Deciduous tree, to 60 ft tall, old bark light in color	Cone, to 1 in long, nutlet small, flat, without a wing	Slight use as browse	Thicket forming
Red alder <i>Alnus rubra</i> Bonp. M2411, M2412, M2413, M2415	Streambanks and moist woods, below 1,000 ft	Deciduous tree, to 75 ft tall, trunk to 2 ft, bark thin, gray, smooth	Cone, to 1 in long, nutlet small, flattish, margined with papery wings	Seeds eaten by song- birds and small mam- mals, of secondary importance as browse	Quickly invades burned over, logged, or other disturbed areas
Serviceberry <i>Amelanchier alnifolia</i> Nutt. M2413, M2415	Dry, well-drained, moist, in sun	Spreading to erect shrub, usually to about 10 ft tall, leaves oval	Pome, available July-Aug.	Fruit eaten by a wide variety of birds and mammals	
Pearly everlasting <i>Anaphalis margaritacea</i> (L.) B. & H. M2414, M2415	Openings in woods, meadows and talus slopes, below 8,500 ft	Perennial herb, simple erect 1-3 in high stems are white-woolly and equably leafy	Achene, Aug.-Oct., covered with small papillae	Seeds and foliage eaten to limited extent by wildlife	Blooms are often used for winter bouquets
Threeleaf anemone <i>Anemone deltoidea</i> Hook. M2413, M2415	Sparse to deep woods, often grow- ing with shrubs in dry to moist areas	Perennial, with slender, widespread, horizontal rhizomes, flowering stems, to 1 ft tall	Achene, turgid, oval, available Apr.-May		
Lyal anemone <i>Anemone lyallii</i> Britt. M2415	Open prairies to deep woods or sub- alpine ridges	Perennial, slender, erect, from horizon- tal rhizomes	Achene, to .2 in long, available Mar.-July		
Oregon anemone <i>Anemone oregana</i> Gray M2413, M2415	Moist woods to bushy or open hillsides	Perennial, from scaly, horizontal rhizomes, flowering stem, single, to 1 ft tall	Achene, narrowly oblong, available Mar.-June		

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Piper anemone <u>Anemone piperi</u> Britt. M2415	Moist woods, shady	Perennial, with deep roots arising from an erect or ascending, rhizome, flowering stems single, to over 1 ft tall	Achene, elliptical		
Shining angelica <u>Angelica arguta</u> Nutt. M2413	Stream banks, wet meadows, marshes, and bottomlands, foothills to moderate elevations	Robust plant, to 6 ft tall	Fruit broadly elliptical, to 1.5 in long and .2 in wide, available June-Aug.		
Sweet vernal grass <u>Anthoxanthum odoratum</u> L. M2411	Moist sites, in woods or native meadows	Tufted perennial, to 2 ft tall			
Low dogbane <u>Apocynum pumilum</u> Greene M2413	Dry soils of valleys and foothills, to medium elevations in the mountains	Plant freely branching, to 1.5 ft tall	Seed hairy white		
Madrone <u>Arbutus menziesii</u> Pursh M2412, M2413, M2414	Dry to moist, in sun		Berry, available July-Dec.	Fruit eaten by a few species of birds including doves, deer, pigeons	Sprouts after injury
Gray manzanita <u>Arctostaphylos cinerea</u> Howell M2413	Dry hillsides and mountain slopes, sun	Shrub, to 6 ft high, young leaves white hairy evergreen	Berry		
Hairy manzanita <u>Arctostaphylos columbiana</u> Piper M2412, M2414	Well-drained sites, in sun	Erect or spreading shrub, to 12 ft tall, old branches with purplish-red bark	Berry		Does not crown sprout after fires
Pine-mat manzanita <u>Arctostaphylos nevadensis</u> Gray M2413	Dry, well-drained, sun	Prostrate shrub with trailing rooting stems, to 6 ft tall	Berry, available July-Sept.	Fruit eaten by a few species of bird including grouse; browsed by mule deer	Roots where branches touch ground, mat-forming
Green manzanita <u>Arctostaphylos patula</u> Greene M2413	Dry, well-drained, in sun	Spreading shrub, to 6 ft tall, old bark reddish-brown, leaves yellow green, evergreen	Berry, available May-Sept.	Very important browse for mule deer	Sprouts after fire
Bearberry <u>Arctostaphylos uva-ursi</u> (L.) Spreng. M2412		Prostrate shrub, trailing rooting stems, to 3 in tall	Red berry, to .2 in long, available Aug.-Mar.	Fruit eaten by many species of birds, including ruffed and dusky grouse; plant eaten by grouse and black-tailed deer	Forms large mats; used ornamentally
White-leaved manzanita <u>Arctostaphylos viscida</u> Parry M2413	Dry hillsides, usually in gravelly or stony soil	Spreading shrub, to 9 ft tall, smooth dark reddish-brown bark	Berry, available year round		Does not crown sprout after fires
Bigleaf sandwort <u>Arenaria macrophylla</u> Hook. M2413, M2415	Moist to dry, shaded to open woods	Perennial, forming loosely matted patches, stems round to 4-angled, erect, to 6 in tall	Capsule		
Heartleaf arnica <u>Arenica cordifolia</u> Hook. M2413, M2415	Woodlands, foothills to high elevations in the mountains	Perennial, to 2 ft tall, from long, naked rhizomes	Achene, hairy and glandular pappus whitish		
Small-flowered arnica <u>Arenica discoidea</u> Benth. M2413	Open woods	Perennial, to over 2 ft tall, from long, naked rhizomes, stems solitary	Fruit .5 in long		

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Broadleaf arnica <u>Arnica latifolia</u> Bong. M2413, M2415	Moist woods, meadows, and moist open places in the mountains, seldom at high elevations	Perennial, to 2 ft tall, broad basal leaves	Achene, glabrous, pappus white		
Goats-beard <u>Aruncus sylvestris</u> Kostel. M2415	Moist woods, along streams	Stem, several, to 7 ft tall, leaves numerous	Seeds about .05 in long		
Wild ginger <u>Asarum caudatum</u> Lindl. M2412, M2413	Moist and deep shaded woods below 5,000 ft	Perennial, aromatic herb, with basal heart-shape leaves and slender rootstocks	Capsule, June-Aug., round and fleshy, seeds .13 in long	Seeds eaten by some species of songbirds	Conspicuous, solitary, large, brownish flower; born from lower axil
Chilian aster <u>Aster chilensis</u> Nees. M2412	Wide variety of habitats and elevations, but mostly dry, open places in the valleys and plains	Perennial, to 3 ft tall, fibrous roots from a rhizome	Achene	Occasionally eaten by a number of wildlife species	
Balloon milk-vetch <u>Astragalus whitneyi</u> Gray M2413	Open stoney soil and mountain crests	Perennial, with woody caudex, decumbent stems 1 ft long	Pod		
Lady fern <u>Athyrium filix-femina</u> (L.) Roth M2411, M2415	Moist woods, meadows, streambanks, lowlands to well up in mountains	Leaves to 6 ft or more tall, clustered erect vase-like tuft, from short rhizome	Spores		
Coyote bush <u>Baccharis pilularis</u> DC. M2412, M2414	Low, open hills and mountain slopes, below 2,000 ft	Evergreen shrub, erect 2-10 ft high, 2-10 ft wide, leaves .25-1 in long, dark green and leathery	Achene, Aug.-Nov., white 7 feathery born from small yellowish-white flower heads	Seeds eaten by rabbit, and small rodents; poor to useless browse value to deer and elk	Post-fire sprouter, often encroaches on pastureland; easily controlled by hormone sprays
Deltoid balsamroot <u>Balsamorhiza deltoidea</u> Nutt. M2413	Open places usually avoiding thinner soils	Perennial, with deep, woody, taproot, to 3 ft tall	Achene, available Mar.-July		
Oregon-grape <u>Berberis nervosa</u> Pursh M2413, M2415	Dry, well-drained slopes, in sun or shade	Shrub, ascending to erect, to 2 ft long, leaves tufted	Berry available July-Aug.	Fruit eaten by black-tailed deer	Spreads by creeping rootstocks to form thickets
Deer fern <u>Blechnum spicant</u> (L.) With. M2411, M2412, M2414, M2415	Wet, sheltered places	Evergreen fern, many erect fronds, 8 in to 3.5 ft tall	Spore-bearing plant	Only foraged when other green plants are scarce	Short, woody creeping rhizomes
<u>Blepharipappus scaber</u> Hook. M2413	Bunchgrass prairies and grassy foothills	Slender annual, to 1 ft tall	Available Apr.-June		
Ground-cone <u>Boschniakia hookeri</u> Walpers M2413	Moist areas	Plants yellow to dark red or purple, to over 1 ft tall stem solitary			Parasitic on salal
Slender boykinia <u>Boykinia elata</u> (Nutt.) Greene M2413	Moist woods, along streams, lower slopes	Stems slender, to 4 ft tall	Seeds black, .02 in long, available June-Aug.		
Large-flowered boykinia <u>Boykinia major</u> Gray M2413	Meadows, along streams	Stems stout, to 3 ft tall	Seeds black, about .04 in long, available June-Sept.		

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Fire-cracker flower <u>Brodiaea ida-maia</u> Nutt. M2412, M2414	Grassy slopes and hillsides in open places, 1,000-4,000 ft	Perennial herb, leaves 1-2 ft long, flower stalk 1-3 ft high	Capsule, June-Aug. born from red flowers tipped with yellow, in clusters	Not specifically known, bulbs possibly eaten by some animals	This attractive plant is found more inland than along the coast
Purplehead brodiaea <u>Brodiaea pulchella</u> (Salisb.) Greene M2414	Meadows, plains, and hillsides, below 6,000 ft	Perennial herb, .5-2 ft high, with usually two long, narrow, parallel-veined basal leaves	Capsule, May-July, oval, .25 in long, born in clusters of 2-20 lavender flowers	Bulbs eaten by some species of birds and small mammals	Attractive wildflower; Indians consumed very edible, meaty bulbs
Brome <u>Bromus</u> spp. L. M2415	Forest edges, mountain meadows, above 7,000 ft	Perennial grass, 16-35 in	Grain, summer-fall	Plant eaten by deer and elk	
California brome <u>Bromus carinatus</u> H. & A. M2415	Various habitats, moist woods to dry open meadows, disturbed soil, to timberline	Perennial, to 4 ft tall	Available May-Aug.	Plant eaten by kangaroo rat and pocket gopher, as well as many other birds and mammals	
Columbia brome <u>Bromus vulgaris</u> (Hook.) Shear M2412, M2413, M2415	Shaded to open woods, rocky ravines, moist to dry banks, montane meadows, under 6,000 ft	Perennial grass, to 4 ft tall, without rhizomes but rooting at nodes, stems	Caryopsis, May-Aug., long awn rising from bifid apex of lemma	Seeds eaten by numerous birds and rodents; foliage is foraged by deer; plant eaten by kangaroo rat and pocket gopher, as well as many other birds and mammals	Valuable grass; important particularly to wildlife as a forage species
Pacific reedgrass <u>Calamagrostis nutkaensis</u> (Presl) Steud. M2412, M2414	Moist places and swamps up to 5,700 ft	Perennial grass, stems 2.5-5 ft high with long, stiff leaves	Caryopsis, May-Aug., .25 in stout awn arises from base of mid-vein on lemma	Seeds and foliage are eaten to some extent by birds and foraging species of wildlife	Flowers are pale-green or purplish on narrow, rather loose panicle
Pinegrass <u>Calamagrostis rubescens</u> Buckl. M2415	Sagebush flats to timbered slopes, both dry and moist montane forest	Perennial, culms to 2.5 ft tall, smooth	Available July-Sept.		
Elegant mariposa lily <u>Calochortus elegans</u> Pursh M2413	Grassy hillsides and open coniferous woods	Stem to 6 in tall, slender, basal leaf flat	Seeds straw-colored		
Mariposa lily <u>Calochortus luteus</u> Nutt. M2414	Usually in heavy soils in open places below 2,000 ft	Perennial herb, erect, slender stem .5-2 ft high	Capsule, May-Aug., 1-3 in from yellow flowers with brown markings		Plants have underground bulbs and long linear leaves
Tolmie's mariposa lily <u>Calochortus tolmiei</u> H. & A. M2413	Dry, rocky slopes	Stem simple or branched to 1 ft tall, basal leaf flat	Seeds purple, available May-June		
California harebell <u>Campanula prenanthoides</u> Dur. M2413,	Open woods	Perennial, from tap-root, erect stems to less than 3 ft tall			
Scouler bellflower <u>Campanula scouleri</u> Hook. M2413, M2415	Open or dense woods, less often rock outcrops, elevations up to 4,000 ft	Perennial, from branching rhizomes, to more than 2 ft tall			
Sedge <u>Carex</u> spp. L. M2412, M2415	Moist soils of marshes, meadows along shores, at all elevations	Perennial herb, solitary or clumped, stems triangular to round and hollow	Achene, June-Aug., lens-shaped to triangular, enclosed in envelope called perigynium	Seeds sparsely used by waterfowl, marsh birds, songbirds; nesting cover for waterfowl	Important builder of soil in bogs and bays; important in the aging process of lakes

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Northwestern sedge <i>Carex concinnoides</i> Mack. M2415	Dry to moist soil in and around con- iferous forests	Stems single, 14 in tall, leaves firm	Achene		
Dewey sedge <i>Carex deweyana</i> Schw. M2411	Streambanks, moist woods and forest openings sea level to timberline	Stems to 3 ft tall, loose to dense clumps, leaves on lower part of stem	Achene	Seeds eaten by a large number of birds and mammals	
Elk sedge <i>Carex geyeri</i> Boott M2415	Woodlands, open slopes, dry meadows, foothills and mod- erate elevations	Stems clustered, to 1.5 ft tall			
Slough sedge <i>Carex obnupta</i> L. H. Bailey M2411	Open water or very wet ground	Densely tufted, stems coarse to 5 ft tall	Achene		
Long-stoloned sedge <i>Carex pennsylvanica</i> Lam. M2413	Open woods and prairies	Stems 1.5 ft tall, tufted in small to large clumps, leaves flat			
Giant chinquapin <i>Castanopsis chrysophylla</i> (Rouglt.) DC. M2412, M2413, M2414	Dry, well-drained sites, in sun, sea level to 5,500 ft elevation	Shrub to small tree, to 90 ft tall, ever- green	Nut, available Sept., fruits sparingly	Browsed by mule deer	Forms thickets
Seaside painted-cup <i>Castilleja latifolia</i> Torr. M2412	Sandy soil and sea cliffs in coastal strans, also in closed cone forest	Perennial herb, .5-1.5 ft high, sticky, hairy, us- ually 3-lobed leaves	Capsule, Apr.- Oct., .5 in long, small dry seeds	Some seeds eaten by birds and rodents	Flowers are green- ish-yellow sur- rounded by yellow bracts
Scarlet paintbrush <i>Castilleja miniata</i> Hook. M2413	Meadows and slopes, at medium and lower elevations	Perennial, stems few, erect or ascend- ing from a woody base, to 2.5 ft tall		Plant eaten by mule deer; hummingbirds get nectar from it	
Common buckbrush <i>Ceanothus cuneatus</i> (Hook.) Nutt. ex T. & G. M2413	Dry, open flats and lower foothills, intolerant of shade, below 3,500 ft ele- vation	Evergreen shrub, to 10 ft tall, freely branched, rigid, re- generates from ex- posed roots	Capsule, available Apr.-July	Browsed by mule deer; seeds eaten by moun- tain and valley quail	Forms dense thick- ets
Deer brush <i>Ceanothus integerrimus</i> H. & A. M2413, M2414	Mountain slopes, ridges and flats, 1,000-7,000 ft elevation	Deciduous shrub, 3-12 ft tall, widely branched with green drooping branches	Capsule, July- Sept., round or triangular, .25- .5 in wide	Browsed by deer and elk, especially young sprouts	Post-fire sprouter; provides good es- cape cover for birds; valuable shrub, allow on ROW edge
Dwarf ceanothus <i>Ceanothus prostratus</i> Benth. M2413	Dry, well-drained, in sun	Prostrate, evergreen shrub, to 2 in tall, roots where stems touch ground	Capsule	Browsed by mule deer	Forms mat-like ground cover to 10 ft broad
Blue-blossum ceanothus <i>Ceanothus thyrsiflorus</i> Esch. M2412, M2414	Generally scattered stands on wooded slopes and canyons, below 2,000 ft	Evergreen shrub, to 20 ft tall	Capsule, July- Sept., round, .17 in wide, smooth, black	Seeds eaten by quail and small mammals; good to fair browse for elk and deer	Escape cover for birds, seedlings invade cut-over and burned areas
Tobacco brush <i>Ceanothus velutinus</i> Dougl. ex Hook. M2412, M2413, M2414	Dry, open wooded slopes and ridges, below 3,000 ft, full sun	Spreading heavy- scented evergreen shrub, to 20 ft tall	Capsule, July- Sept., round or triangular, .13- .06 in wide, 3- lobed at top	Seeds eaten by quail and rodents; fair browse value to deer and elk	Post-fire sprouter; also provides val- uable escape and nesting cover to songbirds; forms thickets on dis- turbed areas

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Common chickweed <u>Cerastium vulgatum</u> L. M2415	Pastures	Biennial, tufted stems ascending, to 1.5 ft long			
Curlleaf mountain-mahogany <u>Cercocarpus ledifolius</u> Nutt. M2413	Dry sunny areas	Evergreen, shrub to 20 ft tall, leaf margin revolute	Achene, available Aug.-Sept.	Browsed by mule deer	
Port-Orford cedar <u>Chamaecyparis lawsoniana</u> (Murr.) Parl. M2412, M2413, M2414	Moist slopes and canyons, below 4,800 ft, often on serpentine soils	Evergreen tree, 140-180 ft tall, 4-6 ft thick, crown dense, with short, pendant branches	Seeds .13 in long, cone round, .33 in thick	Seeds eaten by songbirds and tree squirrels	Important timber tree; wood used for interior finish, ship building, matches, etc.
Alaska cedar <u>Chamaecyparis nootkatensis</u> (D. DON) Spach M2415	Along coast, sea level to timberline, best at 500-1,200 ft	Medium-sized evergreen tree, 40-80 ft, occasionally to 100 ft, scale-like leaves	Cone, less than .5 in, maturing in 2 yrs		Durable aromatic wood; valuable to man
Little prince's-pine <u>Chimaphila menziesii</u> (R. Br.) Spreng. M2413, M2415	Coniferous woods	Plant 6 in tall, leaves serrate to entire	Capsule		
Western prince's-pine <u>Chimaphila umbellata</u> (L.) Bart. M2413, M2415	Woods, especially under conifers	Stem 1 ft tall, leaves oblanceolate with acute base	Capsule		
Ox-eye-daisy <u>Chrysanthemum leucanthemum</u> L. M2414	Naturalized in waste places, fields, etc.	Perennial herb, stems 8-32 in high, from small slender rhizome	Achene, July-Sept., round and more or less flattened	Seeds and foliage of limited food importance to wildlife	An attractive composite which is native of the Old World
Goldaster <u>Chrysopsis villosa</u> var. <u>bolanderi</u> (Gray) Gray ex Jeps. M2414	Grassy slopes, mostly overlooking the coast, below 1,500 ft	Perennial herb, erect, several-stemmed, gray-green, 4-12 in high	Achene, June-Nov., brownish, more or less flattened, born on large, yellow heads	Seeds and foliage eaten by some birds and small mammals	The several stems branch from a woody root crown
Rabbit brush <u>Chrysothamnus nauseosus</u> (Pall.) Britt. M2413	Plains and mountains, dry open places	Shrub, to 10 ft tall, several main stems, ill-smelling, erect	Dull white	Browsed by white-tailed deer; seeds eaten by a few wongbirds and some mammals	
Alpine circaea <u>Circaea alpina</u> L. M2415	Cool, damp woods	Perennial, from slender rootstocks, to 1.5 ft tall			Considered to be one of the worst weeds among native plants
Common thistle <u>Cirsium arvense</u> (L.) M2415	Fields and waste places	Perennial, from creeping roots, to 60 in tall, leaves white hairy below	Achene	Seeds eaten by few songbirds	Noxious weed
Red beadlily <u>Clintonia andrewsiana</u> Torr. M2412	Common in redwood forest and shaded damp woods	Perennial herb, erect 15-20 in, large, elliptical leaves, 7-13 in	Berry, May-July, dark blue oval, .5 in thick, few-seeded	Fruit and foliage possibly eaten by some birds, rabbits, rodents	Red, lily-like flowers are born at top of long, bare stem
Beadlily <u>Clintonia uniflora</u> (Schult.) Kunth M2413, M2415	Coniferous forests, rather moist, from foothills up to 5,000 ft elevation	Plant widely rhizomatous, 2-3 leaves, to 1 in wide	Lustrous, blue berry, more than .25 in long		Widely used in wild gardens

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Littleflower collinsia <i>Collinsia parviflora</i> Lindl. M2413	A variety of mesic habitats, valleys to high elevations in mountains	Plants to 1.5 ft tall, simple or branched	About .04 in long		
Varied-leaved collomia <i>Collomia heterophylla</i> Hook. M2413	Woods, forest openings, and loose streambanks, at lower elevations	Annual, to 1 ft		Seeds eaten by mountain quail and mantled ground squirrel	
Cutleaf goldthread <i>Coptis laciniata</i> Gray M2413, M2415	Moist woods in the coastal mountains	Low herbaceous plants	Minute		
Spotted coralroot <i>Corallorhiza maculata</i> Raf. M2413, M2415	Moist to fairly dry woods	Plant purplish to reddish-brown, to 2 ft tall, erect	Capsule, to 1 in long		
Merten's coralroot <i>Corallorhiza mertensiana</i> Bong. M2415		Plant reddish, to 1.5 ft tall, erect to spreading	Capsule		
Slender bird's-beak <i>Cordylanthus viscidus</i> (Howell) Pennell M2413	Gravelly soils	Plants, to over 2 ft tall, with ascending-spreading branches	Capsule, over .2 in long		
Bunchberry dogwood <i>Cornus canadensis</i> L. M2411, M2415	Moist woods	Subshrub, to 6 in tall, erect, largely herbaceous	Drupe, available June-Aug.	Fruit and buds eaten by several species of grouse and songbirds	
Pacific dogwood <i>Cornus nuttallii</i> Aud. ex T. & G. M2413, M2414, M2415	Along streams, in open to fairly dense woods	Large shrub, to 60 ft tall, showy flowers	Drupe, available Oct.-Nov.	Fruit eaten by few species of birds and chipmunks; browsed by mule deer	Plant may die if exposed to full sunlight after growing in shade
California hazelnut <i>Corylus cornuta</i> Marsh. M2412, M2413, M2414, M2415	Variable site preference, usually dry, well-drained in sun	Shrub, to 10 ft tall, twigs hairy	Hard-shelled nut, to .75 in long	Nuts eaten by grouse, quail, blue jay, chipmunks, squirrels	Thicket forming; often on acid soils
Oregon cliff-brake <i>Cryptogramma densa</i> (Brack.) Diels M2413	Cliff crevices and moist, rocky places, foothills to near timberline	Rhizome short, much branched, leaves numerous, to 1 ft tall	Spores		
Monterey cypress <i>Cupressus macrocarpa</i> Gord. M2412	Exposed headlands and dry places along the sea coast	Evergreen tree, 60-80 ft tall, young trees with center leader, old trees flat topped	Seeds brown, .25 in long, cone closed 1.5 in long, opened with fire	Nesting cover for some species and songbirds	Found originally in Monterey Peninsula, widely transplanted along coast; leave them at ROW edge
Mendocino cypress <i>Cupressus pygmaea</i> Sarg. M2412	Flats and slopes on dry soils below 1,500 ft	Evergreen tree, dwarfed on poor soils, 3 ft, 30-100 ft in better soils	Seeds black, .13 in long, cone .6 in long, closed, open with fire	Nesting cover for some songbirds	Has a small distribution, thus allow on ROW edge
Great houndstongue <i>Cynoglossum grande</i> Dougl. ex Lehm. M2413	Woods at lower elevations	Perennial, to 2.5 ft tall, leaves confined to lower third of stem	Nutlet, with prickles		
Lady's-slipper <i>Cypripedium fasciculatum</i> Kellog ex Wats. M2413	Moist to rather dry and rocky open coniferous forests	Stem to 10 in tall, leaves paired near ground			

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
California danthonia <u>Danthonia californica</u> Boland. M2412, M2414	Frequently on dry hills and meadows, below 5,000 ft	Perennial grass, stems 1-3 ft high, tufted with spreading branches	Caryopsis, May-July, .75-.5 in awn arises from bifid apex on lemma	Seeds and foliage nutritious and palatable to numerous species of wildlife	Large, purplish glumes usually surround the flowers
California pitcher-plant <u>Darlingtonia californica</u> Torr. M2413	Bogs along the coast and inland, along trickling streams	Greenish-yellow leaves to 1.5 ft tall, with purplish hood, flower stalk to 3 ft tall	Seeds, .04 in long		Insect-eating plant
Toothwort <u>Dentaria californica</u> Raf. M2414	Shady banks and wet slopes, mostly below 2,500 ft	Perennial herb, solitary stems, 6-21 in high, three-foliate leaves from base	Siliqua, Mar.-July, 1-2 in long, .05 in broad	Seeds eaten by birds and small rodents	Stems from fleshy horizontal rhizome
Slender hairgrass <u>Deschampsia elongata</u> (Hook.) Munro ex Benth. M2415	Sandy or gravelly banks and slopes near water, sea level to alpine drainages	Perennial, with tufted basal leaves, culms to 3 ft tall	Available June-July		
Bleeding-heart <u>Dicentra formosa</u> (Andr.) Walp. M2412, M2414, M2415	Damp shaded woods or canyons below 7,000 ft	Perennial herb, scapose, fleshy roots, and slender stems 8-18 in	Capsule, Mar.-July, .5-.75 in long seeds, shiny black	Seeds eaten by some songbirds and rodents	Attractive, several nodding pink flowers protected in moist shaded rock crevices
Foxglove <u>Digitalis purpurea</u> L. M2411	Roadsides and disturbed soils	Robust biennial, to 6 ft tall, leaves, basal	Seeds minute		
Hooker's fairybells <u>Disporum hookeri</u> Torr. M2413, M2415	Wooded areas, moist, often in deep shade	Stem sparingly branched, leaves ovate	Red berry, available May-Aug.	Fruit generally not edible; of little forage value to wildlife	
Smith's fairybells <u>Disporum smithii</u> (Hook.) Piper M2411, M2412	Moist, shaded woods or along streambanks near coast	Perennial herb, to 3 ft high, leaves sessile and heart-shaped	Berry, May-July, obovoid, orange-red, to .75 in thick	Same as <u>D. hookeri</u>	Flowers are creamy-white or green, under leaves, in bell-shaped clusters
Saltgrass <u>Distichlis spicata</u> (L.) Greene M2412	Higher parts of Coastal Salt Marsh	Perennial grass; rigid, erect stems 4-12 in high, from strong creeping rhizomes	Caryopsis, Apr.-July, brown and .25 in long	Little value for forage; nesting cover for waterfowl	Creeping rootstocks produce dense sods and dense marsh growths of this plant
Mountain wood fern <u>Dryopteris austriaca</u> (Jacq.) Woyнар ex Schinz & Thell. M2411, M2415	Moist or wet woods and streambanks	Leaves clustered on short rhizome, to 1.5 ft tall, deciduous	Spores		
Blue wild rye <u>Elymus glaucus</u> Buckl. M2413	Prairies, open woods and dry to moist hillsides, lowlands to mid-montane	Clump forming perennial, culms to 3 ft tall	Available, June-Aug.		
Crowberry <u>Empetrum nigrum</u> L. M2411	Exposed rocky bluffs, also peat bogs	Low spreading heatherlike shrub, to more than 6 in tall	Purplish or black, berrylike globe, to .07 in long	Major user spruce grouse, also used by other birds and mammals	

continued

Table M2410-56.2 (Continued)

Species	Habitat	From	Fruit	General wildlife use	Notes
Fireweed <i>Epilobium angustifolium</i> L. M2412, M2414, M2415	In disturbed areas such as burns, clearings, etc., and in fairly moist areas under 9,000 ft	Perennial herb, 2-6 ft high, rhizomes, leaves entire and narrow, 4-6 in long	Capsule, July-Sept., .25 in long, covered with grayish-white hairs	Probably foraged to some extent by rabbits and rodents	Flowers are lilac-purple, often appearing flame-like among the greenery
Small-flowered willowweed <i>Epilobium minutum</i> Lindl. M2413	Sea level to well up in mountains	Freely branched annual, to 1.5 ft tall, leaves opposite	Capsule	Plant eaten by small mammals and hoofed browsers slightly	
Giant helleborine <i>Epipactis gigantea</i> Douglt. M2413	Streambanks, lake margins, around springs and seepage areas	Stems to 3 ft tall, leaves numerous			
Horsetail <i>Equisetum</i> spp. L. M2412, M2414	Moist places, below 6,500 ft	Rushlike, 1-3 ft high stems from branching rhizomes	Reproduction by spores; strobili or cone terminal	Vegetative parts eaten by muskrats; some birds use upper stems for grit	Stems high in silicon; Indians used this plant for scouring rushes
Scouring-rush <i>Equisetum hyemale</i> L. M2413	Streambanks and other moist or wet places, lowlands to moderate elevations	Evergreen, unbranched, to 5 ft tall	Spores	Plant eaten by waterfowl	
Alice fleabane <i>Erigeron aliceae</i> Howell M2413	Moist or fairly dry soil in sandy or open places in the mountains	Perennial, to 2.5 ft tall, from a woody rhizome			
Annual fleabane <i>Erigeron annuus</i> (L.) Pers. M2415	Moist ground and waste places	Annual, to more than 5 ft tall, stem, long spreading hairy			
Bloomer fleabane <i>Erigeron bloomeri</i> Gray M2413	Dry, rocky places in the mountains and foothills	Perennial, with taproot, to 6 in tall			
Threadleaf fleabane <i>Erigeron foliosus</i> Nutt. M2413	Dry, rocky places	Perennial, with stout taproot, to 2 ft tall, leaves numerous			
Barestem buckwheat <i>Eriogonum nudum</i> Douglt. ex Benth. M2413	Sandy or gravelly soil, open to moderate shade, sea-level to subalpine	Perennial, simple to freely branched crown		Seeds eaten by many birds and mammals	
Sulfur buckwheat <i>Eriogonum umbellatum</i> Torr. M2413	Varied habitats, from sagebrush desert to alpine ridges	Perennial, from taproot, to 1 ft tall, freely branching crown, prostrate		Same as <i>E. nudum</i>	Forms mats up to 2 ft broad
Common woolly sunflower <i>Eriophyllum lanatum</i> (Pursh) Forbes M2413	Dry open places, lowlands to moderate elevations	Woolly haired perennial, to 2 ft tall, several-stemmed from base, leaves variable			
Rough wallflower <i>Erysimum asperum</i> (Nutt.) DC. M2413		Biennial, stems to 3 ft tall, basal leaves numerous forming a rosette	Seeds wingless	Seeds eaten by blue grouse	
Idaho fescue <i>Festuca idahoensis</i> Elmer M2414, M2415	Dry openings in woods and on rocky slopes, below 5,000 ft	Perennial grass, stems densely tufted into large bunches, 1-3 ft tall	Caryopsis, May-July, awn .25 in long arises from taper of lemma apex	Seeds eaten by many songbirds and rodents; important forage grass for deer and other mammals	This species is characterized by having very black, fibrous roots

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western fescue <u>Festuca occidentalis</u> Hook. M2412, M2414	Dry, rocky, wooded banks and slopes, below 6,500 ft	Perennial grass, erect, slender stems 1-3 ft high, leaves mostly basal	Caryopsis, May-Aug., awn .25 in long, arises from taper of lemma apex	Seeds eaten by many kinds of birds and rodents; important forage grass for deer and rabbit	This grass is very important as a forage species in relation to its abundance
Sheep fescue <u>Festuca ovina</u> L. M2413	Gravelly prairies to alpine slopes	Perennial, with dense basal tufts, to 1.5 ft tall	Seed, available May-Aug.	Seeds eaten by song-birds	
Sand strawberry <u>Fragaria chiloensis</u> (L.) Duchesne M2412	Mainly coastal	Basal leaves numerous, spreading 4-8 inches	Fruit .75 in broad, seed long	Fruits and leaves eaten by a wide variety of birds and some mammals	Not as aggressive as some
Strawberry <u>Fragaria vesca</u> L. M2411, M2413, M2415	Moist woods, stream-banks, sandy meadows	Plant with trailing stems, leaflets usually 5	Succulent, up to .2 in broad	Fruit eaten by many birds and mammals	
Chocolate lily <u>Fritillaria atropurpurea</u> L. M2413	Grassy slopes to coniferous forest or rocky montane ridges, up to 8,000 ft elevation	Stems, to 2 ft tall, slender, leaves narrow scattered along stem	Capsule		
Obscure bedstraw <u>Galium ambiguum</u> Wight M2413	Dry open forests or rocky places	Low tufted, perennial, from a branched woody root, stems to 3 in long, ascending	Fruit fleshy	Plant eaten by mantled ground squirrels	
Cleaver's bedstraw <u>Galium aparine</u> L. M2413	Common, weedy species, occurring on a variety of habitats	Annual, to 3 ft tall, stems weak	Fruit .1-.2 in long, available Apr.-June	Same as <u>G. ambiguum</u>	
Shrubby bedstraw <u>Galium multiflorum</u> Kellogg M2413	Dry, open, often rocky slopes	Perennial, to over 1 ft tall, spreading freely from creeping, often woody rhizomes	Fruit covered with whitish bristles	Same as <u>G. ambiguum</u>	
Sweet-scented bedstraw <u>Galium triflorum</u> Michx. M2413, M2415	Moist woods near sea level to moderate elevations	Perennial from creeping rhizomes, stems to over 2 ft long	Fruit .04 in long, covered with hooked bristles	Same as <u>G. ambiguum</u>	
Silk-tassel <u>Garrya elliptica</u> Dougl. M2412, M2414	Dry slopes and ridges, below 2,000 ft	Evergreen shrub, erect 5-9 ft, rarely 20 ft, leaves have definite undulating margins, rough bark	Berry, Mar.-June, round .5 in wide, covered with white soft woolly hairs	Fruit eaten by robins and other songbirds; fair to poor browse for deer	Post-fire sprouter, often called quinine bush; bark, leaves, and fruits contain alkaloid garryine, which is used as a tonic
Fremont silk-tassel <u>Garrya fremontii</u> Torr. M2413, M2414	Dry, brushy slopes, mostly between 2,500-7,000 ft	Evergreen shrub, erect 5-10 ft, often with yellow-green cast, leaves oblong .75-2.5 in long, smooth bark	Berry, Mar.-June, smooth, .25 in wide, purple to black, born in clusters from pendulous catkin tassels, 1-2 in	Fruit eaten by robins and other songbirds; good to fair browse for deer, especially of sprouts after burning	Vigorous post-fire sprouter; invades cut-over and burned areas
Salal <u>Gaultheria shallon</u> Pursh M2411, M2412, M2413, M2414, M2415	Dry to moist woods and brush, below 2,500 ft	Evergreen, low growing shrub, 1-6 ft high, with long shallow roots, post-fire sprouter	Capsule, June-Sept., fleshy base looks like dark berry, many seeds	Fruit eaten by song-birds, deer, black bear, raccons; nesting cover for birds and mammals	White-pinkish flowers are urn-shaped; berries make fine jam and are eaten by Indians
Wintergreen <u>Gaultheria ovatifolia</u> Gray M2415	Dry, yellow pine forests to sub-alpine bogs	Low, spreading shrublet, to 1 in tall, branches to 5 in long	Berry, bright red		

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Globe gilia <u>Gilia capitata</u> Sims M2413, M2415	Dry slopes and open places at lower elevations	Erect annual, to 3 ft tall, stem slender, leaves basal	Seeds to .1 in long		
Manna grass <u>Glyceria</u> spp. R. Br. M2412	Wet and swampy meadows and shallow water	Perennial grass; erect stems, 1-4 ft high, growing from strong rhizomes	Caryopsis, June-Sept., 5-7 nerves on lemma which are parallel	Seeds and foliage very palatable to wildlife; nesting cover and good escape for birds and waterfowl	<u>Glyceria</u> spp. are distinct in having a closed sheath at the base of the leaf blade
Rattlesnake plantain <u>Goodyera oblongifolia</u> Raf. M2413, M2415	Dry to mossy or damp, open to dense forest	Plant to .5 ft tall, leaves in basal rosette	Capsule		
Gumweed <u>Grindelia hirsutula</u> Willd. M2414	Dry to arid slopes and canyons, below 5,000 ft	Perennial herb, erect slender stems, 1-3 ft high	Achene, June-Aug., born from head of yellow flowers 1-2 in across	Seeds possibly eaten by some birds and small rodents	Very resinous and sticky plant; of little forage value
Oak-fern <u>Gymnocarpium dryopteris</u> (L.) Newm. M2411	Moist woods, stream-banks, wet cliffs, at moderate altitudes	Leaves scattered to 7 in long	Spores		
Canyon bog orchid <u>Habenaria sparsiflora</u> Wats. M2413	Wet, boggy areas	Plants to over 2 ft tall, stems leafy at base	May-Aug.		
Alaska rein orchid <u>Habenaria unalascensis</u> (Spreng.) Wats. M2413	Dry woods, to gravelly stream-banks and open mountainsides	Plant 2 ft tall, from tubers, leaves on lower third of stem	Capsule, small, erect		
Jessica stickseed <u>Hackelia jessicae</u> (McGregor) Brand M2413	Moist banks or slopes	Stem erect, basal leaves 6 in long	Nutlet with marginal prickles		
Bloomer's haplopappus <u>Haplopappus bloomeri</u> Gray M2413	Dry, rocky slopes, and open woods, foothills to moderate elevations	Branching shrub, to 2 ft tall, twigs brittle	Achene		
Goldenweed <u>Haplopappus racemosa</u> (Nutt.) Torr. M2413	Meadows, open places, in alkaline soil	Perennial, from taproot, to 3 ft tall, tufted basal leaves			
Bigelow's sneezeweed <u>Helenium bigelovii</u> Gray M2413	Marshy meadows foothills and lower slopes	Perennial, to 3 ft tall, from stout, erect, woody caudex			
Cow parsnip <u>Heracleum lanatum</u> Michx. M2412	Moist hillsides and more or less shaded areas	Perennial herb, erect, 4-6 ft large, 3-6 in wide leaflets	Schizocarp, May-Aug., .25-.5 in long, with large round, flat seeds	Seeds eaten by some species of songbirds and small rodents	Indians ate the stems; flowers are white in large, double umbels
Christmas berry <u>Heteromeles arbutifolia</u> (Roem.) M2412, M2414	Semi-dry, brushy slopes and canyons, below 4,000 ft	Evergreen shrub, to 30 ft tall, 1.5 ft thick, leaves are green, stiff and sharply toothed	Pome, Oct.-Dec., pear-shaped, scarlet, .25 in long	Fruit eaten to some extent by songbirds, rodents, band-tailed pigeons	Invades cut-over areas

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Small-leaf alumroot <u>Heuchera micrantha</u> Dougl. ex Lindl. M2413	Gravelly streambanks and rock crevices, near seal level to subalpine, often on talus slopes	Erect, to 2 ft tall, from basal leaves	Available June-Aug., seeds deep brownish-purple, oblong		
White hawkweed <u>Hieracium albiflorum</u> Hook. M2413, M2415	Open woods and moist or rather dry hillsides, moderate elevations	Plants to over 3 ft tall, stem hairy at the base, leaves basal often tufted			
Houndstongue hawkweed <u>Hieracium cynoglossoides</u> Arv.-touv. M2413	Dry, open places, foothills to moderate elevations	Plants to 3 ft tall, leaves mostly basal			
Vanilla grass <u>Hierochloa occidentalis</u> Buckl. M2412	Dry to moist sites in redwood forests, below 2,000 ft	Perennial grass, erect stems 2-3 ft tall, with long leaves and creeping rhizomes	Caryopsis, Mar.-Aug., awnless, lemma, hairy along the margins	Seeds and foliage eaten to a limited extent by birds and small mammals	Sweet-smelling grass with small panicles of broad bronze-colored spikelets
Velvet grass <u>Holcus lanatus</u> L. M2411, M2412, M2414, M2415	Waste places and disturbed soil, lower mountains	Perennial, with soft, grayish hairs, culms to 3 ft tall	Available June-Sept.	Seeds eaten by a few species of songbirds	Considered a weed in most places
Ocean spray <u>Holodiscus discolor</u> (Pursh) Maxim. M2412, M2413, M2414, M2415	Rocky outcrops and woods below 4,500 ft	Shrub, 4-18 ft, spreading, with double-toothed leaves	Achene, June-Sept., straight upper and convex lower edges	Browsed by deer	Not an invader shrub; small white flowers bend down in 4-8 in long panicles
Ocean spray <u>Holodiscus dumosus</u> (Nutt.) Heller M2413	Dry, rocky valleys and hillsides to well up in the mountains	Low, spreading shrub, to 40 ft tall, reddish twigs ridged, leaves in fascicles of 6 or 7 on spur branches	Achene		Forms large clumps
Common St. John's-wort <u>Hypericum perforatum</u> L. 2411	Wasteland and pastures	Perennial, erect stems 1-several, 2.5 ft tall	Capsule, seeds brown		Serious weed throughout range
Spotted catsear <u>Hypochaeris radicata</u> L. M2415	Weed in lawns, pastures, disturbed soil	Perennial, to 2 ft tall, fibrous roots			
Pinesap <u>Hypopitys monotropa</u> Crantz M2415	In humus of chiefly coniferous forests	Plant to 10 in tall, pinkish to straw-colored, leaves entire	Capsule		
Siskiyou iris <u>Iris bracteata</u> Wats. M2413	Open coniferous forest	Tuft-forming, stem slender simple, to 1 ft high	Capsule	Nectar for hummingbirds; plant eaten by mountain beaver	
Slender-tubed iris <u>Iris chrysophylla</u> Howell M2413	Open woods, mostly of ponderosa pine and Douglas-fir	Clump-forming, flowering stems, to 1 ft tall, flowers off-white to blue	Capsule	Same as <u>I. bracteata</u>	
Wild iris <u>Iris douglasiana</u> Herb. M2414	Grassy slopes and open places on moist to wet sites	Perennial herb, erect, leaves to 3 ft tall, 1-2.5 ft flower stalk	Capsule, May-Aug., 1-2 in long, sharp triangular in cross section	Foliage eaten to limited extent by mountain beaver and other rodents	Attractive wild flower with thick rhizomes
Common rush <u>Juncus effusus</u> L. M2412, M2415	Moist places, coastal tide-flats to montane meadows	Tufted perennial, stems round, to 3 or 4 ft tall	Minute	Plant eaten by rabbits in California	

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Common juniper <u>Juniperus communis</u> L. M2413	Open woods to dry hills, mountain valleys to open rocky slopes, sea level to alpine areas	Prostrate and trailing-branched, shrub to small tree, to 20 ft tall	Berry, available Sept., persistent all year	Fruit eaten by few species of birds including grouse, quail, pheasant; browsed by white-tailed deer	Intolerant of shade
Pale laurel <u>Kalmia polifolia</u> Wang. M2411	Lowland bogs to mountain meadows, sun or shade	Shrub, to 25 ft tall, much-branched often matted, spreads by layering and rhizomes	Small capsule, seeds minute		Poisonous to livestock
Wall lettuce <u>Lactuca muralis</u> (L.) Fresen. M2415	Moist, disturbed soil	Biennial, to 3 ft tall	Achene		
Western larch <u>Larix occidentalis</u> Nutt. M2415	Mountain valleys and lower slopes, somewhat swampy areas, usually in mixed stands	Large tree, to over 225 ft tall, well pruned	Cone, 1 in long	Seeds eaten by spruce grouse as well as a few other birds and mammals	
Nevada peavine <u>Lathyrus nevadensis</u> Wats. M2415	Usually in woodlands, on a variety of sites	Perennial, hairy to 2.5 ft tall, angled but not winged	Pod		
Few-flowered peavine <u>Lathyrus pauciflorus</u> Fern. M2413	Grassland or sagebrush slopes to montane forests	Perennial, with taproot and rootstock, stems erect to 2 ft tall	Pod		
Bog Labrador-tea <u>Ledum groenlandicum</u> Oeder. M2411	Swamps and bogs along the coast, sun or shade	Shrub, to 6 ft tall, leaves linear-elliptic leathery, deep green	Capsule	Browsed by white-tailed deer	
Incense-cedar <u>Libocedrus decurrens</u> Torrey. M2413, M2414, M2415	Mountain slopes and canyons, 2,400-8,200 ft	Evergreen tree, 75-125 ft tall, 3-4 ft thick, aromatic tree	Seeds .5 in long, cone, oblong, 1-1.5 in long	Seeds eaten by some species of songbirds and rodents	Wood used for shingles, post, lead pencils, railroad ties
Parsleyleaf licoricicroot <u>Ligusticum apiifolium</u> (Nutt.) Gray M2413	Thickets, fence rows, open or sparsely wooded slopes, at low elevations	Plants to 5 ft tall, generally branched when well developed			
Gray's lovage <u>Ligusticum grayi</u> Coulter & Rose M2413, M2415	Moist to dry, open or wooded slopes, drier meadows in the mountains	Plant, to 2 ft tall, basal leaves well-developed	Small, elliptical		
Columbia lily <u>Lilium columbianum</u> Hanson M2412	Among ferns and brush in cut-over or virgin forests at low elevations	Perennial herb, stems 2-4 ft tall with leaves in whorls of three at the nodes	Capsule, July-Sept., oblong .25 in		Attractive, coast wild flower; red-orange with many dark purple spots
Twinflower <u>Linnaea borealis</u> L. M2413, M2415	Open or dense woods, at various elevations	Stem slender but woody, trailing or creeping, leafy stems over 4 in long		Plant eaten by white-tailed and mule deer	
Wild blue flax <u>Linum perenne</u> L. M2413	Dry, well-drained soil, to alpine ridges	Woody-crowned perennial, to 2 ft tall	Capsule, May-July	Seeds eaten by rodents	

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Northern twayblade <i>Listera borealis</i> Morong M2415	Light to deep moist woods, often in moss along streams, in mountains	Plant 10 in tall, leaves above mid-length of stem			
Western twayblade <i>Listera caurina</i> Piper M2415	Moist forest and mossy streambanks to subalpine slopes	Plant to 15 in tall, leaves subopposite, well above mid-length of stem			
Northwest listera <i>Listera cordata</i> (L.) R. Br. M2415	Damp, mossy places, along streams or in bogs, occasionally on dry forest floor or open slopes	Plants to 1 ft tall, slender, leaves mid-height on stem			
Tanbark-oak <i>Lithocarpus densiflorus</i> (H. & A.) Rehd. M2411, M2413, M2414	Dry, well-drained, moist sun or shade	Tree, to 110 ft tall, narrow conical crown, bark fissured, evergreen	Nut, matures at the end of the second season	Seeds eaten by the redwood chipmunk; slight use as browse for mule deer	Sprouts abundantly after injury
Howell's desert parsley <i>Lomatium howellii</i> (Wats.) Jeps. M2413	Shaded rocky slopes	Plants to 1.5 ft tall, from slender branching taproot			
Bigseed lomatium <i>Lomatium macrocarpum</i> (Nutt.) Coult. & Rose M2413	Open, rocky hills and plains	Distinct taproot, branched near base			
Barestem lomatium <i>Lomatium nudicaule</i> (Pursh) Coult. M2413	Dry, open or sparsely wooded slopes, lowland to moderate elevations	Stems solitary to several branched crown of a stout taproot, to 3 ft tall			
Nineleaf lomatium <i>Lomatium triternatum</i> (Pursh) Coult. & Rose	Open slopes and meadows, dry to moist soil, lowlands to moderate elevations	Taprooted, stems solitary or few, more or less erect, to 2.5 ft tall			
Honeysuckle <i>Lonicera hispidula</i> Lindl. M2413, M2414	Woods and thickets	Vine, with hollow twigs	Red berry, .2 in thick, available July-Feb.	Nesting cover for birds and small mammals	
Black-fruited honeysuckle <i>Lonicera involucreata</i> (Richard) Banks ex Spreng. M2412	Moist canyon flats and shady mountain streams near coast	Deciduous shrub, erect, 2-10 ft high, much branched, simple leaves occur in pairs	Berry, July-Oct., round or oval, black, .33 in thick, occurs in pairs from paired yellow flowers	Fruit eaten by songbirds and small mammals; good to fair browse value for deer and elk	Post-fire non-sprouter large conspicuous bracts below flowers become reddish as fruit ripens
Torrey's lotus <i>Lotus oblongifolius</i> Greene M2413	Wet areas	Perennial, erect or ascending, to 1.5 ft tall, flowers yellow	Pod, 1-2 in long	Seeds eaten by several species of quail, pocket mouse, mule deer	
Silverback luina <i>Luina hypoleuca</i> Benth. M2413	Cliff crevices, talus slopes, rocky places	Perennial, with stout caudex, stems several to many, to 1.5 ft tall	Achene		
Lupine <i>Lupinus</i> spp. L. M2413, M2415	Dry slopes, mesas open forest, 100-10,000 ft, sun	Annual or perennial forb with terminal clusters of flowers, 6-24 in	Flat pod, constricted between seeds, spring-fall	Seeds eaten by quail, turkey, deer	Some species poisonous to livestock
Tree lupine <i>Lupinus arboreus</i> Sims M2412, M2414	Coastal strand sandy places, below 100 ft area	Shrub, 3-6 ft tall, bushy and spread out over several square ft	Legume, May-Aug., brown, 1.5-3 in long, pod with 8-12 seeds	Seeds eaten by quail, other birds, mammals; fair browse value to deer and brush rabbits	Attractive, late spring blooming shrub that should be allowed in ROW

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Lupine <u>Lupinus formosus</u> M2414, M2415	Dry, open fields and sandy places, below 2,500 ft	Perennial herb, several stems, 1-3 ft, lying down or ascending	Legume, May-Oct., silky-hairy, 1-1.5 in long with 5-7 seeds	Seeds eaten by quail and some rodents	Attractive violet-lilac or white flowers are on 4-10 in terminal racemes
Broadleaf lupine <u>Lupinus latifolius</u> Agardh M2413, M2415	Open subalpine ridges to wooded slopes, occasionally on lowlands	Stems up to 3 ft tall, mostly 6-8 leaves	Pod, to 1 in long	Seeds eaten by quail and some mammals	
Velvet lupine <u>Lupinus leucophyllus</u> Dougl. ex Lindl. M2413		Perennial, with branched crown and several stems, to 2.5 ft tall	Pod	Same as <u>L. latifolius</u>	
Spreading woodrush <u>Luzula divaricata</u> Wats. M2415	Woods to open montane or subalpine slopes, dry to moist areas	Matted perennial, 1.5 ft tall, erect	Capsule		
Skunk cabbage <u>Lysichiton americanum</u> Hult. & St. John M2411, M2412	Swamp, wet soils	Perennial, to 3 ft tall			
Shasta aster <u>Machaeranthera shastensis</u> Gray M2413	Dry, open places, especially in the mountains	Biennial, to 2 ft tall, taprooted	Achene		
False lily-of-the-valley <u>Maianthemum dilatatum</u> (Wood) Nels. & Macbr. M2411, M2415	Shaded or moist streambanks, open to dense moist woods, sea level to 3,500 ft elevation	Stems to 1.5 ft tall, erect, flowering stems with 2 leaves	Red berry		
Showy oniongrass <u>Melica spectabilis</u> Scribn. M2413	Wet to rather dry meadowland, usually in moist loamy meadows or open parks in montane forests	Rhizomatous perennial, culms to 3 ft tall	Available late May-July	Seeds eaten by songbirds; plant eaten by elk	
Broad-leaved lungwort <u>Mertensia ciliata</u> (Torr.) G. Don M2413	Streambanks, wet meadows, damp thickets, wet cliffs, foothills to high elevations	Stems numerous, to 6 ft tall, leaf blade oval			
Bush monkey-flower <u>Mimulus aurantiacus</u> Curt. M2412, M2414	Grows on rocky outcrops along streams and woods, below 2,000 ft	Erect, branched shrub, 3-5 ft tall, dark green and sticky foliage	Capsule, May-Aug., .75-1 in long, seeds fusiform, about .05 in long		Flowers are brownish-yellow, funnel-shaped, and narrow-throated
Yellow monkey-flower <u>Mimulus guttatus</u> DC. M2412, M2414	Abundant in moist to wet shaded or open areas, below 10,000 ft	Perennial herb, 1-3 ft high, stem often rooting at nodes of creeping rootstocks	Capsule, Apr.-Aug., many small brown seeds		Flowers yellow with brown to purple dots in the flower throat, born in terminal racemes
Miterwort <u>Mitella</u> spp. L. M2411	Moist damp woods	Perennials, with rhizomes, leaves basal		Plant eaten by ruffed grouse	
Cross-shaped miterwort <u>Mitella stauropetala</u> Piper M2415	Open to dense woods, more or less moist	Stem to 1.5 ft tall, leaves 5-7 lobed		Plant eaten by grouse	
Monardella <u>Monardella odoratissima</u> Benth. M2413	Open, wet or dry, often rocky places, to moderate elevations	Stems numerous to 1.5 ft tall, loosely ascending or erect, slender			

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Miner's lettuce <i>Montia perfoliata</i> (Donn) Howell M2413	Sandy, open to shady woods of valleys and lower mountains, usually moist sites	Taprooted annual, ascending to erect		Seeds eaten by a variety of songbirds and mammals	
Indian lettuce <i>Montia sibirica</i> (L.) Howell M2411, M2412, M2414, M2415	Moist, usually shaded places, lowlands to middle elevations	Taprooted annual stems usually several to 2 in tall		Seeds eaten by a variety of songbirds	
Miner's lettuce <i>Montia spathulata</i> (Dougl.) Howell M2413	Dry to moist soil	Erect annual, with slender taproot, stems to 3 in long	Capsule	Same as <i>M. sibirica</i>	
Wax-myrtle <i>Myrica californica</i> Cham. M2412	Canyons and moist slopes, below 500 ft	Evergreen shrub, 6-12 ft tall or even a small tree 20-30 ft, leaves leathery and aromatic	Nutlet, May-July, dark purple .25 in thick, thinly covered with granular gray wax	Fruit at certain times of year are major food for band-tailed pigeon and many songbirds; browse value low for deer and elk	Post-fire sprouter; attractive shrub
Short-stemmed navarretia <i>Navarretia divaricata</i> (Torr.) Greene M2413	Dry, open slopes, foothills to moderate elevations	Low, slender annual, flower head rarely 2 in above ground	Capsule		
Indian pond lily <i>Nuphar polysepalum</i> Engelm. M2412, M2414	Freshwater ponds and lakes, slow moving water, below 7,500 ft	Perennial aquatic herb, large stout rootstock, large floating or erect leaves, flowers yellow	Nutlike, Apr.-Sept., hard, 1-1.5 in thick	Seeds eaten by waterfowl to a limited extent; rhizomes eaten by muskrats; nesting cover for waterfowl broods	Indians used this plant for food; floating leaves are large and heart-shaped 6-12 in broad and 6-14 in long
Water parsley <i>Oenanthe sarmentosa</i> Prest M2411	Low wet places, in thickets and along streams and in marshes or around sloughs	Soft, weak, fibrous, rooted, to 3 ft tall, leaves 2 or 3 pinnate	Small .04 in long		
Devil's club <i>Oplopanax horridum</i> (Sm.) Miq. M2411, M2415	Moist woods, near streams, in shade	Deciduous shrub, to 9 ft tall, well-armed	Drupe, available July-Oct.	Preferred food of elk	
Mountain owlclover <i>Orthocarpus imbricatus</i> Torr. M2413	Meadows and open slopes in the mountains	Plants over 1 ft tall, leaves 1.5 in long, linear, entire			
Mountain sweetroot <i>Osmorhiza chilensis</i> H. & A. M2413	Woodlands, sea level to moderate elevations	Perennial, stems solitary or in 2 or 3, slender, to 3 ft tall, leaflets thin			
Oregon oxalis <i>Oxalis oregana</i> Nutt. M2411, M2412, M2415	Moist woods	Perennial, with rhizome, low plant, to 3 in tall	Capsule		
Oregon boxwood <i>Pachystima myrsinites</i> (Pursh) Raf. M2413, M2415	Well-drained, shady or open sites	Shrub, to 20 ft tall, leaves evergreen, leathery	Seed dark brown, available July-Sept.	Foliage eaten by Richardson's grouse, black-tailed deer, white-tailed deer	
Leafy lousewort <i>Pedicularis racemosa</i> Dougl. ex Hook. M2413, M2415	Coniferous woods in mountains	Perennial, from woody stalk, to 1.5 ft tall, stems clustered			

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Gay penstemon <u>Penstemon laetus</u> Gray M2413	Dry, open, often rocky or gravelly slopes	Perennial, to 1.5 ft tall, flowering stems several to many	Capsule, ripe June-July		
Mountain false-caraway <u>Perideridia bolanderi</u> (Gray) Nees. & Macbr. M2413	Dry, open, often rocky hillsides, ridges and dry washes, foothills and high plains	Plants to 2 ft tall, slim solitary stem	Oblong, to .2 in long		
Varileaf phacelia <u>Phacelia heterophylla</u> Pursh M2413	Dry, open places at lower elevations	Biennial, with single erect, stout stem, to 4 ft tall, leaves veined			
Lewis mock orange <u>Philadelphus lewisii</u> Pursh M2413	Gullies, water-coarces, rocky cliffs, talus slopes, sea level to 7,000 ft, in sun	Rounded erect shrub, to 12 ft tall, leaf oval with coarse teeth	Capsule	Browsed by deer; seeds eaten by squirrels and quail	
Alpine timothy <u>Phleum alpinum</u> L. M2413	Streambanks, meadows, montane to subalpine	Strongly tufted perennial to 1.5 ft tall, blades flat		Seeds eaten by a few songbirds	
Periwinkle phlox <u>Phlox adsurgens</u> Torr. M2413	Wooded slopes, at moderate elevations in the mountains	Perennial, stems loosely curved, ascending, up to 1 ft tall		Nectar for hummingbirds; plant eaten by mule deer	
Spreading phlox <u>Phlox diffusa</u> Benth. M2413	Forests and open rocky slopes at moderate to high elevations	Perennial, mat-forming, up to 3 in tall		Same as <u>P. adsurgens</u>	
Showy phlox <u>Phlox speciosa</u> Pursh M2413	Sagebrush and ponderosa pine areas	Perennial, to 1.5 ft tall, shrubby toward base		Same as <u>P. adsurgens</u>	
Ninebark <u>Physocarpus capitatus</u> (Pursh) Ktze. M2413, M2414	Streambanks, swamps, and lake margins to moist woods in lower mountains, sun or shade	Spreading to erect shrub, to 15 ft tall, branches angled	Follicle	Plant eaten by mountain goat	
Mallow ninebark <u>Physocarpus malvaceus</u> (Greene) Ktze. M2415	Canyon bottoms and rocky hillsides to ponderosa pine and Douglas-fir forests	Spreading to erect shrub, to 6 ft tall	Follicle	Occasionally browsed	
Weeping spruce <u>Picea breweriana</u> Wats. M2414	Cold, shaded areas in hollows and north slopes, 4,600-7,500 ft	Evergreen tree, 80-100 ft high, 2-3 ft thick	Seeds dark brown, .13 in long, cone oblong, 2-5 in	Seeds eaten by songbirds and rodents; nesting cover for songbirds	Attractive, useful tree, allow on ROW edge
Englemann spruce <u>Picea engelmannii</u> Parry ex Engelm. M2413, M2415	Montane, around swamps, above 3,000 ft elevation, sun or shade	Straight tree, to 150 ft tall, needles to 1 in long, sharp but not stiff	Cone, seeds shed by Oct.	Seeds eaten by birds including dusky grouse; browsed by black-tailed and white-tailed deer, squirrel, porcupine	
Sitka spruce <u>Picea sitchensis</u> (Bong.) Carr. M2411, M2412	Moist to swampy places, shaded areas below 1,200 ft	Evergreen tree, 150-200 ft tall, 3-6 ft thick, wide spreading branches and drooping branchlets, post-fire non-sprouter	Seeds red-brown, .13 in long, cone 2-4 in long	Seeds eaten by songbirds, rodents, woodpeckers; poor browse for elk and deer; needles eaten by blue grouse in winter	Valuable lumber tree; provides important nesting, roosting and winter cover for birds; allow on ROW edge

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Knobcone pine <i>Pinus attenuata</i> Lemmon M2413	Dry, gravelly mountain slopes at low elevations	Small tree, to 45 ft tall, forming straggling crowns with sparse foliage	Cone, matures Sept. of second season, persistent	Seeds eaten by songbirds and many other animals	Very resistant to drought
Lodgepole pine <i>Pinus contorta</i> Dougl. M2411, M2412, M2413 M2415	Dry mountain slopes, occasionally to timberline, often in pure stands in burned areas	Evergreen tree, 30-110 ft high	Cone, 1.5-2.5 in long, long persistent on tree, good crops 1-3 year intervals, Aug.-Sept.	Very important; seeds eaten by many birds and mammals; needles eaten by grouse and, hooved browsers; bark and wood eaten by porcupines and rodents	Valuable cover for gamebirds, fur bearers, hooved browsers and other ground animals
Jeffrey pine <i>Pinus jeffreyi</i> Grev. & Balf. M2413	Well-drained sunny sites, seedling tolerant of shade, mature tree intolerant	Tree, to 90 ft tall, needles in 3's	Cone	Seeds eaten by birds including grouse and quail; slightly browsed	
Sugar pine <i>Pinus lambertiana</i> Dougl. M2413, M2415	Cool, fairly moist, in mixed coniferous forest	Large tree, up to 250 ft tall, needles in 5's deep bluish-green, to 4 in long	Large cone, to 18 in long, seeds brown, .2 in long	Seeds eaten by porcupine, gray fox, chickaree, chipmunks, squirrels; slightly browsed by mule deer	
White pine <i>Pinus monticola</i> Dougl. M2411, M2413, M2415	Moist valleys to fairly open and dry slopes, sea level to 6,000 ft elevation	Tree, to 90 ft tall, bark thin, needles in 5's, light bluish-green, to 4 in long	Cone, 10 in long, seeds available Sept.	Seeds eaten by chipmunk and porcupine; slightly browsed by mule deer	
Bishop pine <i>Pinus muricata</i> D. Don M2412	Low hills and flats near the coast, found in either dry or swampy soils in pure stands	Evergreen tree, 40-50 ft tall, 2-3 ft thick, pyramidal to flat-topped crown, post-fire nonsprouter	Seeds, .25 in long nearly triangular, 2-4 in cone in clusters, 3-5	Seeds eaten by songbirds and rodents; poor browse value for deer; nesting cover for songbirds	Wood occasionally used for lumber; allow on ROW edge
Ponderosa pine <i>Pinus ponderosa</i> Laws. M2413, M2415	Lower levels, mostly where rather dry, often in open pure stands	Evergreen tree, up to 220 ft, bark becoming thick with age, leaves needlelike and persistent	Cone, 3-5.5 in long, deciduous when mature, Aug.-Sept.	Same as <i>P. contorta</i>	Same as <i>P. contorta</i>
Monterey pine <i>Pinus radiata</i> D. Don M2412	Found in scattered colonies on dry bluffs and slopes, below 1,000 ft	Evergreen tree, 40-100 ft tall, 1-3 ft thick, symmetrical or flat-topped with age, post fire nonsprouter	Seeds, dark, .25 in long, reddish brown, oval cone, 2-5 in long	Seeds eaten by some species of mammals and songbirds; poor browse value to deer	Tree has no commercial value in native range; used for reforestation and as timber tree in New Zealand, Australia and South Africa
Digger pine <i>Pinus sabiniana</i> Dougl. M2414	Dry slopes and ridges, below 4,500 ft	Evergreen tree, 30-60 ft tall, 1-2 ft thick, trunk often divided	Seeds black-brown, to 1 in long, large oval cone, 5-8 in long	Seeds eaten by jays, woodpeckers, small rodents; wood gnawed by porcupines; poor browse value for deer	Indians ate and stored seeds; wood of little use
Fowl bluegrass <i>Poa palustris</i> L. M2415	Moist areas, often at the edge of water, sea level to open meadows or forested areas in mountains	Tufted perennial, to 4 ft tall	Available May-Aug.	Plant eaten by coot, other birds, mammals	
Sandberg bluegrass <i>Poa sandbergii</i> Vasey M2415	Poor soils, dry areas	Strongly tufted perennial, over 2 ft tall, usually purplish all over	Available Apr.-June	Same as <i>P. palustris</i>	
Skunkleaf polemonium <i>Polemonium pulcherrimum</i> Hook. M2413	Moist or shaded places, moderate to high elevations	Perennial, to 1.5 ft tall, loosely erect, basal leaves well-developed			

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
California milkwort <u>Polygala californica</u> Nutt. M2413	Wooded areas	Stems numerous, erect or spreading, to 1 ft tall, leaves oval to elliptical	Capsule		
Smartweed <u>Polygonum</u> spp. L. M2412, M2414	Several species in moist to marshy areas in open country	Annual or perennial herbs; aquatic, marginal or amphibious	Achene, May-Sept., trigonous to lenticular in shape, .13 in long	Seeds eaten by waterfowl, upland gamebirds, muskrats	Also called knotweed because of the thickened joints in the stems
Wing knotweed <u>Polygonum majus</u> (Meisn.) Piper M2413	Dry, semibarren, gravelly to heavy soil	Erect, annual, simple to freely branched, to 1.5 ft tall, leaves numerous	Achene, black and shining	Seeds eaten by many birds and mammals	
American bistort <u>Polygonum bistortoides</u> Pursh M2413	Streambanks, moist or swampy meadows to alpine slopes	Perennial from a thick, erect or ascending rhizome, flowering stems to over 2 ft tall, leaves basal	Achene, yellow, .1 in long	Seeds eaten by upland gamebirds, songbirds, small mammals	
Sword fern <u>Polystichum munitum</u> (Kaulf.) Presl M2411, M2412, M2413, M2414, M2415	Damp, shaded woods, usually under 2,500 ft	Coarse, evergreen fern, forming clumps of fronds, 2-5 ft high	Spore-bearing plant	Escape cover for some species	Attractive fern; should be encouraged in shaded edges of ROW
Rock sword fern <u>Polystichum scopulinum</u> (D.C.Eat.) Maxon M2413	Cliff crevices and open rocky slopes (on a variety of conditions, ranging from acid to ultra-basic)	Leaves, to 1.5 ft tall, closely crowded	Spores		
Black cottonwood <u>Populus trichocarpa</u> T. & G. ex Hook. M2411, M2412, M2414	Along streams and rich bottomlands in canyons and valleys between 5,000-9,000 ft	Deciduous tree, 50-125 ft tall, 2-4 ft diameter, broad crown of upright branches	Capsule, June-Aug., 3-valved, .25 in thick and finely hairy	Buds and catkins eaten by blue and ruffed grouse; fair forage value for rabbits and deer	Post-fire sprouter; invades cut-over and burned areas; wood used for paper pulp and veneer
Common selfheal <u>Prunella vulgaris</u> L. M2411	Moist places, sea level to moderate elevations	Perennial, erect to prostrate stems, 1.5 in-2 ft long		Seeds eaten by a few songbirds	
Bitter cherry <u>Prunus emarginata</u> (Dougl.) Walp. M2414, M2415	Moist woods, along watercourses, grassland into mountains, medium elevations, in sun	Straggly shrubs, to 40 ft tall, erect	Drupe, available May-Sept.	Very important browse for mule deer; fruit eaten by chipmunks and birds including grouse	Forming dense thickets
Western choke-cherry <u>Prunus virginiana</u> M2414	Dampish places in woods and on brushy slopes and flats, below 8,200 ft	Erect, deciduous shrub, 3-25 ft tall, 8 in diameter, post-fire sprouter	Drupe, June-Aug., dark red, round, .25 in thick	Fruit eaten by songbirds, small mammals, raccoons; good browse value for deer and rabbits	Fruit ill-smelling but edible by man late in season; very poisonous at certain growth stages to sheep
Douglas-fir <u>Pseudotsuga menziesii</u> (Mirb.) Franco M2411, M2412, M2413, M2414, M2415	Moist slopes below 5,000 ft	Evergreen tree, 100-130 ft tall, up to 230 ft, up to 8 ft thick, post-fire nonsprouter	Seeds winged, .25 in long, cone 3-4 in long with 3-pointed bracts beyond ends of scales	Seeds eaten by songbirds, tree squirrels, other rodents; fair browse value to deer and elk; needles eaten by blue grouse in winter	Probably most important lumber tree in N. America; used as ornamental and for reforestation
California tea <u>Psoralea physodes</u> Dougl. M2413	Common on logged off land	Perennial, sparingly branched, to 2.25 ft tall, leaflets, 3 to 2 in long	Pod		

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bracken fern <i>Pteridium aquilinum</i> (L.) Kuhn M2411, M2412, M2413, M2414, M2415	Widespread, in open and wooded moist areas from the coast inland	1-5 ft tall, fronds erect, blades 3 times pinnate	Spore-bearing plant	Vegetative parts browsed by deer and elk	Spreads by underground rhizomes
Large pyrola <i>Pyrola asarifolia</i> Michx. M2415	Moist ground	Flowering stems, to 1.5 ft tall, numerous basal leaves		Plant eaten by ruffed grouse	
Toothed pyrola <i>Pyrola dentata</i> Smith, J. G. M2413	Coniferous forests, especially yellow pine	Conspicuous rosettes of leaves, flowering stems, 1-several, to 10 in tall		Plant eaten by ruffed grouse	
Whitevein pyrola <i>Pyrola picta</i> Smith, J. G. M2413, M2415	Coniferous forests	Flowering stems, single, often leafless, 10 in tall		Same as <i>P. dentata</i>	
One-sided wintergreen <i>Pyrola secunda</i> L. M2413, M2415	Usually under conifers	Plant widespreading by rhizomes, flowering stems, single, to 6 in tall		Same as <i>P. dentata</i>	
Coastal live oak <i>Quercus agrifolia</i> Nee M2414	Common in valleys and not-so-dry slopes, below 3,000 ft	Evergreen tree, 60-90 ft tall, 2-3 ft thick, short trunk and large branches form a broad, rounded, wide-spreading crown	Acorn, chestnut brown, conical, to 1.5 in long, cup covers only base of acorn, matures the first fall	Acorns provide food for deer, tree squirrels, other birds, mammals; fair browse value for deer	Post-fire sprouter; Indians ground the acorns into meal, then water leached them of tannins and cooked it as mush or bread
Canyon live oak <i>Quercus chrysolepis</i> M2412, M2413, M2414	Canyons and moist slopes below 6,500 ft, typical of rocky, canyon sites	Evergreen, round spreading tree, 60-80 ft tall, 1-5 ft thick, smooth, white bark	Acorn, ovate, 1-1.25 in long, fuzzy, golden hairs cover scaly cup	Acorns are eaten by numerous species of birds and small mammals; poor browse value for deer	Post-fire sprouter; has a tough, fine quality wood, becoming of increasing importance; allow on ROW edge
Oregon white oak <i>Quercus garryana</i> Douglt. M2413, M2414, M2415	Dry prairies, foothills to rocky bluffs	Deciduous tree, to 60 ft tall, with thick-furrowed and scaly bark	Acorn, produced annually	Acorns eaten by pigeons, woodpeckers, pheasants, bear	
California black oak <i>Quercus kelloggii</i> Newb. M2413, M2414	Drier soils on mountain slopes and gravelly valleys, between 1,500-6,500 ft, at times to 200 or up to 8,000 ft	Deciduous tree, 50-100 ft high, 1-3 ft thick, leaves 3-lobed on each side with 1-3 bristly-tipped teeth	Acorn, oblong, 1-1.25 in long, deeply set in the cup, maturing the second year	Seeds eaten by band-tailed pigeons, western gray squirrel, woodpeckers, deer; excellent browse value for deer	Post-fire sprouter; once a major staple food of California Indians; valuable tree, should be allowed on ROW edge
California buttercup <i>Ranunculus californicus</i> Benth. M2414	Moist hillsides and meadows, below 3,000 ft	Perennial herb, with many erect stems, 9-20 in high, and solitary yellow flowers	Achene, Apr.-July, small, 30-35 in a rounded head	Seeds eaten by songbirds, waterfowl, California quail; foraged by deer and rodents	Many stout and fibrous roots
Coffeeberry <i>Rhamnus californica</i> Esch. M2413, M2414	Dry flats, moist hillsides and ravines, rocky ridges, below 3,500 ft	Evergreen shrub, 4-6 ft high with 1-3 in long leaves, post-fire sprouter	Berry, Aug.-Oct., oval, black when ripe, .25 in long, 2-seeded	Fruit eaten by small mammals and songbirds; browsed by deer, especially young sprouts	Attempt to grow commercially to make coffee from berries was a failure
Hollyleaf buckthorn <i>Rhamnus crocea</i> Nutt. M2414	Dry washes and canyons, below 3,000 ft	Evergreen shrub, .5-3 ft high with rigid, spine-like branches	Berry, Aug.-Oct., red, oval, .25 in long, 2-seeded	Fruit eaten by songbirds and rodents; excellent browse for deer	Post fire-sprouter; Indians ate berries; allow on ROW edge
Cascara <i>Rhamnus purshiana</i> DC. M2412, M2414, M2415	Dry, well-drained or moist sites, in sun or shade, canyons and lower mountain slopes, below 5,000 ft	Deciduous shrub, 6-30 ft high with thin leaves 3-8 in long, smooth, dark gray bark	Berry, July-Sept., round, black, .25-.5 in diameter, 3-seeded	Fruit eaten by small mammals, songbirds, grouse, black bear, raccoon; fair to poor browse value for deer; nesting cover for songbirds	Bark possesses cathartic properties and is collected for the drug cascara sagrada, which is used in laxatives

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
White rhododendron <u>Rhododendron albiflorum</u> Hook. M2415	Wet places, along streams, usually montane, shade	Shrub, to 6 ft tall, deciduous	Capsule, heavy walled		Poisonous if grazed in large quantities
Pacific rhododendron <u>Rhododendron macrophyllum</u> G. Don M2411, M2412 M2413, M2414, M2415	Moist, well-drained, in sun	Evergreen shrub, 15 ft tall, leaves leathery, to 8 in long	Woody capsule		Much cultivated
Western azalea <u>Rhododendron occidentale</u> T. & G. M2412, M2413, M2414	Well-drained moist, shade or occasionally full sun	Spreading shrub, to 15 ft tall	Capsule	Foliage eaten by mountain beaver	Important livestock poisoning plant
Poison oak <u>Rhus diversiloba</u> T. & G. M2412, M2413, M2414	Low places, thickets and grassy slopes, below 5,000 ft	Deciduous shrub, erect or spreading, 1-6 ft high, leaves trifoliate, post-fire sprouter	Drupe, June-Aug., dry, berrylike waxy-white, .25 in thick	Fruit eaten by flickers, sapsuckers, other songbirds; good browse for deer, especially young sprouts after burning	Fruit falls soon after maturity; prolific sprouter; oil in leaves irritates human skin
Squawbush <u>Rhus trilobata</u> Nutt. M2414	Dry slopes, thickets, and canyon bottoms, below 5,000 ft	Deciduous shrub, 2-3.5 ft tall, up to 8 ft across, leaves trifoliate, leaflets 3-lobed	Drupe, June-Aug., fleshy, berrylike, .25 in across, red, sticky to touch	Fruit eaten by jays, woodpecker, small mammals; fair to poor browse value to deer	Vigorous sprouter; leaves do not cause dermatitis to human skin; stems used in baskets
Siskiyou gooseberry <u>Ribes binominatum</u> Heller M2413	Well-drained sites, in sun	Shrub with trailing branches 3 ft long, nodal spines, under .2 in long	Berry, covered with spines		
Gooseberry <u>Ribes californicum</u> Hook. & Arn M2414	Open slopes and rocky canyons, below 2,500 ft	Shrub, 2-6 ft high, intricately branched, post-fire sprouters	Berry, July-Sept., round, reddish, .5 in thick, bristly	Fruit eaten by birds and mammals; good to fair browse value for deer	Early successional species, invades cut-over areas
Swamp gooseberry <u>Ribes lacustre</u> (Pers.) Poir. M2415	Moist woods and streambanks to drier forest slopes or subalpine ridges	Erect to spreading shrub, to 6 ft tall, a few nodal spines, leaves cordate	Berry, available in Aug.		
Pioneer gooseberry <u>Ribes lobbii</u> Gray M2413	Creekbanks and lowland valleys to open or forested montane slopes	Freely branched, spreading	Berry	Fruit eaten by Lewis woodpecker	
Hupa gooseberry <u>Ribes marshallii</u> Gray M2413	Well-drained, in sun	Low, spreading shrub, nodal spines	Berry		Mat forming shrub
Canyon gooseberry <u>Ribes menziesii</u> Pursh M2412, M2414	Moist to dry soils in canyons and flats, under 1,000 ft	Shrub, 4-8 ft high, well armed with thorns, loosely branched, leaves .5-1 in long, 3-5 lobed	Berry, July-Sept., round, dark purple, .25 in thick, covered with stiff spine-like bristles	Fruit eaten by songbirds and mammals; fair to good browse value for deer	Invades cut-over areas; white petals with red sepals; berries mixed into other foods by Indians for flavoring
Red flowering currant <u>Ribes sanguineum</u> Pursh M2412, M2414	Moist to dry soils in shaded areas or cut-over woods	Shrub, 3-10 ft high, stems slender, erect or spreading, leaves 5-lobed and round	Berry, June-Aug., bluish-black, round-oblong	Fruit eaten by songbirds, raccoons, rodents; good to fair browse value for deer	This species has many different varieties; blood-red to pinkish flowers
Sticky currant <u>Ribes viscosissimum</u> Pursh M2413	Along creeks and on open to heavily timbered, moist to rather dry slopes, to timberline	Erect to spreading, unarmed shrub, to 6 ft tall	Berry, ovoid, to .2 in long, bluish-black	Fruit eaten by ruffed grouse, Richardson's grouse; browsed by mule deer and beaver	Deep root system

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Baldhip rose <i>Rosa gymnocarpa</i> Nutt. M2413, M2414, M2415	Shaded woods and slopes, under 6,500 ft	Erect shrub, 2-5 ft high, slender-stemmed, armed with slender straight prickles, 5-7 oval leaflets	Fleshy hip, June-Aug., rounded, reddish, .25-.5 in, thick, containing many hairy achenes	Hips and vegetative parts of plant eaten by birds, small mammals, deer, black bear; nesting and protective cover for songbirds	Rose hips remain on the shrubs thru the winter and into next year providing available food to animals if needed
Woods' rose <i>Rosa woodsii</i> Lindl. M2413	Moist places in foothills and lowlands	Strongly armed to unarmed shrub, 5-9 leaflets, stems to over 6 ft tall	Hip, slender	Fruit eaten by several birds and mammals	
Dwarf bramble <i>Rubus lasiococcus</i> Gray M2415	Moist to dry soil, sparse to dense woods, from 1,500-5,500 ft elevation	Unarmed, trailing perennial with stolons, rooting freely	Juicy, cluster of drupelets, red, available June-Aug.	Fruit eaten by several species of birds and mammals; very valuable food source	
Western raspberry <i>Rubus leucodermis</i> T. & G. M2414, M2415	Slopes and canyons below 7,000 ft	Stems arched and branched, about 6 ft long with straight prickles	Aggregate of drupelets, July-Sept., purple to yellowish-red, .5 in diameter	Fruit eaten by numerous birds and mammals; fair browse value for deer	Invader, post-fire sprouter; this and other <i>Rubus</i> spp. fruits used extensively by Indians
Snow dewberry <i>Rubus nivalis</i> Dougl. M2415	Open to deeply shaded, usually moist areas up to 5,000 ft elevation	Trailing perennial rooting freely, prickly stems, up to 6 ft long	Cluster of drupelets	Fruit eaten by several species of birds and mammals	
Thimbleberry <i>Rubus parviflorus</i> Nutt. M2412, M2413, M2414, M2415	Dry to moist soils in open woods and canyons under 8,000 ft	Deciduous shrub, 3-6 ft high, bark shreddy, simple leaves, 3-7 in wide	Aggregate of drupelets, June-Aug., scarlet, 4-7 white flowers in corymbs	Fruit eaten by songbirds, band-tailed pigeons, rodents; fair to poor browse value	Post-fire sprouter; useful shrub for cover in ROW
Strawberry-leaf blackberry <i>Rubus pedatus</i> Sm. M2411, M2415	Mossy banks, open or dense, usually moist woods, sea level to near timberline	Perennial, with herbaceous stems over 1 in long, unarmed	Cluster of drupelets, red, juicy, available May-July	Fruit eaten by many birds and small mammals	Mat-forming, used as ground cover in gardens
Himalaya-berry <i>Rubus procerus</i> Muell. M2412, M2414	Dry to moist roadsides, old fields, etc., escaped plant becoming widely naturalized	Robust, evergreen vine with recurved thorns, forms thickets, 5 leaflets	Aggregate of drupelets which are large, shiny black, round, June-Sept., white flowers	Berrylike fruit eaten by many birds and mammals, especially bear; fair browse value to deer and elk	Invader, post-fire sprouter; useful plant on ROW in some places; good escape and nesting cover for animals
Trailing blackberry <i>Rubus ursinus</i> Cham. & SchTecht. M2411, M2413, M2415	Prairies, clearings, and open to fairly dense woods, especially logged or burned areas, middle elevations	Perennial, to 18 ft long, stems rooting at tips, armed	Blackberry, to 1 in, available Apr.-Aug.	Very valuable for food as well as cover and nesting sites for small birds	
California coneflower <i>Rudbeckia californica</i> A. Gray M2413	Moist places	Stout perennial, to 3 ft tall, stem unbranched	Achene		
Western coneflower <i>Rudbeckia occidentalis</i> Nutt. M2413	Streambanks and moist woods	Perennial, to 6 ft tall, coarse	Achene		
Arrowhead <i>Sagittaria</i> spp. L. M2412	Ditches, ponds, swampy areas	Perennial herbs, usually rhizomatous and often tuber producing	Achene, flattened and usually winged	Seeds and tubers eaten by ducks, swans, wetland birds, muskrat, porcupine	
Pickleweed <i>Salicornia</i> spp. L. M2412	Coastal salt marsh, more on higher parts of salt marsh	Low, very juicy-stemmed herb, with jointed stems and scale leaves	Utricle oblong, the one seed is vertical	Seeds provide minor feed for waterfowl	Also called salt-worts because of salty environment and taste

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Willow <i>Salix</i> spp. L. M2412, M2413, M2414 M2415	In general, along streams, bottomlands, or similar places where soil is moist	Most are deciduous shrubs, 4-12 ft tall, some are trees up to 50 ft, winter buds are covered by 1 scale	Capsule, July-Sept., small, 2-valved, containing many minute seeds having tufts of white silky hairs	Winter buds eaten by some birds, small mammals, deer; leafless twigs and sprouts fair browse value for deer, elk, rabbits	All but a few are post-fire sprouters; invades cut-over and burned areas forming dense thickets; often used to stabilize streambank erosion
Coast willow <i>Salix hookeriana</i> Barr. M2411	Seldom more than 5 miles from salt water	Stout, branching shrub, to 20 ft tall, leaves elliptical to 4 in long	Nutlet	Seeds and buds eaten by a variety of birds and browsers	
Pacific willow <i>Salix lasiandra</i> Benth. M2412, M2414	Streambanks, below 8,000 ft	Deciduous tree, 15-50 ft high, 12-14 in thick, red-brown bark	Capsule, July-Sept., .25 in long, brown to straw colored	Fair browse value from leafless twigs in winter for deer, elk, rabbits	Post-fire sprouter; invades cut-over and burned areas
Blue elderberry <i>Sambucus cerulea</i> Raf. M2414	Moist places in open woody canyons or flats up to 5,500 ft	Deciduous shrub, many-stemmed, 4-10, up to 30 ft high, 5-7 leaflets, 1-3 in long, lined with tiny teeth	Drupe, Aug.-Oct., berry-like, blue to black, .25 in wide, covered with whitish bloom	Fruit eaten by numerous species songbirds, small mammals, band-tailed pigeons; fair browse for deer in spring	Post-fire sprouter; berries can be crushed into juice; Indians used berries for flavoring in meal
Red elderberry <i>Sambucus racemosa</i> L. M2411, M2412, M2414, M2415,	Damp woods, moist canyons and flats at lower elevations	Deciduous woody shrub, 6-20 ft high, leaves hairy beneath and often above	Drupe, July-Oct., round, berrylike bright scarlet and .25 in thick	Berries relished by birds, small mammals, deer, livestock; fair browse value for deer and elk	Post-fire non-sprouter; white flowers are in clusters 2.5 in broad
Yellow mats <i>Sanicula arctopoides</i> H. & A. M2411, M2414	Sandy flats and open hillsides, under 1,000 ft	Perennial herb, prostrate stems, 3-6 ft long, foliage greenish yellow at anthesis	Schizocarp, May-July, .13-.25 in long, bristly above and naked below	Seeds eaten by birds and small mammals; foliage eaten by rabbits and rodents	Flowers are greenish-yellow or purple; born from terminal umbels
Sierra snakeroot <i>Sanicula graveolens</i> Poepp. ex DC. M2413	Open coniferous forests	Stems erect, to 1.5 ft tall	Fruit, .2 in long, bristly		
Peck's snakeroot <i>Sanicula peckiana</i> Macbr. M2413	Open woods	Slender, solitary stems, to 1.25 ft tall, basal leaves, 4 in long			
White-flowered rush lily <i>Schoenolirion album</i> Durand M2413	Streambanks and mountain meadows	Stem branches erect, stout, to 3 ft tall, leaves several	Seed oblong		
Bulrush <i>Scirpus</i> spp. L. M2412, M2414	Freshwater lakes, marshes, etc., to depth of 9 ft, also shore forms	Perennial herb, erect stems, to 15 ft high, round to triangular	Achene, June-Aug., lens-shaped or triangular	Seeds eaten by waterfowl, marsh and shore birds; stems and roots used by geese; excellent nesting and escape cover for waterfowl and mammals	Indians ate roots and used stems for baskets, boats, etc.; important as soil binders and in the aging of lakes
Creamy stonewort <i>Sedum oregonense</i> (Wats.) Peck M2413	Rock crevices, lava flows, rocky slopes, medium elevations	Perennial, 9 in tall, leaves opposite	Follicle		
Bolander's groundsel <i>Senecio bolanderi</i> Gray M2413, M2415	Bluffs, woodlands, beaches and estuary areas	Perennial from branching rhizome, to 2 ft tall			
Western groundsel <i>Senecio integerrimus</i> Nutt. M2413	Dry to moist open places, open woods	Stout, fibrous rooted perennial, stems solitary, to 2 ft tall			

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Common groundsel <i>Senecio vulgaris</i> L. M2415	Weed in disturbed soils and waste places	Simple or strongly branched annual, with taproot stem, over 1 ft tall, leafy throughout			
Redwood <i>Sequoia sempervirens</i> (D. Don) Endl. M2411, M2412	Flats and slopes mostly below 2,000 ft, in coastal fog belt	Evergreen tree, 200-275 ft tall, up to 350 ft, 8-10 ft thick, narrow, conical crown, post-fire sprouter	Seeds brown, oblong, cone small, about 1 in long	Seeds probably of little use to wildlife; elk and deer browse on young seedlings	Valuable lumber tree; vigorous stump sprouter, uncommon in conifers
Rose checkermallow <i>Sidalcea virgata</i> Howell M2413	Moist meadows, fields, roadsides and lower mountains	Perennial, stems to 3 ft tall, from strong taproot			
Blue-eyed grass <i>Sisyrinchium bellum</i> Wats. M2414	Open grassy areas on dry to moist sites below 3,000 ft	Perennial herb, .25-2 ft high, leaves mostly basal and stout	Capsule, Apr.-July, round and brown, .13-.25 in thick		Attractive herb with blue flowers subtended by two spathe-like bracts
Golden blue-eyed grass <i>Sisyrinchium californicum</i> (Ker.) Dryand. M2414	Moist to wet areas at low elevations, near freshwater marsh	Perennial herb, .5-1.5 ft tall, grass-like leaves arranged in 2 rows	Capsule, Apr.-July, round, .25-.5 in thick, seeds are black		Attractive plant with yellow flowers enclosed by two spathe-like bracts
Bottlebrush squirreltail <i>Sitanion hystrix</i> (Nutt.) J.G. Smith M2413	Dry hills, plains, open woods and rocky slopes, to alpine elevations	Tufted, erect, to 1.5 ft tall	Available July-Aug.		
False Solomon's-seal <i>Smilacina racemosa</i> (L.) Desf. M2412, M2413, M2414, M2415	Moist woods, streambanks to open forests, sea level to medium elevations	Flowering stems, to 4 ft tall, leaves sessile, with clasping base	Berry, May-July, round and red-mottled, .25 in thick	Seeds eaten by few songbirds and small mammals	This herb has thick, creeping underground rootstocks
Starry Solomon plume <i>Smilacina stellata</i> (L.) Desf. M2413, M2415	Moist woods and streambanks to rocky, well-drained, fully exposed side-hills	Flowering stems, to 2 ft tall, erect, leaves sessile	Berry, greenish-yellow	Seeds eaten by few birds and small mammals	
Coastal goldenrod <i>Solidago spathulata</i> DC. M2412	Sandy coastal hills and dunes up to 600 ft	Perennial herb, several stems, 15-18 in high, rise from a creeping rhizome	Achene, July-Nov., densely hairy, born from yellow flowers in a spike-like panicle	Seeds and foliage probably eaten by some birds and small mammals	Attractive coast wildflower; Indians ate leaves in salads
Sitka mountain-ash <i>Sorbus sitchensis</i> Roem. M2415	Montane areas, 2,000-10,000 ft elevation	Erect, several-stemmed shrub, to 12 ft tall, bark reddish-purple	Pome, available Aug.-Nov.	Fruit eaten by few birds	Thicket-forming
Bur-reed <i>Sparganium</i> spp. L. M2412	Slow-moving and quiet water, ponds, marshes, lake margins, sloughs, etc.	Perennial herb, leaves clustered, mostly basal and triangular, from creeping rhizomes	Achene, June-Sept., born in burlike heads up to 2 in thick	Seeds eaten by waterfowl; entire plant consumed by muskrats	Tends to produce local colonies near water margin, and not extensive beds
Shinyleaf spiraea <i>Spiraea betulifolia</i> Pall. M2415	Streambanks, lake margins, open to wooded valleys, hillsides, and rock slides, sea level, to 11,000 ft	Shrub, to 20 ft tall, leaves ovate or obovate, to 3.5 in long	Follicle		
Douglas spiraea <i>Spiraea douglasii</i> Hook. M2411, M2415	Streambanks, swamps, bogs, lake margins, sea level to sub-alpine	Erect, freely branched shrub, to 6 ft tall	Follicle, available Sept.-Oct.		Thicket-forming by means of suckers

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Great hedge-nettle <i>Stachys mexicana</i> Benth. M2411	Swamps and moist woods near the coast	Perennial, to 2.5 ft tall, flower pink or pink-purple			
Crisped starwort <i>Stellaria crispa</i> Cham. & Schlecht. M2413	Moist areas, low-lands to lower montane woods	Low, spreading matted perennial, stems prostrate to ascending, to 18 in tall	Capsule		
Common chickweed <i>Stellaria media</i> (L.) Cyrill. M2411	Disturbed soil	Annual, low and spreading, up to 1.5 ft	To .02 in long		Very troublesome weed west of the Cascade Mts.
Lemmon needlegrass <i>Stipa lemmonii</i> (Vasey) Scribn. M2413	Valleys to medium elevations, ponderosa pine forest	Perennial, to 3 ft tall, panicle erect	Available May-June	Seeds and plant eaten by several species of birds and mammals	
Western needlegrass <i>Stipa occidentalis</i> Thurb. ex Wats. M2413, M2415	Grasslands to ponderosa pine forest and subalpine forest ridges	Strongly tufted perennial, to 5 ft tall	Available May-Aug.		
Clasping-leaved twisted-stalk <i>Streptopus amplexifolius</i> (L.) DC. M2415	Moist forest, streambanks and mountain thickets	Stems, to 3 ft tall, freely branched, leaves ovate to .75 in long	Berry, yellow to red, many-seeded		
Purple twisted-stalk <i>Streptopus roseus</i> Michx. M2415	Streambanks, damp montane woods, 3,000-6,000 ft elevations	Stems simple to branched, to 1 ft tall, leaves to 4 in long, flowers white or greenish-yellow, rose tips	Red berry		
Snowberry <i>Symphoricarpos</i> spp. <i>S. albus</i> <i>S. mollis</i> M2413, M2414, M2415	Dry to moist fairly deep soils on slopes both in full sun and shade, below 4,000 ft	Deciduous shrub, low-trailing or erect, widely branched, 2-6 ft high, pink to white flowers born in terminal clusters	Drupe, July-Oct., round, berry-like white, .25 in wide, contains 2 nutlets	Fruit eaten by song-birds and rodents; fair browse to deer; nesting and escape cover for quail, rabbits, other animals	Post-fire sprouter; the tasteless fruits are persistent 6 months or more; some forms valued as ornamentals because of large, waxy, snowwhite berries
Glaucous tauschia <i>Tauschia glauca</i> (Coulter & Rose) Math. & Const. M2413	Wooded slopes	Slender, to 16 in tall, basal leaves dissected, often 3-lobed	Fruit .04 in long		
Kellogg's tauschia <i>Tauschia kelloggii</i> (Gray) Macbr. M2413	Wooded slopes	Slender, to 28 in tall, leaflets oblong to ovate, to 1.25 in long	Fruit .1 in long		
Western yew <i>Taxus brevifolia</i> Nutt. M2413, M2415	Light to deep, moist forests, often along streams	Shrublike tree, to 30 ft tall, erect to contorted stem	Drupe-like, available Sept.-Oct.	Fruit eaten by birds	Poisonous to cattle
Alaska fringe-cup <i>Jellima grandiflora</i> (Pursh.) Dougl. M2412, M2414	Rocky outcrops and moist soils, below 5,000 ft	Perennial herbs, 1-3 ft high, basal leaves rounded, horizontal root-stocks	Capsule, May-Aug., seeds are oblong with bumps		Flowering stems are simple, with a terminal, many-flowered raceme
Western meadow-rue <i>Thalictrum occidentale</i> Gray M2415	Moist to well-drained sites, sun	Perennial, stems 3 ft tall, leaves mostly cauline	Achene		

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western redcedar <i>Thuja plicata</i> Donn M2411, M2412, M2415	Moist and shaded sites, below 2,000 ft	Evergreen tree, 150-200 ft, 3-8 ft thick, aromatic, post-fire nonsprouter	Seeds brown, .25 in long, cone small, about .5 in long	Seeds of slight value to birds and mammals; poor browse value to deer and elk	Attractive, valuable timber tree; should be allowed on ROW edge
Three-leaved coolwort <i>Tiarella trifoliata</i> L. M2411, M2415	Moist woods and streambanks, up to 3,500 ft elevations	Horizontal to ascending, flowering stem to 1 ft tall			
Coolwort foamflower <i>Tiarella unifoliata</i> Hook. M2411, M2413, M2415	Moist woods and streambanks, up to 3,500 ft elevation	Flowering stems, to 2 ft tall, basal leaf cluster		Occasionally eaten by ruffed grouse	
Tofieldia <i>Tofieldia glutinosa</i> (Michx.) Pers. M2413	Meadows, bogs, streambanks, and alpine ridges	Stems, 2.5 ft tall, leaves mainly in basal tufts	Capsule		
Star-flower <i>Trientalis latifolia</i> Hook. M2413, M2415	Woods and prairies	Stems, to 10 in tall, leaves 4-8 in, terminal whorl			
Shore podgrass <i>Triglochin maritimus</i> M2412	Coastal salt marsh, boggy places and alkaline flats	Perennial herb, to 3 ft tall, from short thick root-stocks	Capsule, July-Sept., from long slender spike with numerous small flowers	Seeds and foliage eaten to a very limited extent by some waterfowl species	This species occurs as a clump of long, slender, round, basal leaves with a solitary spike
White trillium <i>Trillium ovatum</i> Pursh M2412, M2413, M2414 M2415	Streambanks to open or thick woods, often where boggy in spring, lowlands to mountains	Perennial herb, erect, unbranched 6-10 in high, 3 green leaves in a whorl at summit of the stem	Berry, Apr.-July, .5-.75 in long and somewhat winged		Flowers are white to pinkish rose color arising from center of the three leaves
Tall trisetum <i>Trisetum canescens</i> Buckl. M2413	Streambanks, moist to dry areas, sea level to lower levels of the mountains	Perennial, to 3 ft tall, tuft- or mat-forming			
Nodding trisetum <i>Trisetum cernuum</i> Trin. M2411, M2415	Moist woods, lakes and streambanks	Tufted perennial, to 3.5 ft tall, blades, flat, to .5 in wide			
Western hemlock <i>Tsuga heterophylla</i> (Raf.) Sarg. M2411, M2412, M2414, M2415	Moist to well-drained sites, sea level to 5,000 ft elevation	Tree, to 150 ft tall, narrow crown	Cone, seeds shed Sept.-Oct.	Seeds eaten by songbirds; browsed by white-tailed deer and black-tailed deer; survival food for elk	Early injured
Mountain hemlock <i>Tsuga mertensiana</i> (Bong.) Carr. M2413, M2415	Subalpine to timberline tree, 4,000-7,000 ft elevation, sun	Alpine tree, often stunted, a few to 120 ft tall, crown narrow	Cone, deep purple, to 2 in long, seeds to .1 in long	Seeds eaten by crow and grouse; also browsed	
Common cat-tail <i>Typha latifolia</i> L. M2412, M2414	Freshwater marshes, emergent in shallow water and along shores	Perennial herb, stalks 3-7 ft high, from creeping rhizomes, relatively long and wide leaves	Many hairy, dry, dehiscent seeds from a terminal cylinder head	Sometimes browsed by land mammals; rhizomes eaten by beavers; excellent nesting and escape cover	Indians consumed young sprouts and inner parts of the shoots
Californian-laurel <i>Umbellularia californica</i> (H. & A.) Nutt. M2411, M2412, M2413, M2414	Alluvial flood plains, shady hill-sides and canyons, below 5,000 ft, sun or shade	Dense-crowned tree, 20-60 ft high, erect shrub in drier places, post-fire sprouter	Drupe, late spring to early summer, 1 in long, greenish, oblong and solitary	Fruit eaten by Steller Jay, squirrel, deer	Attractive evergreen tree; wood is hard and strong; used for various purposes

continued

Table M2410-56.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Alaska blueberry <u>Vaccinium alaskaense</u> Howell M2411, M2415	Near the coast, dry, well-drained, sun or shade	Deciduous shrub, to 4 ft tall	Berry, bluish-black, available May-Aug.	Used as browse infrequently; berries eaten by spruce grouse and other birds	
Delicious blueberry <u>Vaccinium deliciosum</u> Piper M2415	Montane, sun	Low, often matted, to 2 ft tall	Berry, blue, very palatable, available May-June		
Big huckleberry <u>Vaccinium membranaceum</u> Dougl. ex Hook. M2413, M2415	Mountain slopes, sun or shade	Spreading shrub, to 6 ft tall	Berry, available July-Sept.		
Ovalleaf huckleberry <u>Vaccinium ovalifolium</u> Sm. M2411, M2413, M2415	Dry, well-drained, sun or shade	Spreading deciduous shrub, to 3 ft tall	Berry, available July-Aug.	Fruit eaten by spruce grouse	
Evergreen blueberry <u>Vaccinium ovatum</u> Pursh M2411, M2412, M2413, M2414	Well-drained, moist, sun or shade	Evergreen shrub, to 12 ft tall	Berry, available July-Sept.	Browsed by ruffed grouse, mule deer, Roosevelt elk	Forms dense cover when growing close together
Wild cranberry <u>Vaccinium oxycoccos</u> L. M2411	Usually in sphagnum bogs	Creeping shrub, with slender stems, leaves persistent	Berry, deep red, to .5 in broad		
Red huckleberry <u>Vaccinium parvifolium</u> Sm. M2411, M2412, M2413, M2414, M2415	Shade of deep woods and moist soils, usually below 5,000 ft	Deciduous shrub, 3-20 ft tall, thin, oval leaves, green and angled, branched and branchlets, unshapely	Berry, July-Oct., red, .25-.5 in diameter, greenish to pinkish globular flowers	Fruit eaten by many birds and mammals in the fall; fair browse value to deer; escape cover for birds and mammals	Valuable shrub to protect and even transplant in suitable shaded areas of ROW; post fire sprouter
Grouseberry <u>Vaccinium scoparium</u> Leib. M2413, M2415	Dry, well-drained to moist sites, shade	Plants to 1 ft tall, many branches, slender broomlike	Berry, red, available July-Sept.	Fruit important food for a variety of wildlife, including grouse	Mat-forming
Sitka valerian <u>Valeriana sitchensis</u> Bong. M2413, M2415	Moist, open or wooded places, middle or upper elevations	Perennial, from stout rhizome, to 3.5 ft tall, leaves mostly cauline, 2-5 pairs	Fruit rounded		
White inside-out flower <u>Vancouveria hexandra</u> (Hook.) Morr. & Dec. M2412, M2413, M2414, M2415	Moist, shady woods	Herbaceous perennial, to 1 ft long, from a rhizome			
California false hellebore <u>Veratrum californicum</u> Durand M2413, M2415	Swamps, creek bottoms, meadows and moist woodlands, lowlands to sub-alpine	Stems, to 6 ft tall, leaves numerous, oval	Seed, winged		
American false hellebore <u>Veratrum viride</u> Ait. M2415	Wet thickets, swamps, lowland to montane meadows	Stems to 6 ft tall, leaves elliptical	Capsule, 1 in long		
American vetch <u>Vicia americana</u> Muhl. ex Willd. M2413		Hairy perennial, stems 32 in tall, with tendrils, leaflets 8-12	Pod, to 1 in long	Limited food use by upland gamebirds and small mammals	

continued

Table M2410-56.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Wood violet <u>Viola glabella</u> Nutt. M2413, M2415	Moist woods or along streams	Perennial, fleshy rootstock, flowering stems, to 1 ft tall	Capsule	Seeds eaten by upland gamebirds and some mammals	
Pine violet <u>Viola lobata</u> Benth. M2413	Open coniferous forests	Plants rising from simple rootstocks, to 8 in tall, basal leaves, ovate	Capsule	Same as <u>V. glabella</u>	
Evergreen violet <u>Viola sempervirens</u> Greene M2411, M2413, M2414, M2415	Moist woods	Perennial with rhi- zomes, leaf blades cordate, thick leathery	Capsule, seeds brown	Same as <u>V. glabella</u>	
Whipple vine <u>Whipplea modesta</u> Torr. M2413, M2414, M2415	Dry, rocky, open to lightly forested areas	Main stems slender, trailing and freely rooting, to 3 ft, erect flower shoots deciduous	Leathery capsule		
Yerba De Selva <u>Whipplea modesta</u> Torr. M2412, M2413, M2414, M2415	Dry to moist, rocky, open to lightly for- ested areas	Main stems slender, trailing and freely rooting, to 3 ft, erect flower shoots, deciduous	Leathery capsule, May-Aug., round, 1 in thick	Provides fair browse value for deer	Flowers are small and white in term- inal clusters; encourage this spe- cies on ROW
Chain fern <u>Woodwardia fimbriata</u> Sm. in Rees. M2413	Streambanks, moist or wet places, some- times maritime hab- itats, lowlands to moderate elevations	Large, firm, erect, to 4 ft long	Spores		Choice large fern
Beargrass <u>Xerophyllum tenax</u> (Pursh) Nutt. M2413, M2415	Openwoods and clearings, sea level to over 7,000 ft	Flower stalk to 5 ft tall, basal leaves in large clump, from a thick rhizome	Capsule, to .2 in long		
Small-flowered deathcamas <u>Zigadenus micranthus</u> Eastw. M2413	Wooded dry slopes	Plants slender, to 1.5 ft tall, basal leaves .67 as long as stem			

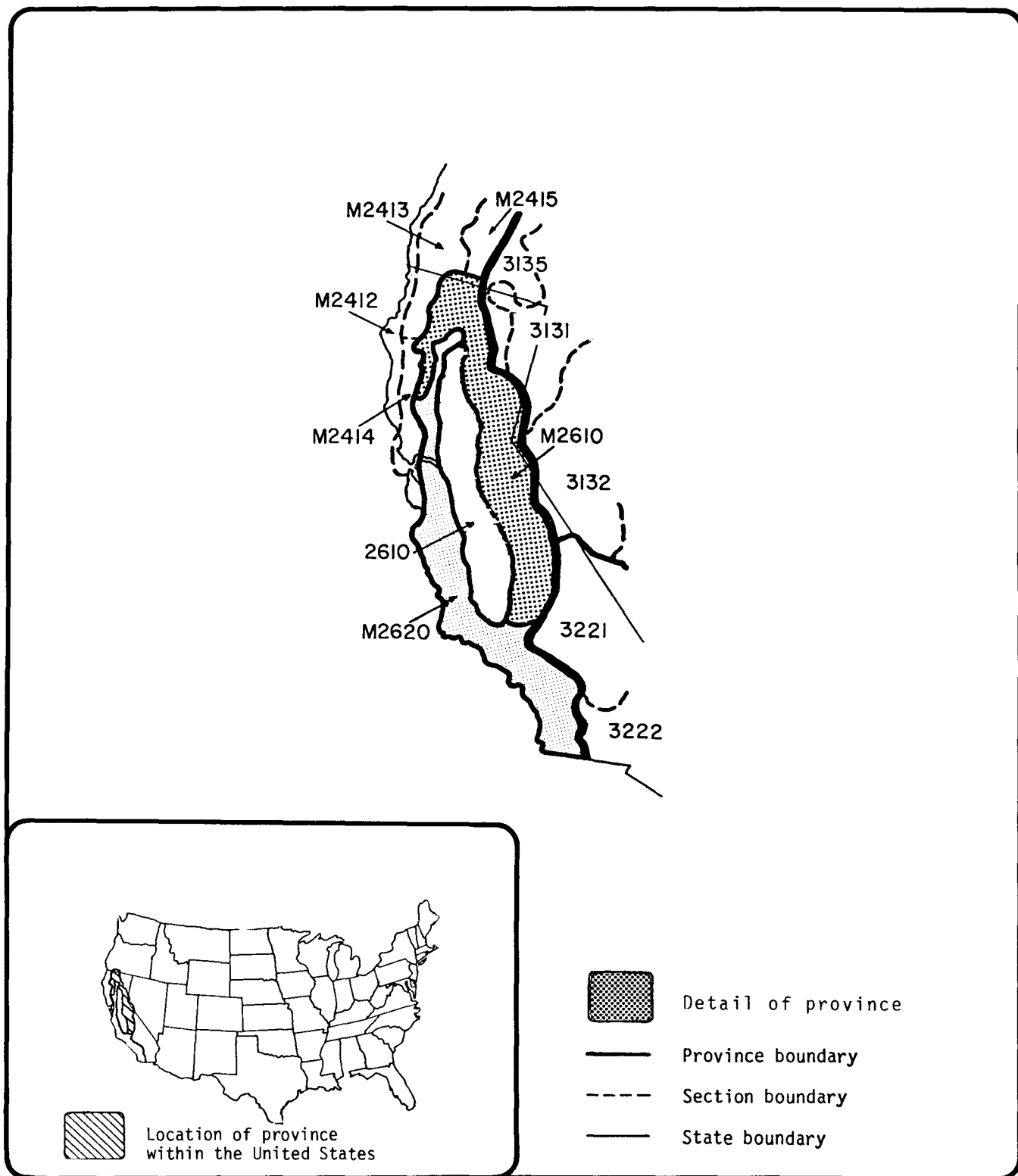


Figure 57.1 Province M2610, Sierran Forest

57 PROVINCE M2610 Sierran Forest

The Sierran Forest Province is bounded on the west by the lowland California Grassland (Province 2610), in the Central Valley and on the east by the Intermountain Sagebrush and American Desert provinces (3130 and 3220). Rising into the Sierra Nevadas, forest composition gradually changes from evergreen hardwoods, chiefly scrub oaks, to mixed coniferous stands of pine and fir.

The terrain is mountainous with broad ridges between which lie deep canyons. Shallow soils are high in magnesium but low in both potassium and calcium. Water holding capacity of different soils varies greatly, with poorer soils holding less than 12 percent of the moisture held by the best soils.

The climate is marked by a long, dry summer period with low relative humidities. Major precipitation falls as winter rain or snow at higher elevations.

Vegetational patterns tend to follow precipitation and moisture holding capacity of the soil. Low dry areas are covered by open stands of evergreen scrub oaks and digger pines with dense understories of manzanita and ceanothus. As elevation and moisture increase, sugar, ponderosa, and western white pine increase gradually giving way to Douglas-fir, western juniper, and finally white and red fir at higher elevations.

Table M2610-57.1 Selected Plant Species Common to the Sierran Forest

Growth form	Plant associations	
Habitat conditions: Dry to moist/excessive to well-drained		
Tall trees, over 40 ft	<u>Abies concolor</u> <u>Abies magnifica</u> <u>Arbutus menziesii</u> <u>Libocedrus decurrens</u> <u>Lithocarpus densiflorus</u> <u>Pinus coulteri</u> <u>Pinus jeffreyi</u> <u>Pinus lambertiana</u> <u>Pinus monticola</u> <u>Pinus ponderosa</u> <u>Pinus sabiniana</u> <u>Pseudotsuga macrocarpa</u> <u>Quercus kelloggii</u> <u>Quercus wislizenii</u> <u>Sequoia gigantea</u>	White fir Shasta red fir Madrone Incense-cedar Tanbark-oak Coulter pine Jeffrey pine Sugar pine White pine Ponderosa pine Digger pine Big cone Douglas-fir California black oak Interior live oak Giant sequoia
Medium trees, 20-40 ft	<u>Fremontia californica</u> <u>Juniperus occidentalis</u> <u>Prunus emarginata</u>	California fremont Western juniper Bitter cherry
Low to medium shrubs, under 10 ft	<u>Adenostoma fasciculatum</u> <u>Arctostaphylos mariposa</u> <u>Arctostaphylos nevadensis</u> <u>Carpenteria californica</u> <u>Castanopsis sempervirens</u> <u>Ceanothus cordulatus</u> <u>Ceanothus integerrimus</u> <u>Cercis occidentalis</u> <u>Chamaebatia foliolosa</u> <u>Chamaebatia millefolium</u> <u>Dendromecon rigida</u> <u>Jamesia americana</u> <u>Pachystima myrsinites</u> <u>Pickeringia montana</u> <u>Purshia tridentata</u> <u>Staphylea bolanderi</u>	Common chamise Mariposa manzanita Pine-mat manzanita Carpenteria Sierra chinquapin Mountain white-thorn Deer brush Western redbud Mountain misery Fernbush Tree poppy Cliffbush Oregon boxwood Stingaree-bush Antelope brush Bolander's bladder-nut

continued

Table M2610-57.1 (Concluded)

Growth form	Plant associations	
Lesser vegetation	<u>Apiastrum angustifolium</u> <u>Blepharipappus scaber</u> <u>Crocidium multicaule</u> <u>Emmenanthe penduliflora</u> <u>Holozonia filipes</u> <u>Kelloggii galioides</u> <u>Odontostomum hartwegi</u> <u>Pleuricospora fimbriolata</u> <u>Rigtopappus leptocladius</u>	Wild celery Blepharipappus Spring gold Whispering bells Holozonia Kelloggii Hartweg's odontostomum Fringed pinesap Rigtopappus
Habitat conditions: Moist to wet/well-drained to impeded		
Tall trees, over 40 ft	<u>Cornus nuttallii</u> <u>Pseudotsuga menziesii</u> <u>Quercus chrysolepis</u> <u>Taxus brevifolia</u> <u>Torreya californica</u> <u>Umbellularia californica</u>	Pacific dogwood Douglas-fir Canyon live oak Western yew California nutmeg California-laurel
Low to medium shrubs, under 10 ft	<u>Aristolochia californica</u> <u>Calycanthus occidentalis</u> <u>Leucothoe davisiae</u> <u>Osmaronia cerasiformis</u>	California pipe-vine Western sweet-scented shrub Western leucothoe Oso berry
Lesser vegetation	<u>Bolandra californica</u> <u>Darlingtonia californica</u> <u>Hesperocnide tenella</u> <u>Luetkea pectinata</u> <u>Microcala quadrangularis</u> <u>Peltiphyllum peltatum</u> <u>Porterella carnosula</u>	Sierra bolandra California pitcher-plant Western nettle Luetkea American microcala Umbrella plant Porterella

Moist/well-drained (Continued)

Lesser vegetation (Continued)	<u>Schoenolirion album</u> <u>Smilax californica</u> <u>Trautvetteria carolinensis</u> <u>Woodwardia fimbriata</u>	White-flowered rush lily California green-brier False bugbane Chain fern
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Table M2610-57.2 Ecological Characteristics of Selected Plant Species Common to the Sierran Forest

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir <i>Abies concolor</i> (Gord. & Glend.) Lindl.	Well-drained, sun or shade, 2,000-5,000 ft elevations	Tree, to over 240 ft tall, needles pale bluish-green	Cone, matures in Sept., soon breaks up	Outstanding browse for mule deer; seeds eaten by squirrels, grouse, small rodents	
Shasta red fir <i>Abies magnifica</i> Murr.	Well-drained sunny sites	Tree, to 200 ft tall, short branches	Cone, matures in Aug., breaks up in Sept.	Occasionally browsed by mule deer and blue grouse	
Common chamise <i>Adenostoma fasciculatum</i> H. & A.	Dry, sun, chaparral	Shrub, 3-14 ft tall	Achene	Browsed by mule deer	Forms dense colonies
Wild celery <i>Apiastrum angustifolium</i> Nutt.	Sandy soils in the foothills	Slender plants, 2-20 in tall			
Madrone <i>Arbutus menziesii</i> Pursh	Dry, well-drained, moist, sun, on wooded slopes	Tree, 3-130 ft tall	Berry, July-Jan.	Fruit eaten by dove, band-tailed pigeons, turkey, mule deer, raccoon	
Mariposa manzanita <i>Arctostaphylos mariposa</i>	Dry, well-drained, sun	Erect arborescent shrub, 6-10 ft tall	Berry, Aug.-Sept.	Fruit eaten by mountain quail, mule deer, coyote, gray fox	
Pine-mat manzanita <i>Arctostaphylos nevadensis</i> Gray	Dry, well-drained, sun	Prostrate shrub with trailing rooting stems, to 6 in tall	Berry, July-Sept.	Fruit eaten by few species of birds, including grouse; browsed by mule deer	Roots where branches touch ground, mat-forming
California pipe-vine <i>Aristolochia californica</i> Torr.	Streambanks and borders of lakes	Stems woody, climbing to a height of 10-13 ft tall	Capsule		
Blepharipappus <i>Blepharipappus scaber</i> Hook	Arid plains and slopes	Stems erect, 4-12 in tall	Achenes		
Sierra bolandra <i>Bolandra californica</i> Gray	In moist places or on wet rocks	Stems, 4-12 in tall			
Western sweet-scented shrub <i>Calycanthus occidentalis</i> H. & A.	Well-drained, sun, moist places, along streams and borders of lakes and ponds	Erect branching shrub, 3-10 ft tall	Capsule	Browsed by mule deer	
Carpenteria <i>Carpenteria californica</i> Torr.	Well-drained, sun, canyons and foothills	Shrub, 3-6 ft tall	Capsule		Commonly cultivated
Sierra chinquapin <i>Castanopsis sempervirens</i> (Kellogg) Dudley	Dry, well-drained, sun, in open coniferous forest	Low spreading shrub, 3-8 ft tall	Nut, available Sept.-Oct. of second season	Browsed by bighorn sheep	
Mountain white-thorn <i>Ceanothus cordulatus</i> Kellogg	Dry, well-drained, sun, shade, mountain slopes and open pine forests	Low spreading shrub, 3-6 ft tall	Capsule, Aug.-Sept.	Seeds eaten by mountain quail; browsed by mule deer and beaver	Thicket-forming
Deer brush <i>Ceanothus integerrimus</i> H. & A.	Dry, well-drained, sun, mountain slopes, ridges and flats between 1,000-7,000 ft	Deciduous shrub, 3-12 ft tall, widely branched with green drooping branches	Capsule, round or triangular, .25 in wide, July-Sept.	Excellent summer range browse for deer and elk, especially young sprouts	Post-fire sprouter; provides good escape cover for birds; valuable shrub, allow on ROW edge

continued

Table M2610-57.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western redbud <u>Cercis occidentalis</u> Torr.	Dry, well-drained, moist, sun, foothill slopes	Shrub, 8-16 ft tall	Legume, July-Aug.	Browsed by mule deer	
Mountain misery <u>Chamaebatia foliolosa</u> Benth.	Well-drained, sun, shade, open pine forests, 2,000-7,000 ft elevation	Erect evergreen shrub, 1-3 ft tall	Achene	Browsed by mule deer	Forms mats by means of rootstocks
Fernbush <u>Chamaebatiaria millefolium</u> (Torr.) Maxim.	Dry, well-drained, sun, rocky ridges	Shrub, 3-6 ft tall	Pod		
Pacific dogwood <u>Cornus nuttalli</u> Aud.	Well-drained, sun, shade, along streams, below 6,000 ft elevation	Large shrub to tree, to 60 ft tall, showy flowers	Drupe, Oct.-Nov.	Fruit eaten by few species of birds and chipmunks; occasionally browsed by mule deer	Plant may die if exposed to full sunlight after growing in shade
Spring gold <u>Crocidium multicaule</u> Hook.	Sand plains, cliff ledges, other dry open places at low elevations	Achenes			
California pitcher-plant <u>Darlingtonia californica</u> Torr.	Mountain swamps and bogs	Stems, 12-20 in tall	Capsule, Apr.-July		Insectivorous plants
Tree poppy <u>Dendromecon rigida</u> Benth.	Dry, sun, chaparral ridges	Erect shrub, 3-10 ft tall	Capsule	Browsed by mule deer	
Whispering bells <u>Emmenanthe penduliflora</u> Benth.	Rocky soil, particularly common on burns	Plants erect, 6-20 in tall	Capsule		
California fremont <u>Fremontia californica</u> Torr.	Dry, sun, hill-sides and mountain slopes	Arborescent shrub, 10-28 ft tall	Capsule	Browsed by mule deer	
Western nettle <u>Hesperocnide tenella</u> Torr.	On shaded canyon slopes and hillsides	Stems slender, 10-20 in tall	Achene, Mar.-July		
Holozonia <u>Holozonia filipes</u> (H. & A.) Greene	Dry alkaline or rocky gulches or beds of intermittent streams	Stems, 1-3 ft tall	Achene		
Cliffbush <u>Jamesia americana</u> T. & G.	Dry, well-drained, moist, sun, rock ledges	Erect shrub, branching, 8-40 in tall	Capsule		
Western juniper <u>Juniperus occidentalis</u> Hook.	Desert foothills, to lower mountains, dry, well-drained sites in sun	Evergreen tree, to 30 ft tall, leaves scale-like, pale green	Berry, available Sept. of second season	Fruit eaten by songbirds; browsed slightly by mule deer	
Kelloggia <u>Kelloggia galioides</u> Torr.	Dry ridges	Plants with woody rootstocks, stems 4-10 in tall	Small and dry		
Western leucothoe <u>Leucothoe davisiae</u> Torr.	Moist, sun, shade, in bogs and edges of pools	Erect shrub, 2-5 ft tall	Capsule		Occurs on acid slopes

continued

Table M2610-57.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Incense-cedar <u>Libocedrus decurrens</u> Torr.	Dry, well-drained, sun, shade, mountain slopes and canyons, 2,400-8,200 ft	Evergreen tree, 75-125 ft tall, 3-4 ft thick, aromatic tree	Seeds .5 in long, cones oblong, 1-1.5 in long	Seeds probably eaten by some species of songbirds and rodents	Wood used for shingles, posts, lead pencils, railroad ties
Tanbark-oak <u>Lithocarpus densiflorus</u> (H. & A.) Rehd.	Dry, well-drained, moist, sun and shade	Tree, 80-115 ft tall	Nut, matures end of second season	Seeds eaten by chipmunks and mule deer	
Luetkea <u>Luetkea pectinata</u> (Pursh) Ktze.	On moist rocky or sandy slopes	Flowering stems, 2-6 in tall	Follicule, July-Sept.		Often mat-forming
American microcala <u>Microcala quadrangularis</u> (Lam.) Griseb.	Grassy fields	Erect annual stems, 1-4 in tall	Capsule		
Hartweg's odontostomum <u>Odontostomum hartwegi</u> Torr.	Dry, usually above hillsides	Stem, 8-18 in tall	Capsule		
Oso berry <u>Osmaronia cerasiformis</u> (T. & G.) Greene	Well-drained, shade, canyons and shaded slopes	Shrub, 3-16 ft tall	Drupe, July-Aug.	Fruit eaten by many birds and mammals	
Oregon boxwood <u>Pachystima myrsinites</u> (Pursh) Raf.	Dry, well-drained, moist, sun, shade, coniferous forests	Much branched shrub, 1-3 ft tall	Capsule, July-Sept.	Browsed by grouse, mountain sheep, black and white-tailed deer	
Umbrella plant <u>Peltiphyllum peltatum</u> (Torr.) Engler	In streams and along stream-banks	Tufted plant, 1-3 ft tall			
Stingaree-bush <u>Pickeringia montana</u> Nutt.	Dry, sun, chaparral ridges	Spreading shrub, 3-10 ft tall	Legume	Browsed by mule deer	
Coulter pine <u>Pinus coulteri</u> D. Don	Dry, well-drained, sun	Tree, 50-80 ft tall	Cone, matures Aug. of second year	Browsed by mule deer	
Jeffrey pine <u>Pinus jeffreyi</u> Grev. & Balf.	Well-drained sunny sites, seedling tolerant of shade, mature tree intolerant	Tree, to 90 ft tall, needles in 3's	Cone	Seeds eaten by few species of birds, including grouse and quail; slightly browsed by deer	
Sugar pine <u>Pinus lambertiana</u> Dougl.	Well-drained, sun, cool, fairly moist, in mixed coniferous forest	Large tree up to 250 ft tall, needles in 5's deep, bluish-green, to 4 in long	Large cone, to 18 in long, seeds brown, .2 in long	Seeds eaten by gray fox, chickaree, chipmunks, squirrels; slightly browsed by mule deer and porcupine	
White pine <u>Pinus monticola</u> Dougl.	Dry, well-drained, moist, sun, sea level to 6,000 ft elevation	Tree, to 90 ft tall, bark thin, needles in 5's, light bluish-green, to 4 in long	Cone, 10 in long, seeds available in Sept.	Seeds eaten by chipmunk and porcupine; slightly browsed by mule deer	
Ponderosa pine <u>Pinus ponderosa</u> Laws.	Dry, well-drained, in sun	Tree, to 180 ft tall, needles in fascicles of 3, 4-11 in long	Cone, ripe Aug.-Sept. of second season	Major browse for mule deer and porcupine; seeds eaten by grouse, squirrels, quail	Very drought resistant
Digger pine <u>Pinus sabiniana</u> Dougl.	Dry slopes and ridges, below 4,500 ft, dry, well-drained, moist, sun	Evergreen tree, 30-60 ft tall, 1-2 ft thick, trunk often divided	Seeds, black-brown, to 1 in long, large oval cone, 5-8 in long	Seeds eaten by jays, woodpeckers, small rodents; wood eaten by porcupines; poor browse value for deer	Indians ate and stored seeds; wood of little use

continued

Table M2610-57.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Fringed pine-sap <u>Pleuricospora</u> <u>fimbriolata</u> Gray	Coniferous forest	Saprophytic herb, stems 4-10 in tall	Berry, June-Aug.		
Porterella <u>Porterella carnosula</u> (H. & A.) Torr.	Muddy edges of ponds and pools	Erect annual, stems 4-12 in tall	Capsule		
Bitter cherry <u>Prunus emarginata</u> (Dougl.) Walp.	Dry, well-drained, moist, sun, moist woods, along water-courses, grass-land into mountains, medium elevations, in sun	Straggly shrubs, to 40 ft tall, erect	Drupe, May-Sept.	Very important browse for mule deer; fruit eaten by chipmunks and birds, including grouse	Forming dense thickets
Big cone Douglas-fir <u>Pseudotsuga macrocarpa</u> (Torr.) Mayr.	Dry, well-drained, sun, in mountains, 3,000-6,000 ft elevation	Tree, 50-80 ft tall	Cone, seeds shed Aug.-Sept.		
Douglas-fir <u>Pseudotsuga menziesii</u> (Mirb.) Franco	Moist slopes, below 5,000 ft	Evergreen tree, 100-130 ft tall, up to 230 ft, up to 8 ft thick, post-fire non-sprouter	Seeds, winged, .25 in long with 3-pointed bracts beyond ends of scales	Seeds eaten by song-birds, tree squirrels and other rodents; fair browse value to deer and elk; needles eaten by blue grouse in winter	Probably most important lumber tree in North America; used for ornamental and for reforestation
Antelope brush <u>Purshia tridentata</u> (Pursh) DC.	Dry, well-drained, sun, dry arid slopes	Shrub, 3-10 ft tall	Achene, Aug.	Seeds eaten by chipmunks; browsed by black-tailed deer	
Canyon live oak <u>Quercus chrysolepis</u> Liebm.	Canyons and moist slopes below 6,500 ft, typical of rocky canyon sites, dry, well-drained, sun	Evergreen tree, round-spreading, 60-80 ft tall, 1-5 ft thick, smooth, white bark	Acorn, ovate, 1-1.25 in long, fuzzy golden hairs cover scale cup	Acorns eaten by numerous species of birds and small mammals; poor browse value for deer	Post-fire sprouter; has a tough, fine quality wood, becoming of increasing importance; allow on ROW edge
California black oak <u>Quercus kelloggii</u> Newb.	Drier soils on mountain slopes and gravelly valleys between 1,500-6,500 ft	Deciduous tree, 50-100 ft high, 1-3 ft thick, leaves 3-lobed on each side with 1-3 bristly-tipped teeth	Acorn, oblong, 1-1.25 in long, Deeply set in cup, maturing second year	Acorns eaten by band-tailed pigeons, western gray squirrel, woodpeckers, deer; excellent browse value for deer	Post-fire sprouter; once a major staple food of California Indians; valuable tree, should be allowed on ROW edge
Interior live oak <u>Quercus wislizenii</u> DC.	Dry, well-drained, sun, mountain slopes, foothills, valleys	Tree, 50-80 ft tall	Acorn, biennial	Browsed by mule deer	
Rigiopappus <u>Rigiopappus</u> <u>leptocladus</u> Gray	In grasslands or with sagebrush	Erect, annual, gray-green, stems 4-12 in tall	Achenes		
White-flowered rush lily <u>Schoenolirion album</u> Durand	Streambanks and mountain meadows	Stems erect, 15-36 in tall	Capsule		
Giant sequoia <u>Sequoia gigantea</u> (Lindl.) Decn.	Dry, well-drained, sun, 4,500-8,700 ft elevation	Massive trees, to 320 ft tall	Cone, matures end of second summer	Seeds eaten by California pine squirrel	
California greenbrier <u>Smilax californica</u> (DC.) Gray	Streambanks	Stem, woody, to several ft long	Berry		
Bolander's bladder-nut <u>Staphylea bolanderi</u> Gray	Dry, well-drained, sun, in foothills and canyons	Tall shrub, 6-20 ft tall	Capsule, Aug.-Sept.		

continued

Table M2610-57.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Western yew <u>Taxus brevifolia</u> Nutt.	Well-drained, moist, sun, shade, coniferous woods	Tree, 30-80 ft tall	Drupelike, Aug.- Sept. of second year	Fruit eaten by birds and ring-tailed cat	Poisonous to cattle
California nutmeg <u>Torreya californica</u> Torr.	Well-drained, moist, sun, shade, often along water courses	Tree 50-115 ft tall	Drupelike, Aug.- Oct.		
False bugbane <u>Trautvetteria</u> <u>carolinensis</u> (Walt.) Vail.	Mountain streams	Stems, stout, 1.5-3 ft tall	Achenes, June- Aug.		
California-laurel <u>Umbellularia</u> <u>californica</u> (H. & A.) Nutt.	Well-drained, moist, sun, shade, canyon slopes and alluvial valleys	Tree, 65-100 ft tall	Drupe, Oct.	Fruit eaten by song- birds and gray squir- rel; browsed by mule deer	
Chain fern <u>Woodwardia fimbriata</u> Sm. ex Rees.	Springy and boggy places in canyons below 5,000 ft elevation	Leaves, erect, 3-6 ft tall	Spores		

58 PROVINCE M2620
California Chaparral

The California Chaparral forms a band north and south through the State. In the north, chaparral vegetation lies in a narrow strip in the rainshadow of the lush coastal mountains of the Pacific Forest (Province M2410). Gradually widening as it moves south, it touches the coast near Monterey; from this point south, chaparral types cover essentially the entire Coastal Range. On the east, the province is bordered in the north and central areas by the California Grassland (Province 2610) and in the south by the American Desert (Province 3220).

The terrain of the province consists of low to moderate mountains interspersed with an occasional broad valley. Soils are frequently shallow, gravelly, or sandy, with low water holding capacity.

A Mediterranean climate prevails throughout the chaparral area with wet, mild winters and dry, hot summers. Annual rainfall averages 15 to 25 inches, with most precipitation occurring in winter.

Chaparral areas are frequently burned and much of the region is held in subclimax plant communities due to periodic fires. Relatively dry evergreen leaves on dense shrubs growing close together provide ideal conditions for intense fires to develop.

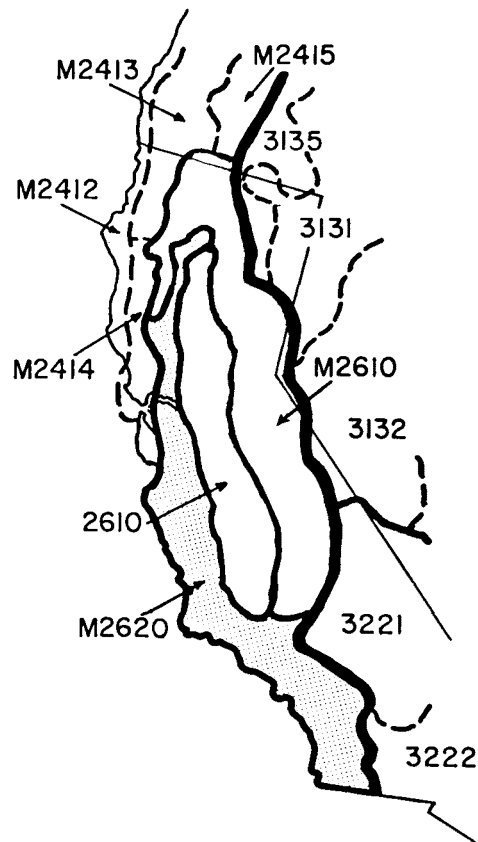
Table M2620-58.1 Selected Plant Species Common to the California Chaparral

Growth form	Plant associations	
Habitat conditions: Dry to moist/excessive to well-drained		
Tall trees, over 40 ft	<u>Aesculus californica</u> <u>Arbutus menziesii</u> <u>Castanopsis chrysophylla</u> <u>Libocedrus decurrens</u> <u>Lithocarpus densiflorus</u> <u>Pinus attenuata</u> <u>Pinus sabiniana</u> <u>Quercus chrysolepis</u> <u>Quercus douglasii</u> <u>Quercus engelmannii</u> <u>Quercus wislizenii</u>	Horse chestnut Madrone Giant chinquapin Incense-cedar Tanbark-oak Knobcone pine Digger pine Canyon live oak Blue oak Evergreen white oak Interior live oak
Low trees and tall shrubs, 10-20 ft	<u>Adenostoma fasciculatum</u> <u>Arctostaphylos glandulosa</u> <u>Arctostaphylos glauca</u> <u>Arctostaphylos manzanita</u> <u>Arctostaphylos patula</u> <u>Arctostaphylos viscida</u> <u>Cercocarpus betuloides</u> <u>Cercocarpus ledifolius</u> <u>Chilopsis linearis</u> <u>Crossosoma californicum</u> <u>Fremontia californica</u> <u>Heteromeles arbutifolia</u> <u>Nicotiana glauca</u> <u>Rhamnus californica</u> <u>Sambucus cerulea</u>	Common chamise Eastwood manzanita Big-berry manzanita Common manzanita Greenleaf manzanita White-leaved manzanita Birchleaf mountain-mahogany Curlleaf mountain-mahogany Desert-willow Catalina crossosoma California fremont Christmas berry Tree tobacco Coffeeberry Blue elderberry
Low to medium shrubs, under 10 ft	<u>Castanopsis sempervirens</u> <u>Ceanothus</u> spp. <u>Cercis occidentalis</u> <u>Dirca occidentalis</u> <u>Eastwoodia elegans</u> <u>Eriodictyon californicum</u>	Sierra chinquapin Ceanothus Western redbud Western leatherwood Eastwoodia Yerba santa

continued

Table M2620-58.1 (Concluded)

Growth form	Plant associations	
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>		
	<u>Eriogonum fasciculatum</u> <u>Galrezia speciosa</u> <u>Garrya elliptica</u> <u>Garrya fremontii</u> <u>Isomeris arborea</u> <u>Lotus scoparius</u> <u>Mimulus aurantiacus</u> <u>Purshia tridentata</u> <u>Quercus dumosa</u> <u>Rhus diversiloba</u> <u>Rhus integrifolia</u> <u>Rhus laurina</u> <u>Rhus ovata</u> <u>Salvia apiana</u> <u>Salvia mellifera</u> <u>Simmondsia chinensis</u>	Wild buckwheat Showy galrezia Silk-tassel Fremont silk-tassel Baldderpod Common deerweed Bush monkey-flower Antelope brush California scrub oak Poison oak Mahogany sumac Laurel sumac Sugar bush White sage Black sage Jojoba
Lesser vegetation	<u>Bloomeria crocea</u> <u>Dithyrea californica</u> <u>Emmenanthe penduliflora</u> <u>Hemitomes congestum</u> <u>Hollisteria lanata</u> <u>Holozonia filipes</u> <u>Jepsonia parryi</u> <u>Kelloggella galioides</u> <u>Loeflingia squarrosa</u> <u>Lyrocarpa coulteri</u> <u>Microcala quadrangularis</u> <u>Paeonia brownii</u> <u>Romneya coulteri</u> <u>Xerophyllum tenax</u>	Common golden stars California shield-pod Whispering bells Hemitomes Hollisteria Holozonia Coast jepsonia Kelloggella California loeflingia Coulter's lyre-pod American microcala Western peony Matilija poppy Bear grass
Tall trees, over 40 ft	<u>Acer macrophyllum</u> <u>Alnus rhombifolia</u> <u>Platanus racemosa</u> <u>Populus fremontii</u> <u>Quercus agrifolia</u> <u>Torreya californica</u> <u>Umbellularia californica</u>	Bigleaf maple White alder California sycamore Fremont cottonwood Coastal live oak California nutmeg California-laurel
Low to medium shrubs, under 10 ft	<u>Anemopsis californica</u> <u>Taxus brevifolia</u> <u>Whipplea modesta</u>	Yerba mansa Western yew Yerba De Selva
Lesser vegetation	<u>Aristolochia californica</u> <u>Blechnum spicant</u> <u>Datisca glomerata</u> <u>Osmaronia cerasiformis</u> <u>Pleuricospora fimbriolata</u> <u>Woodwardia fimbriata</u>	California pipe-vine Deer fern Durango root Oso berry Fringed pinesap Chain fern



Location of province
within the United States



Detail of province



Province boundary



Section boundary



State boundary

Figure 58.1 Province M2620, California Chaparral

Table M2620-58.2 Ecological Characteristics of Selected Plant Species Common to the California Chaparral

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bigleaf maple <i>Acer macrophyllum</i> Pursh	Common along stream-sides and shaded canyons below 5,000 ft	Deciduous tree, 30-100 ft high, broad crowned with large 5-lobed leaves 4-10 in broad	Samara, body of samara short-bristle-hairy, wings 1.5-2 in long, diverging at an acute angle, Aug.-Oct.	Seeds eaten by tree squirrels and some songbirds; due to growing habits, fair-poor browse to deer when and where foliage is available	Post-fire sprouter; attractive fall coloring tree, with leaves turning yellow brown
Common chamise <i>Adenostoma fasciculatum</i> H. & A.	Dry, sun, on shallow soils	Shrub, 4-10 ft tall	Achene	Browsed by mule deer	Useful for erosion control when planted in full sunlight strong root system and drought resistant
Horse chestnut <i>Aesculus californica</i> (Spach) Nutt.	Dry canyons, slopes, low hills below 4,000 ft	Deciduous tree, 15-40 ft tall with broad open crown, post fire sprouter, 5-7 leaflets	Capsule, pear-shaped, 1.5-2 in long, 3-valved with 1 or 2 large shiny brown seeds, Aug.-Oct.	Newly fallen and early growing green leaves are excellent-good browse for deer	Fruits and leafage are said to be poison to livestock, honeybees, and humans; candlestick-like white flower panicles
White alder <i>Alnus rhombifolia</i> Nutt.	Along streams, shade	Deciduous tree, to 60 ft tall, old bark light in color	Cone, to 1 in long, nutlets small, flat, without a wing	Slight use as browse	Thicket-forming
Yerba mansa <i>Anemopsis californica</i> Hook.	Low, alkaline ground	Stem, 6-20 in tall	Capsule, Mar.-Aug.		
Madrone <i>Arbutus menziesii</i> Pursh	Dry, well-drained, moist, sun, on wooded slopes	Tree, 3-130 ft tall	Berry, July-Jan.	Fruit eaten by dove, band-tailed pigeons, turkey, raccoon; browsed by mule deer	
Eastwood manzanita <i>Arctostaphylos glandulosa</i> Eastw.	Dry, well-drained, sun, shallow soils	Shrub, to 7 ft tall, evergreen	Berry, Feb.-Nov.	Browsed by mule deer	
Big-berry manzanita <i>Arctostaphylos glauca</i> Lindl.	Dry, well-drained, sun, shallow soils	Shrub, to 7 ft tall, evergreen	Berry	Same as <i>A. glandulosa</i>	Colony-forming
Common manzanita <i>Arctostaphylos manzanita</i> Parry	Dry, well-drained, sun, shallow to medium soils	Evergreen shrub, to 10 ft tall	Berry, available all year	Fruit eaten by few species of birds	Killed by fire, does not sprout
Greenleaf manzanita <i>Arctostaphylos patula</i> Greene	Dry, well-drained, in sun	Spreading shrub to 6 ft tall, old bark reddish-brown, leaves yellow green, evergreen	Berry, May-Sept.	Very important browse for mule deer	Sprouts after fires
White-leaved manzanita <i>Arctostaphylos viscida</i> Parry	Dry hillsides usually in gravelly or stony soil	Spreading shrub to 9 ft tall, smooth dark red-brown bark	Berry, available year round		Does not crown sprout after fires
California pipe-vine <i>Aristolochia californica</i> Torr.	Streambanks and borders of lakes	Stems woody, climbing to a height of 10-13 ft tall	Capsule		
Deer fern <i>Blechnum spicant</i> (L.) Roth	Wet, sheltered places	Evergreen fern, many erect fronds, 8 in to 3.5 ft tall	Spore-bearing plant	Forage when other green plants are scarce	Short, woody creeping rhizomes
Common golden stars <i>Bloomeria crocea</i> (Torr.) Cov.	Coast ranges	Stems, 8-20 in tall	Capsule		

continued

Table M2620-58.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Giant chinquapin <i>Castanopsis chrysophylla</i> (Dougl.) DC.	Dry, well-drained, sun, wooded slopes	Tree, 50-150 ft tall	Nut, available in Sept. of second year	Browsed by mule deer	Thicket-forming
Sierra chinquapin <i>Castanopsis sempervirens</i> (Kellogg) Dudley	Dry, well-drained, sun, in open coniferous forest	Low spreading shrub, 3-8 ft tall	Nut, Sept.-Oct. of second season	Browsed by bighorn sheep	
Ceanothus <i>Ceanothus</i> spp. L.	Most species dry, well-drained, sun, usually on shallow soils	Shrubs to 15 ft tall	Capsule	Seeds eaten by quail, mourning dove, mountain sheep, chipmunks; browsed by jackrabbit and black-tailed deer	
Western redbud <i>Cercis occidentalis</i> Torr.	Dry, well-drained, moist, sun, foothill slopes	Shrub, 8-16 ft tall	Legume, July-Aug.	Browsed by mule deer	
Birchleaf mountain-mahogany <i>Cercocarpus betuloides</i> Nutt.	Dry, sun, shallow soils and rock outcrops	Shrub, 6-23 ft tall, evergreen	Achene, July-Sept.	Browsed by mule deer	
Curlleaf mountain-mahogany <i>Cercocarpus ledifolius</i> Nutt.	Dry sunny areas	Evergreen, shrub to 20 ft tall, leaf margin revolute	Achene, Aug.-Sept.	Important browse for mule deer	
Desert-willow <i>Chilopsis linearis</i> (Cav.) Sweet	Dry, well-drained, moist, sun, along desert water-courses	Willow-like shrub, 6-20 ft tall	Capsule, persistent, Sept.-Oct.	Seeds eaten by Gambel quail	
Catalina crossosoma <i>Crossosoma californicum</i> Nutt.	Dry, sun, hill-sides and canyons	Shrub, 3-50 ft tall	Follicle		
Durango root <i>Datisca glomerata</i> (Presl.) Baill.	Streambanks	Perennial herb, 3-6 ft tall	Capsule, May-Aug.		
Western leatherwood <i>Dirca occidentalis</i> Gray	Dry, well-drained, sun, wooded hill-sides	Erect shrub, 3-6 ft tall	Drupe, June		Colony-forming
California shield-pod <i>Dithyrea californica</i> Harv.	Sandy soils in the deserts	Annual, stems 3-12 in long	Pod		
Eastwoodia <i>Eastwoodia elegans</i> Brandeg.	Hot dry hillsides, up to 2,500 ft elevation	Rounded desert shrub, 1-3 ft tall	Achenes, Apr.-July		
Whispering bells <i>Emmenanthe penduliflora</i> Benth.	Rocky soil, particularly common on burns	Plants erect, 6-20 in tall	Capsule		
Yerba santa <i>Eriodictyon californicum</i> (H. & A.) Greene	Dry, well-drained, sun, stony soil	Evergreen shrub, 2-8 ft tall	Capsule	Browsed by mule deer	Forms colonies
Wild buckwheat <i>Eriogonum fasciculatum</i> Benth.	Dry, sun, shallow soils	Shrub, to 7 ft tall	Achene	Browsed by deer	
California fremont <i>Fremontia californica</i> Torr.	Dry, sun, hill-sides and mountain slopes	Arborescent shrub, 10-28 ft tall	Capsule	Browsed by mule deer	
Showy galrezia <i>Galrezia speciosa</i> (Nutt.) Gray	Rocky canyons	Stems, to 3 ft tall	Capsule		Forms wide clumps

continued

Table M2620-58.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Silk-tassel <u>Garrya elliptica</u> Dougl.	Dry slopes and ridges below 2,000 ft	Evergreen shrub, erect, 5-9 ft, rarely 20 ft, leaves have de- vinate undulating margins, rough bark	Berry, round, .5 in wide, covered with white, soft woolly hairs, Mar.-June	Fruit eaten by song- birds; fair-poor browse for deer	Post-fire sprouter; often called quinine bush; bark, leaves, fruits contain al- kaloid garryine, which is used as a tonic
Fremont silk-tassel <u>Garrya fremontii</u> Torr.	Dry, brushy slopes, mostly between 2,500- 7,000 ft	Evergreen shrub, erect, 5-10 ft, often with yellow green cast, leaves oblong, .75-2.5 in long, smooth bark	Berry, smooth, .25 in wide, purple-black, born in clusters from pendulous catkin tassels, 1-2 in, Mar.- June	Fruit eaten by song- birds; good-fair browse for deer, especially of sprouts after burning	Vigorous post-fire sprouter; invades cutover and burned areas
Hemitomes <u>Hemitomes congestum</u> Gray	Coniferous woods	Stems, 2-6 in tall	Berry, May-July		
Christmas berry <u>Heteromeles</u> <u>arbutifolia</u> Roem.	Semi-dry, brushy slopes and can- yons below 4,000 ft	Evergreen shrub, to 30 ft tall, 1.5 ft thick, leaves are green, stiff and sharply toothed	Pome, pearshaped, scarlet, .25 in long, Oct.-Dec.	Fruit eaten to some extent by songbirds, rodents, band-tailed pigeons	Invades cutover areas
Hollisteria <u>Hollisteria lanata</u> Wats.	Open hills and plains	Prostrate annual, branches 2-8 in long	Achene, Apr.- June		
Holozonia <u>Holozonia filipes</u> (H. & A.) Greene	In dry alkaline or rocky gulches or beds of in- termittent streams	Stems, 1-3 ft tall	Achene		
Bladderpod <u>Isomeris arborea</u> Nutt.	Dry, sun	Shrub, 3-10 ft tall	Capsule		
Coast jepsonia <u>Jepsonia parryi</u> (Torr.) Small	Dry slopes	Stems, 4-12 in tall			
Kelloggia <u>Kelloggia galioides</u> Torr.	Dry ridges	Plants with woody rootstocks, stems 4-10 in tall	Small and dry		
Incense-cedar <u>Libocedrus decurrens</u> Torr.	Dry, well-drained, sun, shade, moun- tain slopes and canyons, 2,400- 2,800 ft	Evergreen tree, 75- 125 ft tall, 3-4 ft thick, aromatic tree	Seeds, .5 in long, cones ob- long, 1-1.5 in long	Seeds probably eaten by some species of songbirds and rodents	Wood used for shingles, posts, lead pencils, rail- road ties
Tanbark-oak <u>Lithocarpus densiflorus</u> (H. & A.) Rehd.	Dry, well-drained, moist, sun and shade	Tree, 80-115 ft tall	Nut, matures at end of second season	Seeds eaten by Red- wood chipmunk and mule deer	
California loeflingia <u>Loeflingia squarrosa</u> Nutt.	Dry soils, sandy plains	Low annual, 2-6 in long	Capsule, many seeds		
Common deerweed <u>Lotus scoparius</u> (Nutt. ex T. & G.) Ottley	Dry, well-drained, sun, shallow soils	Shrub, to 5 ft tall	Legume	Browsed by deer	
Coulter's lyre-pod <u>Lyrocarpa coulteri</u> Hook. & Harv.	Dry, rocky areas	Perennial, stems 8-20 in tall	Pod, Jan.-Apr.		

continued

Table M2620-58.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
American microcala <i>Microcala quadrangularis</i> (Lam.) Griseb.	Grassy fields	Erect annual, stems 1-4 in tall	Capsule		
Bush monkey-flower <i>Mimulus aurantiacus</i> Curt.	Grows on rocky outcrops along streams and woods below 2,000 ft	Erect, branched shrub, 3-5 ft tall, dark green, sticky foliage	Capsule, .75-1 in long, seeds fusiform, about .05 in long, May-Aug.		Flowers are brownish yellow, funnel-shaped, narrow-throated
Tree tobacco <i>Nicotiana glauca</i> Graham	Dry, well-drained, moist, sun, shade, disturbed soils	Evergreen shrub, 7-26 ft tall	Capsule, small woody seeds	Used by hummingbirds for nectar	Sprouts
Oso berry <i>Osmaronia cerasiformis</i> (T. & G.) Greene	Well-drained, shade, canyons and shaded slopes	Shrub, 3-16 ft tall	Drupe, July-Aug.	Fruit eaten by many birds and mammals	
Western peony <i>Paeonia brownii</i> Dougl.	Rocky ridges	Perennial herb, stems 8-16 in tall	Leathery foli-icles, June-July		
Knobcone pine <i>Pinus attenuata</i> Lemm.	Dry, gravelly mountain slopes at low elevations	Small tree, to 45 ft tall, forming straggling crowns with sparse foliage	Cone, matures Sept. of second season, persistent	Seeds eaten by birds and small mammals	Very resistant to drought
Digger pine <i>Pinus sabiniana</i> Dougl.	Dry, well-drained, moist, sun, 500-4,000 ft elevation	Tree, to 98 ft tall	Cone, matures Sept. of second year, seeds shed during several years, cones persistent	Seeds eaten by western gray squirrel and mule deer	
California sycamore <i>Platanus racemosa</i> Nutt.	Well-drained, moist, sun, riparian	Tree, to 80 ft tall	Head of achenes, available in Oct., persistent through winter	Seeds eaten by song-birds; browsed by mule deer	
Fringed pinesap <i>Pleuricospora fimbriolata</i> Gray	Coniferous forest	Saprophytic herb, stems 4-10 in tall	Berry, June-Aug.		
Fremont cottonwood <i>Populus fremontii</i> Wats.	Riparian	Tree, to 165 ft	Plumed achene	Good-fair browse for mule deer	Sprouts
Antelope brush <i>Purshia tridentata</i> (Pursh) DC.	Dry, well-drained, sun, dry arid slopes	Shrub, 3-10 ft tall	Achene, Aug.	Seeds eaten by chipmunks; browsed by mule deer	
Coastal live oak <i>Quercus agrifolia</i> Nee	Common in valleys and not-so-dry slopes below 3,000 ft	Evergreen tree, 60-90 ft tall, 2-3 ft thick, short trunk and large branches form a broad, rounded, wide-spreading crown	Acorn, chestnut-brown, conical, .13-1.5 in long, cup covers only base of acorn, matures first fall	Acorns eaten by deer, turkeys, tree squirrels, birds, mammals; fair browse value for deer	Post-fire sprouter; Indians ground acorns into meal, the water leached them of tannins, and cooked it as mush or bread
Canyon live oak <i>Quercus chrysolepis</i> Liebm.	Dry, well-drained, sun, steep canyons and stony soils	Tree, evergreen, to 65 ft tall	Acorn, biennial	Seeds eaten by woodpeckers and mule deer	
Blue oak <i>Quercus douglasii</i> H. & A.	Dry, well-drained, sun, dry hills	Tree, to 65 ft tall	Acorn, annual	Seeds eaten by mule deer	Sprouts from stumps; slow-growing

continued

Table M2620-58.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
California scrub oak <i>Quercus dumosa</i> Nutt.	Dry, well-drained, sun, shallow, stony soils	Shrub, to 15 ft, evergreen	Acorn, annual	Seeds eaten by mule deer	
Evergreen white oak <i>Quercus engelmannii</i> Greene	Dry, well-drained, sun, shallow soils	Evergreen tree, 50-60 ft tall	Acorn, annual	Same as <i>Q. engelmannii</i>	
Interior live oak <i>Quercus wislizenii</i> DC.	Dry, well-drained, sun, mountain slopes, foothills, valleys	Tree, 50-80 ft tall	Acorn biennial	Same as <i>Q. engelmannii</i>	
Coffeeberry <i>Rhamnus californica</i> Esch.	Dry flats, moist hillsides and ravines, rocky ridges below 3,500 ft	Evergreen shrub, 4-6 ft high with 1-3 in long leaves, post fire sprouter	Berry, oval, black when ripe, .25 in long, 2-seeded, Aug.-Oct.	Berries eaten by small mammals and songbirds; good browse for deer, especially young sprouts	Attempt to grow commercially to make coffee from berries was a failure
Poison oak <i>Rhus diversiloba</i> T. & G.	Dry, well-drained, sun, shade, on a wide variety of sites	Shrub and vine, to 10 ft	Drupe, Sept.-Oct.	Fruit eaten by California quail; browsed by mule deer	May form extensive thickets
Mahogany sumac <i>Rhus integrifolia</i> (Nutt.) Benth. & Hook.	Dry, well-drained, sun, shallow soil	Shrub, to 10 ft tall	Drupe, Aug.-Sept.	Browsed by mule deer	Very drought resistant
Laurel sumac <i>Rhus laurina</i> Nutt.	Dry, well-drained, sun, shallow soils	Shrub, 7-16 ft tall, evergreen	Drupe, persistent, Sept.	Same as <i>R. integrifolia</i>	
Sugar bush <i>Rhus ovata</i> Wats.	Dry, well-drained, sun, shallow soil	Shrub, evergreen, to 10 ft tall	Drupe, persistent, Aug.-Sept.	Same as <i>R. integrifolia</i>	Thicket-forming
Matilija poppy <i>Romneya coulteri</i> Harv.	Arroyos and canyon floors	Herbaceous stems, 3-8 ft tall			
White sage <i>Salvia apiana</i> Jeps.	Dry, sun, shallow, stony soil	Shrub, to 7 ft tall	Nutlet	Browsed by deer	
Black sage <i>Salvia mellifera</i> Greene	Dry, sun, shallow soil	Shrub, less than 3 ft tall	Nutlets	Same as <i>S. apiana</i>	Valuable bee plant
Blue elderberry <i>Sambucus cerulea</i> Raf.	Moist places in open woody canyons or flats up to 5,500 ft	Deciduous shrub, many-stemmed, 4-10 up to 30 ft high, leaves 5-7 leaflets, 1-3 in long, lined with tiny teeth	Drupe, berrylike, blue-black, .25 in wide, covered with whitish bloom, Aug.-Oct.	Fruit eaten by numerous species of songbirds, small mammals, band-tailed pigeons; fair browse for deer in spring	Post-fire sprouter; berries can be crushed into juice; Indians used berries for flavoring in meal
Jojoba <i>Simmondsia chinensis</i> (Link) Schneid.	Dry, sun, bushy hills and mesas	Shrub, 3-9 ft tall	Capsule, Aug.-Sept.	Seeds eaten by squirrels and doves; browsed by mule deer	
Western yew <i>Taxus brevifolia</i> Nutt.	Well-drained, moist, sun, shade, coniferous woods	Tree, 30-80 ft tall	Drupelike, Aug.-Sept. of second year	Fruit eaten by birds and ring-tailed cat	Poisonous to cattle
California nutmeg <i>Torreya californica</i> Torr.	Well-drained, moist, sun, shade, often along water courses	Tree, 50-115 ft tall	Drupelike, Aug.-Oct.		
California-laurel <i>Umbellularia californica</i> (H. & A.) Nutt.	Well-drained, moist, sun, shade, canyon slopes and alluvial valleys	Tree, 65-100 ft tall	Drupe, Oct.	Fruit eaten by songbirds and squirrels; browsed by mule deer	

continued

Table M2620-58.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Yerba De Selva <i>Whipplea modesta</i> Torr.	Moist shaded areas below 4,500 ft	Trailing, partly woody herb with weak, slender branches, leaves deciduous, opposite, ovate, toothed	Capsule, round, 1 in thick, May-Aug.	Provides fair deer browse value	Flowers are small and white in terminal clusters; encourage this species on ROW
Chain fern <i>Woodwardia fimbriata</i> Sm. ex Rees.	Springy and boggy places in canyons below 5,000 ft elevation	Leaves erect, 3-6 ft tall	Spores		
Bear grass <i>Xerophyllum tenax</i> (Pursh) Nutt.	Open woods and clearings, sea level to + 7,000 ft	Flower stalk to 5 ft tall, basal leaves in large clump, from a thick rhizome	Capsule, to .2 in long		

59 PROVINCE M3110 Rocky Mountain Forest

SECTION M3111 GRAND FIR—DOUGLAS-FIR FOREST

Only the forested communities in this Grand Fir—Douglas-fir Section are described because the nonforested communities are very similar to those described in sections 50 and 51. The boundary between forest and semi-arid vegetation is often sharp due to abrupt changes in soil.

Most of this section is found in the Blue Mountains of eastern Oregon and Washington. Soils of the area can be grouped into two main units: 1) moderate to high elevation soils formed under forest vegetation, and 2) soils at lower elevations formed under grassland or shrub—grassland vegetation. Most of the forest soils are formed in volcanic ash while soils of the forest—grassland transition at moderate to high elevations are usually formed in loess and basic igneous rock materials.

SECTION M3112, DOUGLAS-FIR FOREST

Bailey's (1976) Douglas-fir Forest Section appears to be equivalent to the Upper Montane Forest of Daubenmire (1968) and extends from central Colorado to central Montana. It is made up largely of country which drains into the Great Basin and into the Columbia Plateau. In the northeast, this forest adjoins the grassland because the Lower Montane of more southerly areas is lacking (see regional ecology discussion under Section M3113). This Douglas-fir Forest extends up the lower slopes of the mountains until it reaches the subalpine forest region, the actual altitude of the contact changing from approximately 4000 feet in the north to approximately 10,000 feet in the south. Physiographically, this section is comprised of many relatively small, isolated mountain ranges on which the Douglas-fir Forest occupies the lower to intermediate elevations.

White fir and blue spruce in the south, and grand fir and white spruce in the north are associated with the Douglas-fir in more moist sites. Lodgepole pine, aspen, and subalpine larch are pioneers following disturbances. Over large expanses, aspen may be the only tree and many of the stands it dominates may be climax units. In the north, whitebark pine and limber pine occur on rocky ridges and lower mountain slopes.

SECTION M3113 PONDEROSA PINE—DOUGLAS-FIR FOREST

This mountainous section is comprised of a series of ecosystem belts forming an altitudinal series tipped at a gentle angle from south to north due to the organisms that are adapted to a pattern of climatic units with that sloping form.

Grassland in the east and semidesert shrublands in the west occupy the lower elevations. Several different mountain ranges rise up from these lowlands and penetrate progressively wetter and cooler climates. Because each species of plants has a capacity for growth in only part of the section's environmental gradient, there is a tendency for similar species to associate, resulting in a series of belt-shaped subdivisions of the section. Each belt is identified by a single real or potential climatic climax ecosystem and a series of other ecosystems which are either successional following disturbance or occur on sites in which extremes of topography or soil prevent the development of the climatic climax unit (i.e., the climatic climax is the most moderate ecosystem in each altitudinal belt).

"Late successional" is assumed to imply forest stands. Some ecosystems in this section are unlikely to succeed to forest because the soil is deep and well-drained. The resulting meadows have species not listed under the "late successional" category in the tables that follow this discussion.

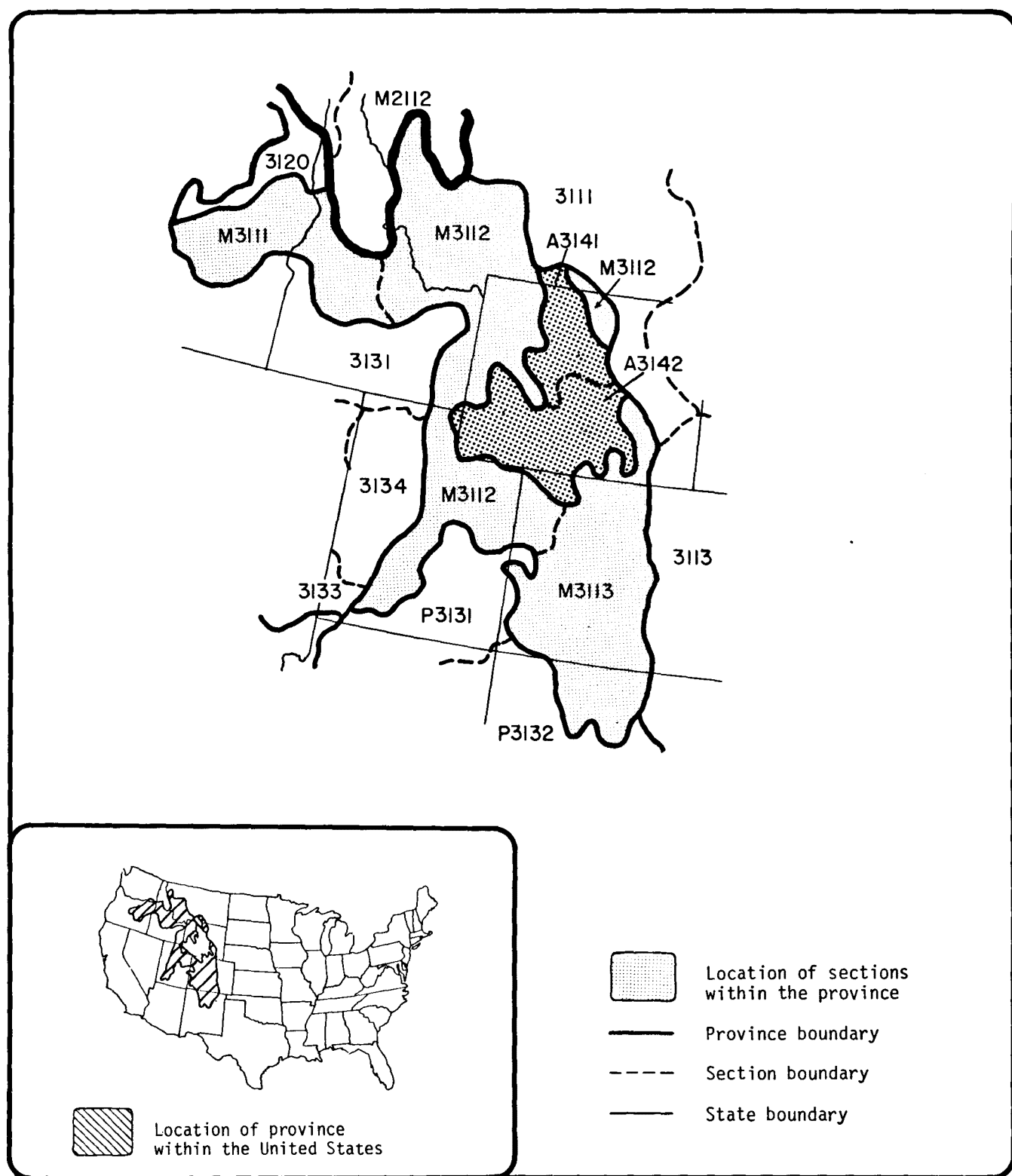


Figure 59.1 Province M3110, Rocky Mountain Forest; Sections M3111, Grand Fir—Douglas-fir Forest; M3112, Douglas-fir Forest; and M3113, Ponderosa Pine—Douglas-fir Forest

Table M3110-59.1 [M3111] Selected Plant Species Common to the Grand Fir—Douglas-fir Forest

Growth form	Early successional plants	Late successional plants
<u>Habitat Conditions: Dry to Moist Sites/Excessive to Well-Drained</u>		
(Ponderosa pine communities)		
Tall-growing trees, over 40 ft (Must be controlled)	<u>Juniperus occidentalis</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u>	Western juniper Ponderosa pine Douglas-fir
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Artemisia tridentata</u> <u>Berberis repens</u> <u>Cercocarpus ledifolius</u> <u>Purshia tridentata</u> <u>Symphoricarpos albus</u>	Big sagebrush Oregon-grape Curlleaf mountain- mahogany Bitterbrush Common snowberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Achillea millefolium</u> <u>Agroseris glauca</u> <u>Agropyron spicatum</u> <u>Antennaria rosea</u> <u>Antennaria stenophylla</u> <u>Arnica cordifolia</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Carex rossii</u> <u>Erigeron eatonii</u> <u>Festuca idahoensis</u> <u>Festuca occidentalis</u> <u>Fragaria vesca</u> <u>Hieracium albertinum</u> <u>Koeleria cristata</u> <u>Lupinus caudatus</u> <u>Phlox douglasii</u> <u>Poa nervosa</u> <u>Sitanion hystrix</u> <u>Stipa occidentalis</u>	Western yarrow Pale agroseris Bluebunch wheatgrass Rosy pussy's-toes Narrowleaf pussy's toes Heartleaf arnica Pinegrass Elk sedge Ross sedge Eaton's daisy Idaho fescue Western fescue Strawberry Western hawkweed Prairie junegrass Tailcup lupine Tufted phlox Wheeler bluegrass Bottlebrush squirreltail Western needlegrass
(Grand fir communities)		
Tall-growing trees, over 40 ft (Must be controlled)	<u>Abies grandis</u> <u>Juniperus occidentalis</u> <u>Larix occidentalis</u> <u>Picea engelmannii</u> <u>Pinus contorta</u> <u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u>	Grand fir Western juniper Western larch Englemann spruce Lodgepole pine Ponderosa pine Douglas-fir
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Berberis repens</u> <u>Cercocarpus ledifolius</u> <u>Symphoricarpos albus</u> <u>Vaccinium scoparium</u>	Oregon-grape Curlleaf mountain- mahogany Common snowberry Grouseberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Achillea millefolium</u> <u>Antennaria rosea</u> <u>Antennaria stenophylla</u> <u>Aquilegia formosa</u> <u>Arnica cordifolia</u> <u>Bromus vulgaris</u> <u>Calamagrostis rubescens</u> <u>Carex geyeri</u> <u>Erigeron eatonii</u> <u>Festuca occidentalis</u> <u>Fragaria vesca</u> <u>Fragaria virginiana</u> <u>Hieracium albertinum</u> <u>Hieracium albiflorum</u> <u>Lupinus caudatus</u> <u>Lupinus latifolius</u> <u>Osmorhiza purpurea</u> <u>Poa nervosa</u> <u>Pyrola secunda</u> <u>Sitanion hystrix</u> <u>Smilacina stellata</u> <u>Stipa occidentalis</u>	Western yarrow Rosy pussy's-toes Narrowleaf pussy's-toes Red columbine Heartleaf arnica Columbia brome Pinegrass Elk sedge Eaton's daisy Western fescue Strawberry Virginia strawberry Western hawkweed White hawkweed Tailcup lupine Broadleaf lupine Purple sweetroot Wheeler bluegrass One-sided wintergreen Bottlebrush squirreltail Starry Solomon plume Western needlegrass

Table M3110-59.1 [M3112] Selected Plant Species Common to the Douglas-fir Forest

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Larix lyallii</u> <u>Larix occidentalis</u> <u>Pinus albicaulis</u> <u>Pinus contorta</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Populus trichocarpa</u>	Subalpine larch Western larch Whitebark pine Lodgepole pine Limber pine Ponderosa pine Black cottonwood	<u>Abies concolor</u> <u>Picea pungens</u> <u>Pinus contorta</u> <u>Populus trichocarpa</u> <u>Pseudotsuga menziesii</u>	White fir Blue spruce Lodgepole pine Black cottonwood Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Alnus rubra</u> <u>Amelanchier</u> spp. <u>Quercus gambellii</u> <u>Salix</u> spp.	Red alder Serviceberry Gambel oak Willow		
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Artemisia tridentata</u> <u>Berberis nervosa</u>	Big sagebrush Oregon-grape	<u>Berberis nervosa</u> <u>Ceanothus</u> spp. <u>Cornus nuttallii</u> <u>Holodiscus dumosa</u> <u>Juniperus communis</u> <u>Physocarpus capitatus</u> <u>Prunus emarginata</u> <u>Rosa</u> spp. <u>Spiraea douglasii</u> <u>Symphoricarpos albus</u>	Oregon-grape Ceanothus Pacific dogwood Ocean spray Dwarf juniper Ninebark Bitter cherry Wild rose Douglas spiraea Common snowberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)			<u>Arnica cordifolia</u> <u>Cornus amomum</u> <u>Diodia teres</u> <u>Festuca</u> spp. <u>Galium</u> spp. <u>Smilacina racemosa</u>	Heartleaf arnica Silky dogwood Rough buttonweed Fescue Bedstraw False Solomon's-seal
Habitat conditions: Moist to wet/well-drained to impeded				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Picea pungens</u> <u>Populus deltoides</u> <u>Populus tremuloides</u>	Blue spruce Cottonwood Quaking aspen	<u>Abies concolor</u> <u>Picea pungens</u> <u>Pseudotsuga menziesii</u>	White fir Blue spruce Douglas-fir
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Alnus rubra</u> <u>Amelanchier</u> spp. <u>Betula occidentalis</u> <u>Quercus gambellii</u> <u>Salix</u> spp.	Red alder Serviceberry River birch Gambel oak Willow	<u>Alnus rubra</u> <u>Salix</u> spp.	Red Alder Willow
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)			<u>Galium</u> spp. <u>Poa pratensis</u> <u>Smilacina racemosa</u>	Bedstraw Kentucky bluegrass False Solomon's-seal

Table M3110-59.1 [M3113] Selected Plant Species Common to the Ponderosa Pine—Douglas-fir Forest

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Pinus contorta</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u>	Lodgepole pine Limber pine Ponderosa pine Quaking aspen Douglas-fir	<u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u>	Limber pine Ponderosa pine Quaking aspen Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Amelanchier</u> spp. <u>Quercus gambelii</u> <u>Salix amygdaloides</u>	Serviceberry Gambel oak Willow	<u>Juniperus scopulorum</u> <u>Salix amygdaloides</u>	Rocky Mountain juniper Willow
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Berberis repens</u> <u>Holodiscus dumosa</u> <u>Jamesia americana</u> <u>Juniperus communis</u> <u>Physocarpus capitatus</u> <u>Ribes cereum</u> <u>Rosa</u> spp. <u>Rubus deliciosus</u> <u>Sambucus racemosa</u> <u>Shepherdia canadensis</u>	Oregon-grape Ocean sprav Cliffbush Dwarf juniper Ninebark Wax current Wild rose Boulder raspberry Red elderberry Buffaloberry	<u>Berberis repens</u> <u>Ceanothus velutinus</u> <u>Holodiscus dumosa</u> <u>Juniperus communis</u> <u>Rosa</u> spp. <u>Shepherdia canadensis</u>	Oregon-grape Tobacco brush Ocean spray Dwarf juniper Wild rose Buffaloberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Achillea</u> spp. <u>Agropyron</u> spp. <u>Aletes acaulis</u> <u>Antennaria</u> spp. <u>Arctostaphylos uva-ursi</u> <u>Artemisia dracunculus</u> <u>Artemisia frigida</u> <u>Aster</u> spp. <u>Astragalus</u> spp. <u>Bromus</u> spp. <u>Campanula rotundifolia</u> <u>Carex</u> spp. <u>Cystopteris fragilis</u> <u>Eriogonum umbellatum</u> <u>Fragaria ovalis</u> <u>Fraseria speciosa</u> <u>Harbounia trachypyleura</u> <u>Lithospermum multiflorum</u> <u>Lupinus argenteus</u> <u>Penstemon</u> spp. <u>Phacelia</u> spp. <u>Potentilla</u> spp. <u>Pulsatilla patens</u> <u>Sedum lanceolatum</u> <u>Solidago</u> spp. <u>Thermopsis divaricarpa</u>	Milfoil Wheatgrass Mountain caraway Pussy's-toes Kinnikkinnik Linearleaf wormwood Pasture sage Aster Milk-vetch Brome Harebell Sedge Brittle fern Sulfur buckwheat Strawberry Monument plant Wiskbroom parsley Puccoon Lupine Beard tongue Purple fringe Cinquefoil Wind flower Stonecrop Goldenrod Golden banner	<u>Achillea</u> spp. <u>Aster</u> spp. <u>Astragalus</u> spp. <u>Poa</u> spp.	Milfoil Aster Milk-vetch Bluegrass
Habitat conditions: Moist to wet/well drained to impeded				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Picea pungens</u> <u>Pinus ponderosa</u> <u>Populus trichocarpa</u> <u>Populus tremuloides</u> <u>Pseudotsuga manziesii</u>	Blue spruce Ponderosa pine Black cottonwood Quaking aspen Douglas-fir	<u>Pinus ponderosa</u> <u>Pseudotsuga menziesii</u>	Ponderosa pine Douglas-fir
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Amelanchier</u> spp. <u>Betula glandulosa</u> <u>Betula occidentalis</u> <u>Cornus stolonifera</u> <u>Lonicera</u> spp. <u>Potentilla</u> spp. <u>Quercus gambelii</u>	Serviceberry Bog birch River birch Red-osier dogwood Honeysuckle Cinquefoil Gambel oak	<u>Lonicera</u> spp. <u>Potentilla</u> spp.	Honeysuckle Cinquefoil
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Geranium</u> spp. <u>Habenaria</u> spp. <u>Juncus</u> spp. <u>Mertensia</u> spp. <u>Oenothera</u> spp. <u>Spiranthes</u> spp.	Geranium Bog orchid Rush Bluebells Evening-primrose Ladies'-tresses	<u>Geranium</u> spp. <u>Mertensia</u> spp. <u>Spiranthes</u> spp.	Geranium Bluebells Ladies'-tresses

Table M3110-59.2 Ecological Characteristics of Selected Plant Species Common to the Rocky Mountain Forest

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir <i>Abies concolor</i> (Gord. & Glend.) Lindl. ex Hildebr. M3112	Well-drained, sunny or shade, 2,000-5,000 ft elevations	Tree, to over 240 ft tall, needles pale bluish-green	Cone, matures in Sept. soon breaks up	Outstanding browse for mule deer; seeds eaten by grouse and rodents	
Grand fir <i>Abies grandis</i> Lindl. M3111	Low hills, val- leys, moist sites near the coast	Tree, 125-150 ft high, 2-4 ft thick, bark gray to reddish brown, post-fire non- sprouter	Seeds, .25 in long, brown, green cylindrical cones 2-4 in long, stand up- right on branches	Seeds eaten by song- birds, chickarees, other rodents; fair browse value for deer and elk; needles eaten by blue grouse in winter	Attractive ever- green tree, pro- vides good nesting cover for song- birds
Milfoil <i>Achillea</i> spp. L. M3113	Conifer forest, 5,500-11,500 ft	Perennial forb, to 1.5 ft	Flattened achene, June-Sept.	Plant eaten by rabbit and sheep	
Western yarrow <i>Achillea millefolium</i> L. M3113	Circumpolar, com- mon, variable and not fully under- stood	Aromatic perennial herb, stems 1-3 ft, leaves slender	Achene	Sage-scented leaves are eaten by a few wildlife species	
Pale agoseris <i>Agoseris glauca</i> (Pursh) Raf. M3111	Meadows and open places at all elevations	Perennial, to 2.25 ft tall, leaves linear to broad to 14 in long	Achene	Seeds eaten by sage grouse	
Wheatgrass <i>Agropyron</i> spp. Gaertn. M3113	Forest edges, mountain meadows, above 7,000 ft, sun	Perennial grass, up to 4 ft	Achene, summer- fall	Plant eaten by deer and elk	
Bluebunch wheatgrass <i>Agropyron spicatum</i> Pursh M3111	Dry rocky slopes, open woodland	Bunchgrass, 15-40 in	Grain, July-Sept.	Plant eaten by rabbit, elk, deer, antelope	
Mountain caraway <i>Aletes acaulis</i> (Torr.) Coult. & Rose M3113	High mountains	Short, to 1.5 in tall, leaflets rhombic	.2 in long		
Red alder <i>Alnus rubra</i> Bong. M3112	Streambanks and moist woods, be- low 1,000 ft	Deciduous tree, to 75 ft tall, trunk to 2 ft, bark thin, gray, smooth	Cones, to 1 in long, nutlets small, flattish, margined with papery wings	Seeds eaten by song- birds and small mam- mals; of secondary importance as browse	Quickly invades burned over, logged or other disturbed areas
Serviceberry <i>Amelanchier alnifolia</i> Nutt. M3112, M3113	Dry, well-drained, moist, in sun	Spreading to erect shrub, usually to about 20 ft tall, leaves oval	Pome, July-Aug.	Fruit eaten by many songbirds and black bear; browsed by mule deer	
Pussy's-toes <i>Antennaria</i> spp. Gaertn. M3113	Well-drained soil in woods and dry open areas	Low, perennial woody herbs	Achene, Apr.-July	Seed heads eaten by blue grouse, plus a few songbirds	Invades old fields
Rosy pussy's-toes <i>Antennaria rosea</i> Greene M3111	Dry, open places, meadows, plains to moderate or high elevations	Mat-forming, stoloniferous perennial to 16 in tall, basal leaves spatulate	Seeds, minute	Same as <i>Antennaria</i> spp.	
Narrowleaf pussy's-toes <i>Antennaria stenophylla</i> Gray M3111	Dry, open places, meadows, open woods	Stems, clustered, to 6 in tall, leaves linear	Seeds, minute	Same as <i>Antennaria</i> spp.	
Red columbine <i>Aquilegia formosa</i> Fisch. M3111	Widely distribut- ed along the coast and coastal mountains	Leaves mainly basal, stems 2.5 ft tall, flowers nodding	Follicles		

continued

Table M3110-59.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Kinnikinnik <i>Arctostaphylos uva-ursi</i> (L.) Spreng. M3113	Dry, well-drained, in sun or shade	Prostrate shrub, trailing rooting stems, to 3 in tall	Red berry, to .2 in long, Aug.-Mar.	Fruit eaten by several species of birds, including grouse; browsed by deer	Forms large mats; used ornamentally
Heartleaf arnica <i>Arnica cordifolia</i> Hook. M3111, M3112	Woodlands, foothills to high elevations in the mountains	Perennial, to 2 ft tall, from long, naked rhizomes	Achene, hairy and glandular, pappus whitish		
Linearleaf wormwood <i>Artemisia dracunculoides</i> L. M3113	Disturbed soil and waste places, usually dry	Rank herb, to 3 ft tall	Minute		Invades grazing land
Pasture sage <i>Artemisia frigida</i> Willd. M3113	Dry prairies, plains and rocks	Woody base forking into many crowns, flowering stems, slender, to 1.5 ft tall, heads nodding	July-Sept.	Plant eaten by grouse, antelope, mule deer, elk, bighorn sheep	
Big sagebrush <i>Artemisia tridentata</i> Nutt. M3111, M3112	Dry plains and hills, in sun	Shrub, to 12 ft tall, much branched, branches erect, leaves 3-toothed	Achene, Oct.	Same as <i>A. frigida</i>	
Aster <i>Aster</i> spp. L. M3113	Different species growing on a variety of site conditions, to alpine regions	Perennial herbs, usually with a rootstock, leaves alternate	Achene	Relatively little importance to wildlife	
Milk-vetch <i>Astragalus</i> spp. L. M3113	Hillsides, open woods, arid slopes, 2,000-10,000 ft	Mostly low herbaceous perennials, to 6 in	Pods, dehiscent or indehiscent	Seeds eaten by quail; plant eaten by antelope	
Oregon-grape <i>Berberis nervosa</i> Pursh M3112	Dry, well-drained slopes, in sun or shade	Shrub, ascending to erect, to 2 ft long, leaves tufted	Berry, July-Aug.	Browsed freely by white-tailed and mule deer; fruit eaten by a few species of birds and mammals	Spreads by creeping rootstocks to form thickets
Oregon-grape <i>Berberis repens</i> Lindl. M3111, M3113	Moist, well-drained sites, lower foothills and forested slopes	Erect, stiff-branched woody shrub, to 6 ft tall, mostly deciduous	Berry, deep-blue, to .5 in long	Same as <i>B. nervosa</i>	
Log birch <i>Betula glandulosa</i> Michx. M3113	Moist to wet areas, in sun	Shrub, to 6 ft tall, leaf blades 1 in long	Small winged nutlet	Seeds eaten by white-tailed ptarmigan and sharp-tailed grouse	
River birch <i>Betula occidentalis</i> Hook. M3112, M3113	Banks of streams and lakes	Tree, to 130 ft tall, twigs brown, leaves ovate	Small winged nutlet		Clump-forming
Brome <i>Bromus</i> spp. L. M3113	Forest edges, mountain meadows, above 7,000 ft	Perennial grass, 16-35 in	Grain, summer-fall	Plant eaten by deer and elk	
Columbia brome <i>Bromus vulgaris</i> (Hook.) Shear M3111	Shaded to open woods, moist to dry banks, montane meadows, sea level to 6,000 ft elevation	Perennial, to 3 ft tall, without rhizomes but rooting at nodes	June-Aug.	Seeds eaten by few species of songbirds and small rodents; plant eaten by elk and mule deer	
Pinegrass <i>Calamagrostis rubescens</i> Buckle M3111	Sagebrush flats to timbered slopes, both dry and moist montane forest	Perennial, culms to 2.5 ft tall, smooth	July-Sept.		

continued

Table M3110-59.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Harebell <u>Campanula rotundifolia</u> L. M3113	Open or rocky banks, meadows and shores	Slender perennial, to 1.5 ft tall, basal leaves round withering	Capsule		
Sedge <u>Carex</u> spp. L. M3113	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grasslike erect herb, 2-4 ft	Achenes, in spikes	Seeds eaten by gamebirds, bear, squirrel, fox; plant eaten by rabbit, deer, elk	
Elk sedge <u>Carex geyeri</u> Boott M3111	Woodlands, open slopes, dry meadows, foothills and moderate elevations	Stems, clustered, to 1.5 ft tall			
Ross sedge <u>Carex rossii</u> Boott M3111	Dry to moderately moist sites in coniferous forest, sea level to near timberline	Stems, slender to over 1 ft tall, densely clustered	Achene	Seeds eaten by wetland birds	
Ceanothus <u>Ceanothus</u> spp. L. M3112	Dry, open flats and lower foothills, intolerant of shade	Low spreading shrub, occasionally to 10 ft tall, freely branched, rigid, regenerates from exposed roots	Capsule, Apr.-Sept.	Browsed by mule deer	Forms dense thickets
Tobacco brush <u>Ceanothus velutinus</u> Dougl. M3113	Open wooded slope, 3,500-10,000 ft	Shrub, 3-6 ft	Capsule, summer-fall	Browsed by deer	Same as <u>Ceanothus</u> spp.
Curlleaf mountain-mahogany <u>Cercocarpus ledifolius</u> Nutt. M3111	Dry, sunny areas	Evergreen, shrub to 20 ft tall, leaf margin revolute	Achene, Aug.-Sept.	Browsed by mule deer, pronghorn and bighorn sheep	
Silky dogwood <u>Cornus amomum</u> Mill. M3112	Swamps and damp thickets	Shrub, to 10 ft tall	Blue berry, Aug.-Oct.		
Pacific dogwood <u>Cornus nuttallii</u> Aud. M3112	Along streams in open to fairly dense woods	Large shrub to tree, to 60 ft tall, showy flowers	Drupe, Oct.-Nov.	Fruit eaten by few species of birds; occasionally browsed by mule deer	Plant may die if exposed to full sunlight after growing in shade
Red-osier dogwood <u>Cornus stolonifera</u> Michx. M3113	Well-drained, moist sites in sun or shade	Spreading or ascending stoloniferous shrub, branches deep red	Drupe, July-Sept.	Fruit eaten by several species of birds; browsed by white-tailed and mule deer, elk, moose, rabbit	Forms thickets by spreading rootstocks
Brittle fern <u>Cystopteris fragilis</u> (L.) Bernh. M3113	Dry rocky places	Rhizome, creeping, fronds clustered	Spores		
Rough buttonweed <u>Diodia teres</u> Walt. M3112	Dry, rocky, sterile soils, alluvial flats, gravel and sandy washes along streams	Annual, moderately erect, roots shallow, stems branching	Seeds hairy, oval, light brown	Minor food value to gamebirds	
Eaton's daisy <u>Erigeron eatonii</u> Gray M3111	Open places in mountains and foothills	Taprooted perennial, to 1 ft tall, basal leaves tufted			

continued

Table M3110-59.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sulfur buckwheat <i>Eriogonum umbellatum</i> Torr. M3113	Mountains and dry slopes	Flowering stems to 1 ft tall, leaves 2.5 in long, blades thick			
Fescue <i>Festuca</i> spp. Elmer M3112	Dry and rocky montane slopes and meadows, to 12,000 ft elevation	Tufted perennial, to 3 ft tall, leaves mostly basal	May-July	Plant eaten by mountain sheep as well as many other birds and mammals	
Idaho fescue <i>Festuca idahoensis</i> Elmer M3111	Dry and rocky montane slopes and meadows, to 12,000 ft elevation	Tufted perennial, to 3 ft tall, leaves mostly basal	May-July	Same as <i>Festuca</i> spp.	
Western fescue <i>Festuca occidentalis</i> Hook. M3111	Streambanks, lake margins, moist woods to montane forest	Tufted perennial, basal leaves, tufted to 3.5 ft tall	May-July	Same as <i>Festuca</i> spp.	
Strawberry <i>Fragaria ovalis</i> (Lehm.) Rydb. M3113	Moist meadows, coniferous forest, 7,000-11,000 ft, sun or shade	Perennial shrub with connecting runners, 4-6 in	Achenes, embedded in fleshy aggregate fruit, May-Oct.	Fruit eaten by gamebirds, songbirds, rabbit, squirrel, deer	
Strawberry <i>Fragaria vesca</i> L. M3111	Moist woods, streambanks, sandy meadows	Plant with trailing stems, leaflets, usually 5	Succulent, up to .2 in broad	Fruit eaten by many songbirds and small mammals	
Virginia strawberry <i>Fragaria virginiana</i> Duchesne M3111	Open woods, sandy or gravelly meadows and streambanks, plains and lower mountains	Freely stoloniferous, leaflets in 5's to 1.5 in long	About .2 in broad, May-Aug.	Light food use by many birds and small mammals	
Monument plant <i>Frasera speciosa</i> Dougl. M3113	Hills and canyons, 7,000-10,000 ft elevation	Upright herb, to 2 ft tall			
Bedstraw <i>Galium</i> spp. L. M3112	Woods and thickets	Slender low herbs	Dry or fleshy, twin, separating into 2 carpels, May-Sept.		
Geranium <i>Geranium</i> spp. L. M3113	Rich soils, 3,000-11,000 ft	Annual or perennial forb, 12-30 in	Capsule, 5-lobed, Apr.-Oct.	Seeds eaten by dove and quail; plant eaten by deer	
Bog orchid <i>Habenaria</i> spp. (Spreng.) Wats. M3113	Dry woods to moist gravelly streambanks and open mountain sides	Plant 2 ft tall, from tubers, leaves on lower third of stem	Capsule, small erect		
Wiskbroom parsley <i>Harbounia trachypleura</i> (Gray) Coult. & Rose M3113	Mountains	Stem to 2 ft tall, flowers yellow			
Western hawkweed <i>Hieracium albertinum</i> Farr. M3111	Dry open places, foothills to moderate elevations	Plants to 4.25 ft tall	Small achene	Seeds eaten by few species of songbirds and small mammals	
White hawkweed <i>Hieracium albiflorum</i> Hook. M3111	Open woods and moist or rather dry hillsides, moderate elevations	Plants to over 3 ft tall, stem hairy at the base, leaves basal, often tufted		Same as <i>H. albertinum</i>	
Ocean spray <i>Holodiscus dumosa</i> (Nutt.) Rydb. M3112, M3113	Dry, well-drained, sunny in mountains	Shrub to 3 ft tall, leaf-blades ovate, to 1 in long	Follicle		

continued

Table M3110-59.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Cliffbush <u>Jamesia americana</u> T. & G. M3113	Dry, well-drained to moist sites, in sun	Shrub, to 6 ft tall, young twigs, brown, leaf-blades oval, serrate	Capsule		
Rush <u>Juncus</u> spp. L. M3113	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grasslike herb, 2-4 ft	Capsule, spring	Forage	
Dwarf juniper <u>Juniperus communis</u> L. M3112, M3113	Open woods to dry hills, mountain valleys to open rocky slopes, sea level to alpine areas	Prostrate and trailing, branched, shrub to small tree, to 20 ft tall	Berry, available Sept., persistent all year	Fruit eaten by birds, including grouse; browsed by white-tailed deer	Intolerant of shade
Western juniper <u>Juniperus occidentalis</u> Hook. M3111	Desert foothills to lower mountain dry, well-drained sites, in sun	Evergreen tree, to 30 ft tall, leaves scale-like, pale green	Berry, Sept. of second season	Fruit eaten by several species of songbirds; browsed slightly by mule deer	
Rocky Mountain juniper <u>Juniperus scopulorum</u> Sarg. M3113	Dry, well-drained, in sun, 5,000-9,500 ft	Bushy shrub occasionally to 40 ft tall, leaves scale-like, .13 in long	Berry, year round	Browsed by bighorn sheep	Very drought-resistant
Prairie junegrass <u>Koeleria cristata</u> (L.) Pers. M3111	Sandy to rocky soil, sagebrush desert to sub-alpine ridges	Strongly tufted perennial, to 2 ft tall, leaves mostly basal tufted	May-July	Plant eaten by white-tailed deer	
Subalpine larch <u>Larix lyallii</u> Parl. M3112	Subalpine to alpine, often on north-facing slopes	Small, dwarfed or misshapen tree, to 45 ft tall, leaves rigid, light bluish-green, about 1 in long	Cone, ripens in Aug. of first season	Browsed by white-tailed deer	
Western larch <u>Larix occidentalis</u> Nutt. M3111, M3112	Mountain valleys and lower slopes, somewhat swampy areas, usually in mixed stands	Large tree, to over 225 ft tall, well pruned	Cones, 1 in long	Seeds eaten by grouse as well as a few songbirds	
Puccoon <u>Lithospermum multiflorum</u> Torr. M3113	Hills, mountain sides, canyons	Stems, to 2 ft tall, branched above, leaves linear	Nutlets, .1 in long		
Honeysuckle <u>Lonicera</u> spp. L. M3113	Hillsides and valleys, moist to dry places	Mostly climbing shrubs, opposite leaves	Fleshy berry, with few seeds	Fruit eaten by quail, grouse, chipmunks, other birds and mammals	
Lupine <u>Lupinus argenteus</u> Pursh M3113	Plains and hills	Stems, diffusely branched, to 3 ft tall, leaflets 7-8, to 2 in long	Pod, about 1 in long, 5-6 seeded	Seeds eaten by upland gamebirds and small mammals	
Tailcup lupine <u>Lupinus caudatus</u> Kellogg M3111	Sagebrush and ponderosa pine forest	Perennial, several- or much-branched, to 14 in tall, leaves mostly cauline	Pod, 1.25 in long	Same as <u>L. argenteus</u>	
Broadleaf lupine <u>Lupinus latifolius</u> Agardh. M3111	Open subalpine ridges to wooded slopes, occasionally on lowlands	Stems, up to 3 ft tall, mostly 6-8 leaves	Pods, to 1 in long	Same as <u>L. argenteus</u>	
Bluebells <u>Mertensia</u> spp. (Torr.) G. Don M3113	Streambanks, wet meadows, damp thickets, wet cliffs, foothills to high elevations	Stems numerous, to 6 ft tall, leaf blade oval			

continued

Table M3110-59.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Evening-primrose <i>Oenothera</i> spp. L. M3113	Roadsides, marshes, canyons, to 6,000 ft	Herbs, to 1.5 ft	Capsule, Mar.- Oct.	Plant eaten by browsers	
Purple sweetroot <i>Osmorhiza purpurea</i> (Coult. & Rose) Sksd. M3111	Meadows stream- banks, moist or wet slopes	Perennial, stems solitary, some- times 2 or 3's, to 3 ft tall			
Beard tongue <i>Penstemon</i> spp. Mitch. M3113	Different species found on a variety of site conditions	Perennial, leaves opposite, entire or toothed, flowers irregular	Capsule, 2-valved	Little use to wildlife, slightly used by ro- dents	
Purple fringe <i>Phacelia</i> spp. Juss. M3113	Dry, open places	Biennial, with single, erect stout stem, to 4 ft tall, leaves veined			
Tufted phlox <i>Phlox douglasii</i> Hook. M3111	Dry slopes and ridges	Loosely tufted, to 8 in tall, leaves .2 in long, with prominent midrib	Capsule		
Ninebark <i>Physocarpus capitatus</i> (Pursh) Ktze. M3112, M3113	Streambanks, swamps and lake margins, to moist woods in lower mountains, sun or shade	Spreading to erect shrub, to 15 ft tall, branches angled	Follicle		
Englemann spruce <i>Picea engelmannii</i> Parry ex Engelm. M3111	Montane, around swamps, above 3,000 ft eleva- tion, sun or shade	Straight tree, to 150 ft tall, needles to 1 in long, sharp but not stiff	Cone, seeds shed by Oct.	Needles eaten by grouse; seeds eaten by red squirrel	
Blue spruce <i>Picea pungens</i> Engelm. M3112, M3113	Mountains along streams, in sun	Tree, to 90 ft tall, needles 1 in long, tree usually dull bluish-green with a silvery bloom	Cone, Aug. seeds shed in Sept.	Same as <i>P. engelmannii</i>	High ornamental value
Whitebark pine <i>Pinus albicaulis</i> Engelm. M3112	Dry, well-drained site, in sun	Tree, to 40 ft tall, crown ir- regular, leaves in fascicles of 5, to 2.5 in long	Cone, matures Aug.-Sept. of second year, seeds only re- leased with rotting of cone	Western pines are im- portant food source for wildlife; seeds eaten by grouse, many songbirds, bears, squirrels, chipmunks; browsed by mule deer, elk, porcupine	More tolerant of shade in moist areas
Lodgepole pine <i>Pinus contorta</i> Dougl. M3111, M3112, M3113	Moist, well- drained sites, in sun, 6,000- 11,000 ft elevation	Tree, to 80 ft tall, short, narrow crown, needles in fascicles of 2-3 in long	Cone, matures Aug.-Sept. of second season	Same as <i>P. albicaulis</i>	
Limber pine <i>Pinus flexilis</i> James M3112, M3113	Summits, ridges, rocky foothills, 4,000-10,000 ft elevation	Tree, to 50 ft tall, crown broad, open with plume-like branches, needles in fascicles of 5, to 3 in long	Cone, maturing in Sept.	Same as <i>P. albicaulis</i>	Very intolerant of shade
Ponderosa pine <i>Pinus ponderosa</i> Laws. M3111, M3112, M3113	Dry, well-drained, in sun	Tree, to 180 ft tall, needles in fascicles of 3, 4-11 in long	Cone, ripe Aug.- Sept. of second season	Same as <i>P. albicaulis</i>	Very drought- resistant
Wheeler bluegrass <i>Poa nervosa</i> (Hook.) Vasey M3111	Exposed ridges and talus slopes to open woods, montane to alpine, to 10,000 ft ele- vation	Perennial, ascend- ing or erect, closely tufted, to 2.5 ft tall	Apr.-Aug.	Seeds eaten by coot; occasional use by many other birds and mammals	

continued

Table M3110-59.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Kentucky bluegrass <u>Poa pratensis</u> L. M3112	Open woods, meadows, disturbed soil, medium to high elevation	Perennial grass, 10-40 in	Grain, summer-fall	Plant eaten by rabbit and deer	Widespread, probably introduced
Cottonwood <u>Populus deltoides</u> Marsh. M3112	Alluvial soils and low wet ground	Tree, to 80 ft tall, buds are gummy		Minor wildlife use	Good for shelter-belts, erosion control
Quaking aspen <u>Populus tremuloides</u> Michx. M3112, M3113	Dry, cool, well-drained sites, in full sunlight	Slender tree, with light green on whitish bark, to 90 ft tall	Capsule, May-June	Buds, catkins, bark, twigs, wood, foliage all eaten by wildlife; major users are beaver, varying hare, grouse	Invasion species on open sites
Black cottonwood <u>Populus trichocarpa</u> T. & G. ex. Hook. M3112, M3113	Along streams and rich bottomlands, in canyons and valleys, between 5,000-9,000 ft	Deciduous tree, 50-125 ft tall, 2-4 ft diameter, broad crown of upright branches	Capsule, 3-valved, .25 in thick, finely hairy, June-Aug.	Buds and catkins eaten by blue and ruffed grouse; fair forage value for rabbit and deer	Post fire sprouter; invades cutover and burned areas; wood used for paper pulp and veneer
Chinquefoil <u>Potentilla</u> spp. L. M3113	Moist to dry rocky sites depending on species	Herbs rarely shrubs, with compound leaf parts usually in 5's	Achenes	Relatively low wildlife value; used mainly in the west as food for few birds and mammals	
Bitter cherry <u>Prunus emarginata</u> (Dougl.) Walp. M3112	Moist woods along watercourse grassland into mountains, medium elevations, in sun	Straggly shrubs, to 40 ft tall, erect	Drupe, May-Sept.	Very important browse for mule deer; fruit eaten by chipmunks and birds, including grouse	Forming dense thickets
Douglas-fir <u>Pseudotsuga menziesii</u> (Mirb.) Franco M3111, M3112, M3113	Moist slopes, below 5,000 ft	Evergreen tree, 100-130 ft tall, up to 230 ft, up to 8 ft thick, post-fire non-sprouter	Seeds winged, .25 in long, cones 3-4 in long with 3 pointed bracts beyond ends of scales	Seeds eaten by songbirds, tree squirrels and other rodents; fair browse value to deer and elk; needles eaten by blue grouse in winter	Probably most important lumber tree in North America, used as ornamental and for reforestation
Wind flower <u>Pulsatilla patens</u> L. M3113	Exposed sunny slopes and light shade	Low herb, to 1.5 ft tall	Achene, mid-summer		Poisonous to livestock
Bitterbrush <u>Purshia tridentata</u> Pursh M3111	Dry, well-drained, in sun	Shrub, to 10 ft tall, leaves 3-lobed at apex, bark chestnut-brown	Achene, Aug.	Valuable browse for mule deer, as well as pica, chipmunk, antelope	
One-sided wintergreen <u>Pyrola secunda</u> L. M3113	Mostly in coniferous woods	Perennial herb, slender rhizomes, 2-6 in high	Dry capsule	Little food value but occasionally grazed by ruffed grouse	
Gambel oak <u>Quercus gambellii</u> Nutt. M3112, M3113	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6-70 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel, bear; browsed by rabbit and deer	
Wax currant <u>Ribes cereum</u> Lindl. M3113	Dry hills	Much branched shrub, over 3 ft tall, leaf blades round-renaliform, 1.5 in wide	Red berry, June-Aug.	Fruit eaten by grouse, few songbirds, chipmunk	
Wild rose <u>Rosa</u> spp. L. M3112, M3113	Usually moist, well-drained open sites	Shrubs or vines, usually prickly leaves alternate, pinnate and serrate	Hips	Fruit eaten by many species of songbirds, gamebirds, small mammals; covering for birds	

continued

Table M3110-59.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Boulder raspberry <u>Rubus deliciosus</u> Torr. M3113	Slopes and canyons	Stems arched and branched, about 6 ft long with prickles	Aggregate of drupelets, purple to yellowish-red, .5 in diameter, July-Sept.	Fruit eaten by numerous birds and mammals; fair browse value for deer	Invader; post-fire sprouter
Willow <u>Salix</u> spp. L. M3112	Moist soil along streams, 3,500-9,500 ft, sun	Tree, 15-50 ft	Seed capsules in catkins, Mar.	Browsed by beaver; seeds eaten by squirrel	Prevents erosion and invades burned forest areas
Willow <u>Salix amygdaloides</u> Anderss. M3113	Moist sites along banks of streams	Tree, to 70 ft tall, leaves lanceolate, to 5 in long, finely serrate	Capsules		Intolerant of shade
Red elderberry <u>Sambucus racemosa</u> L. M3113	Damp woods, moist canyons and flats at lower elevations	Deciduous woody shrub, 6-20 ft high, leaves hairy beneath and often above	Drupe, round berrylike, bright scarlet, .5 in thick, July-Oct.	Berries relished by birds, small mammals, deer, livestock; fair browse value for deer and elk	Post-fire non-sprouter; white flowers are in clusters 2.5 in broad
Stonecrop <u>Sedum lanceolatum</u> Torr. M3113	Damp rocks and mossy banks	Fleshy-leaved, low perennial	Follicle		
Buffaloberry <u>Shepherdia canadensis</u> (L.) Nutt. M3113	Dry, well-drained, moist sites, in sun or shade	Thornless shrub, to 10 ft tall, leaves oval, silvery hairy beneath	Berry, July-Sept.	Fruit eaten by several species of birds and chipmunks; occasionally browsed by white-tailed deer	
Bottlebrush squirreltail <u>Sitanion hystrix</u> (Nutt.) J. G. Smith M3111	Dry hills, plains, open woods, rocky slopes, to alpine elevations	Tufted, erect, to 1.5 ft tall	Available July-Aug		
False Solomon's-seal <u>Smilacina racemosa</u> (L.) Desf. M3112	Moist woods and streambanks to open forests, lowlands to mid elevations	Perennial herb, widely rhizomatous, erect, leafy flower stems	Berry, few seeded, greenish to red	Fruit eaten by few species of songbirds and rodents	
Starry Solomon plume <u>Smilacina stellata</u> L. M3111	Moist woods and streambanks to rocky, well-drained, fully exposed side-hills	Flowering stems, to 2 ft tall, erect, leaves sessile	Berry, greenish yellow	Fruit eaten by a few birds and small mammals	
Goldenrod <u>Solidago</u> spp. L. M3113	Moist to dry sites, to alpine elevations	Perennial herbs, to 6 ft tall in some species, often with basal clusters of leaves	Achenes, many produced annually	Wildlife value low in comparison to abundance	Usually considered undesirable weeds
Douglas spiraea <u>Spiraea douglasii</u> Hook. M3112	Streambanks, swamps, bogs, lake margins, sea level to subalpine	Erect, freely branched shrub, to 6 ft tall	Follicle, Sept.-Oct.		Thicket-forming by means of suckers
Ladies'-tresses <u>Spiranthes</u> spp. L. C. Rich M3113	Dry to moist, swamps, bogs, open areas	Herb, to 3 ft tall	Minute		
Western needlegrass <u>Stipa occidentalis</u> Thurb. M3111	Grasslands to ponderosa pine forest and sub-alpine forest ridges	Strongly tufted perennial, to 5 ft tall	Available May-Aug.	Seeds eaten by few songbirds; plant eaten by mule deer and bighorn sheep	

continued

Table M3110-59.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Common snowberry <i>Symphoricarpos albus</i> (L.) Blake M3111, M3112	Thickets, woodlands, open slopes, lowlands to moderate elevations	Erect, branching shrub, to 6 ft tall, leaves elliptic with irregular teeth	Berry, available year round	Fruit eaten by many birds; browsed by white-tailed and mule deer	Forms thickets
Golden banner <i>Thermopsis divaricarpa</i> A. Nels. M3113	Creek banks and open slopes	Stem erect, to 2.5 ft tall, leaves to 4 in long	Pod		
Grouseberry <i>Vaccinium scoparium</i> Leib. M3111	Dry, well-drained to moist sites, shade	Plants, to over 1 ft tall, many branches, slender, broomlike	Berry, red, July-Sept.	Fruit eaten by grouse and songbirds	Mat-forming

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UPPER GILA MOUNTAINS FOREST

The distribution of vegetation and, hence, the occurrence of biotic communities in this province, is dependent upon the evolutionary interactions of climatic, topographic, and edaphic features as well as recent factors such as fire suppression and disturbance by man. Within broad climatic zones, such as those delineated by Bailey (1976), topography is quite important. A difference in elevation of 6000 feet affects climate and distribution of plants and animals in about the same way as a latitudinal distance north or south of 300 miles at sea level. The total precipitation, for example, increases on mountain gradients at a rate of approximately 5 inches per 1000 feet increase in elevation (Shreve 1915; Lull and Ellison 1950).

Within the Upper Gila Mountains Forest Province, variations in topography and climate are extreme. Roosevelt Lake and vicinity, in the south central portion of this province, is the lowest elevational area, at about 2200 feet. Elevations generally increase northward toward the base of the Mogollon Rim. For example, the San Francisco Mountains reach 12,000 foot elevation. Much of the northern portions of this province are broad plateaus of about 4500 to 5500 feet elevation or higher. These varied topographic and associated climatic features naturally support a number of major biotic communities, such as Arizona upland Sonoran desertscrub, interior chaparral, riparian deciduous forest and woodland, Madrean evergreen woodland, conifer woodland, montane conifer forest, subalpine and montane grasslands, and subalpine conifer forest. Forest and woodland species generally extend downward along narrow canyons and north-sloping valleys, whereas species of lower zones extend upward within wide valleys and on ridges. (See section 52 for a general discussion of succession and climax communities.)

Arizona Upland Sonoran Desertscrub

In Province M3120, this community occurs chiefly in the

Roosevelt Lake region, on the southwestern edge of the province. A general discussion of this community is found in section 55.

Interior Chaparral

See section 55 for a general discussion of this community type.

Great Basin and Rocky Mountain Conifer Woodland

The Great Basin and Rocky Mountain conifer woodland is best developed on plateaus and mesas at elevations between 5500 and 7500 feet with an annual precipitation of about 12 to 21 inches. It is a structurally simple woodland of low (usually less than 20 feet) evergreen trees and shrubs. Utah juniper, one-seeded juniper, pinyon pine, singleleaf pinyon, and Mexican pinyon are usually the dominant overstory species; the junipers often occur in pure stands without pinyons. The understory may be either grassland, chaparral, or desertscrub, depending upon specific location.

Madrean Evergreen Woodland

The Madrean evergreen woodland is intermittently present along the southern base of the Mogollon Rim in Province M3120, which is the northern limit of this principally Mexican community. These woodlands occur between 4000 and 7000 feet where there is about 12 to 24 inches annual precipitation. Common dominant species are evergreen oaks, junipers, and pines. Freezing temperatures are of short duration and the growing season is generally longer than in conifer woodland.

Riparian Deciduous Forest and Woodland

The riparian deciduous forest and woodland is frequently of considerable importance in ROW management decisions due to its scarcity, its recreational value, and its immense biological interest. This community is comprised of tall (50 to 100 feet) winter-deciduous broadleaf trees and is principally restricted to streamways and drainageways fingering down through other communities. The species composition and growth form of the riparian deciduous forest changes

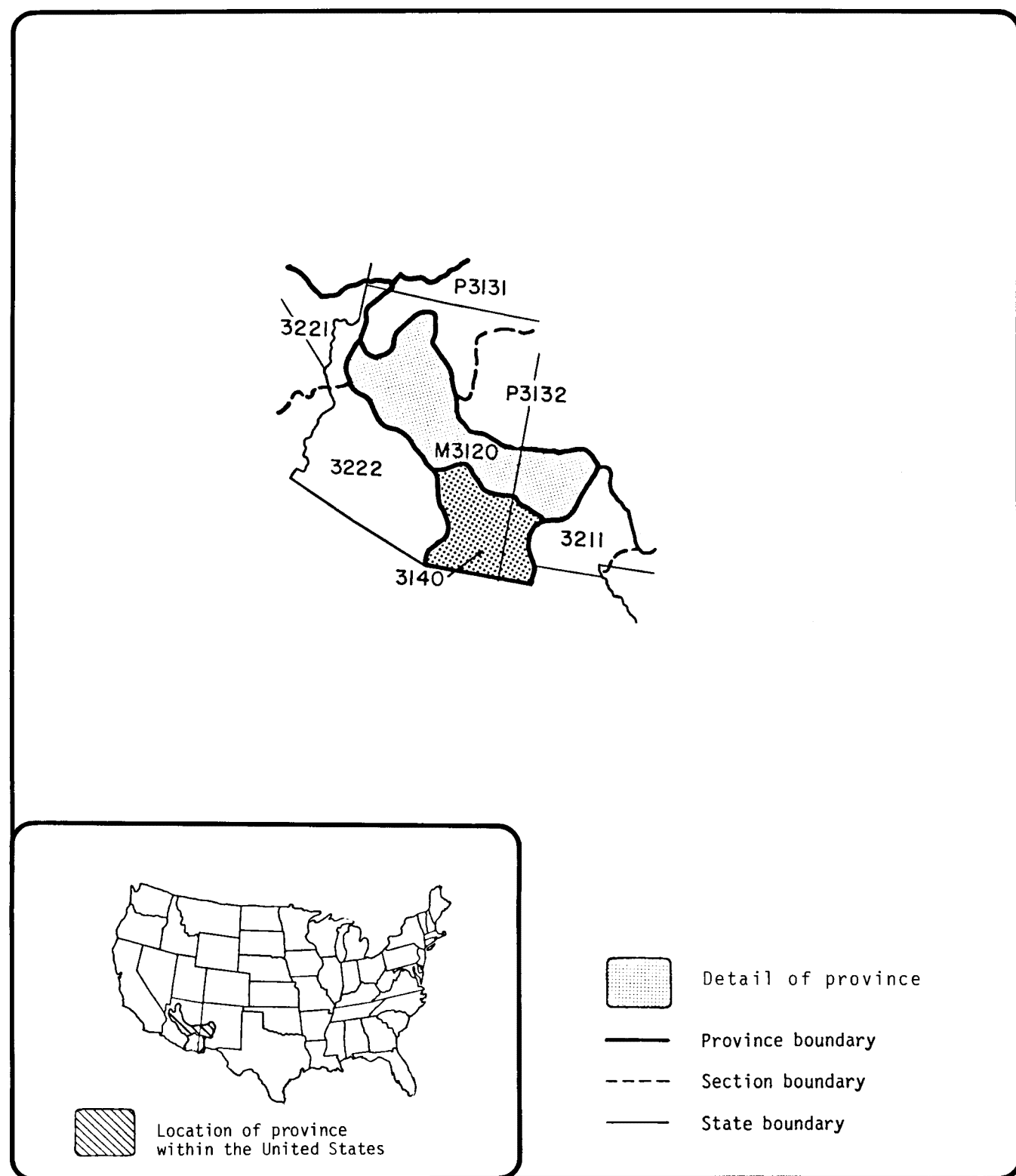


Figure 60.1 Province M3120, Upper Gila Mountains Forest

elevationally from the high coniferous forest where dominant riparian tree species include box-elder, maple, and mountain willows, down through the lower woodlands and chaparral where riparian dominants are cottonwood, willow, sycamore, walnut, and ash.

Rocky Mountain Montane Conifer Forest

The Rocky Mountain montane conifer forest is populated by nearly pure stands of ponderosa pine with Douglas-fir dominating canyons and north- and east-facing slopes. This community is generally found between 6000 and 9500 feet but extends down to about 5500 feet on north-facing slopes and up to about 10,000 feet on south-facing slopes. Annual precipitation averages 20 to 30 inches. Other principal trees include white fir, limber pine, Gambel oak, locust, and trembling aspen.

Subalpine Conifer Forest

The subalpine conifer forest occurs on and around the summits of higher ranges, from about 8500 or 9000 feet to about 11,500 feet, with an average annual precipitation of about 30 to 40 inches. This precipitation is mostly in the form of snow. The principal conifer species include Engelmann spruce, blue spruce, alpine fir, and white fir. Broadleaf deciduous trees, when present, include Rocky Mountain maple, wild cherry, mountain alder, and trembling aspen.

Subalpine and Montane Grasslands

The subalpine and montane grasslands occur in the upper montane conifer forest and throughout the subalpine conifer forest in areas that are relatively small to quite extensive (e.g., the White Mountain “prairies” and “Cienegas”). The grasslands are mostly found at elevations of 7500 to 11,000 feet where the annual average precipitation is from 20 to 35 inches. Prominent grass species include fescues, pine dropseed, mountain timothy, tufted hairgrass, and bluegrasses. The lower and wetter parts of these meadows are usually dominated by mountain clover, vetch, groundsel, sedges, rushes, and other forbs.

Since the alpine tundra only occurs on and near the peaks of a few high mountains above 11,500 feet and is unlikely to be included in any transmission line ROW, it is not included in this discussion.

UPPER GILA MOUNTAINS FOREST (RIPARIAN COMMUNITIES)

Within Province M3120, riparian communities are largely temperate and subtropical, and are recognized primarily by their dominant plant constituents (Brown and Lowe 1974). These two broad divisions are principally represented by the following major formation-classes: riparian deciduous forest, including mixed broadleaf and cottonwood—willow communities (refer to section 53 for descriptions of these communities); mesquite woodland; and marshland formations. Riparian scrublands of the introduced

saltcedar (and other species) also occur in both temperate and subtropical climatic zones (Brown and Hausler 1977). Willow often dominates riparian scrublands in the limited boreal zone.

Marshlands

Marshlands are wetlands composed of emergent plants which have their basal portions periodically submerged. They are found in the “prairies” of the White Mountains, on Anderson Mesa, and elsewhere in Province M3120. These communities may be dominated by sedges, rushes, cat-tail, great American and three-square bulrush, and other aquatics.

Subtropical marshlands are not extensive within Province M3120, as these communities occur mainly at lower elevations where the shallow streams periodically overflow their bank. Many of these marshland communities are now dependent upon stored and/or recycled agricultural and waste waters. In Province M3120, marshlands are principally confined to the Lower Salt and Verde rivers (e.g., Taveschi Marsh). Other examples may occur elsewhere as local conditions permit.

Mesquite—Saltcedar Woodlands

Mesquite—saltcedar woodlands are largely restricted to below 3500 feet elevation. These winter-deciduous woodlands (bosques) attain maximum development on the alluvium of old dissected floodplains laid down between the intersection of major watercourses and their large tributaries (Brown and Hausler 1977). Woodlands of mesquite once covered vast areas of floodplains in the Southwest. This community, as with the cottonwood—willow, has suffered greatly from a variety of man-related activities including water diversion, flood control, agricultural clearing programs, and most importantly, lowering water tables.

While many of the famous bosques are mostly of historical interest today, important remnants still occur in Province M3120 along the Big Sandy and Verde rivers, Tonto Creek, and in scattered patches along other Lower Sonoran watercourses.

In the past, these subtropical communities were almost completely dominated by velvet mesquite with individuals commonly attaining great size (Brandt 1951). Cottonwood, desert hackberry, and increasingly, the introduced tamarix or saltcedar may now share dominance in local situations (Bowser 1957; Robinson 1965; Turner 1974).

Historically, the understory in mature mesquite bosques was relatively open with saltbushes or annual and perennial grasses and forbs forming the ground cover. Today, introduced annual forbs such as filaree, mustards, and annual grasses are most frequently encountered as understory species. Vines such as janusia, canyon grape, and others are often still common in some areas. Individual cottonwoods, velvet ash, and Gooding willow may be interspersed in more mesic sites within the bosque (Brown and Hausler 1977).

Table M3120-60.1 Selected Plant Species Common to the Upper Gila Mountains Forest

Growth form	Plant associations	
<u>Habitat: Sonoran Desertscrub--Arizona Upland Association</u>		
Medium trees, 20-40 ft	<u>Celtis reticulata</u> <u>Cercidium floridum</u> <u>Cereus giganteus</u> <u>Chilopsis linearis</u> <u>Olneya tesota</u> <u>Prosopis juliflora</u>	Netleaf hackberry Blue paloverde Saguaro Desert-willow Ironwood Mesquite
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Cercidium microphyllum</u> <u>Cereus thurberi</u> <u>Fouquieria splendens</u>	Cat-claw Yellow paloverde Organpipe cactus Ocotillo
Low to medium shrubs, under 10 ft	<u>Acacia constricta</u> <u>Ambrosia ambrosioides</u> <u>Ambrosia deltoidea</u> <u>Celtis pallida</u> <u>Dodonaea viscosa</u> <u>Echinocereus</u> spp. <u>Encelia farinosa</u> <u>Eriogonum wrightii</u> <u>Ferocactus wislizenii</u> <u>Holacantha emoryi</u> <u>Krameria grayi</u> <u>Krameria parvifolia</u> <u>Larrea divaricata</u> <u>Lycium</u> spp. <u>Mammillaria microcarpa</u> <u>Opuntia fulgida</u> <u>Opuntia leptocaulis</u> <u>Opuntia phaeacantha</u> <u>Opuntia spinosior</u> <u>Simmondsia chinensis</u>	White-thorn Canyon ragweed Triangle bur sage Spiny hackberry Hopbush Hedgehog cactus Brittle bush Deer buckwheat Barrel cactus Crucifixion thorn White ratany Ratany Creosote bush Wolfberry Fish-hook cactus Jumping cholla Desert Christmas cactus Prickly pear Cane cholla Jojoba
Grasses	<u>Bouteloua rothrockii</u> <u>Muhlenbergia porteri</u> <u>Tridens puchellus</u>	Rothrock grama Bush muhly Fluffgrass
<u>Habitat: Interior Chaparral</u>		
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus betuloides</u> <u>Cercocarpus breviflorus</u> <u>Juniperus monosperma</u> <u>Quercus emoryi</u> <u>Rhus ovata</u>	Birchleaf mountain-mahogany Hairy mountain-mahogany One-seeded juniper Emory oak Sugar sumac
Low to medium shrubs, under 10 ft	<u>Amorpha californica</u> <u>Arctostaphylos pringlei</u> <u>Arctostaphylos pungens</u> <u>Berberis haemotocarpa</u> <u>Brickellia californica</u> <u>Ceanothus greggii</u> <u>Ceanothus integriramus</u> <u>Cowania mexicana</u> <u>Eriodictyon angustifolium</u> <u>Fallugia paradoxa</u> <u>Fremontia californica</u> <u>Garrya flavescens</u> <u>Garrya wrightii</u> <u>Haplopappus laricifolius</u> <u>Mimosa biuncifera</u> <u>Quercus turbinella</u> <u>Rhamnus betulaeifolia</u> <u>Rhamnus californica</u> <u>Rhamnus crocea</u> <u>Rhus trilobata</u>	Mock locust Manzanita Pointleaf manzanita Barberry California brickellia California lilac Deer brush Cliffrose Yerba santa Apache plume Flannel bush Silk-tassel Silk-tassel Turpentine-brush Wait-a-minute bush Shrub live oak Birchleaf buckthorn California buckthorn Hollyleaf buckthron Squawbush
Grasses	<u>Andropogon barbinodis</u> <u>Aristida longiseta</u> <u>Bouteloua curtipendula</u>	Cane beardgrass Red three-awn Side-oats grama

continued

Table M3120-60.1 (Continued)

Growth form	Plant associations	
	<u>Interior Chaparral (Continued)</u>	
Grasses (Continued)	<u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Eragrostis intermedia</u> <u>Lycurus phleoides</u> <u>Muhlenbergia porteri</u>	Black grama Blue grama Plains lovegrass Wolf tail Bush muhly
	<u>Habitat: Conifer Woodland--Rocky Mountain Fasciation</u>	
Tall trees, over 40 ft	<u>Quercus gambelii</u>	Gambel oak
Medium trees, 20-40 ft	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus edulis</u> <u>Pinus monophylla</u>	Utah juniper Rocky Mountain juniper Pinyon pine Singleleaf pinyon
Low trees and tall shrubs, 10-20 ft	<u>Juniperus monosperma</u> <u>Yucca baccata</u>	One-seeded juniper Spanish dagger
Low to medium shrubs, under 10 ft	<u>Amelanchier alnifolia</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Berberis fremontii</u> <u>Ceanothus fendleri</u> <u>Chamaebatiaria millefolium</u> <u>Chrysothamnus depressus</u> <u>Chrysothamnus nauseosus</u> <u>Cowania mexicana</u> <u>Ephedra viridis</u> <u>Fallugia paradoxa</u> <u>Opuntia basilaris</u> <u>Opuntia fragilis</u> <u>Purshia tridentata</u> <u>Quercus trubiniella</u>	Serviceberry Black sagebrush Big sagebrush Barberry Buckbrush Fernbush Rabbit brush Rabbit brush Cliffrose Mormon tea Apache plume Beavertail Little prickly pear Antelope brush Shrub live oak
Grasses	<u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Festuca arizonica</u> <u>Koeleria cristata</u> <u>Muhlenbergia torreyi</u> <u>Oryzopsis hymenoides</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u> <u>Stipa</u> spp.	Side-oats grama Black grama Blue grama Arizona fescue Mountain junegrass Ring muhly Indian rice-grass Squirreltail Sand dropseed Needlegrass
	<u>Habitat: Madrean Evergreen Woodland</u>	
Tall trees, over 40 ft	<u>Juniperus deppeana</u> <u>Pinus latifolia</u> <u>Pinus leiophylla</u> <u>Pinus ponderosa</u> <u>Quercus arizonica</u> <u>Quercus emoryi</u> <u>Quercus grisea</u>	Alligator juniper Apache pine Chihuahua pine Ponderosa pine Arizona white oak Emory oak Gray oak
Medium trees, 20-40 ft	<u>Arbutus arizonica</u> <u>Cupressus arizonica</u> <u>Pinus cembroides</u> <u>Quercus emoryi</u> <u>Quercus hypoleucoides</u> <u>Quercus oblongifolia</u> <u>Quercus reticulata</u>	Arizona madrone Arizona cypress Mexican pinyon Emory oak Silverleaf oak Mexican blue oak Netleaf oak
Low trees and tall shrubs, 10-20 ft	<u>Juniperus monosperma</u>	One-seeded juniper
Low to medium shrubs and cacti, under 6 ft	<u>Agave palmeri</u> <u>Agave parryi</u> <u>Arctostaphylos pungens</u> <u>Echinocereus pectinatus</u> <u>Erythrina flabelliformis</u>	Palmer agave Parry agave Pointleaf manzanita Rainbow cactus Coral bean

continued

Table M3120-60.1 (Continued)

Growth form	Plant associations	
<u>Madrean Evergreen Woodland (Continued)</u>		
Shrubs and cacti -- (Continued)	<u>Mammillaria gummifera</u> <u>Mimosa biuncifera</u>	Cream cactus Wait-a-minute bush
Grasses and forbs	<u>Andropogon barbinodis</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Elyonurus barbiculmus</u> <u>Lycurus phleoides</u> <u>Muhlenbergia emersleyi</u> <u>Oxalis</u> spp.	Cane bluestem Side-oats grama Blue grama Woolspike balsamscale Woolftail Bullgrass Wood-sorrel
<u>Habitat: Riparian Deciduous Forest and Woodland</u>		
Tall trees, over 40 ft	<u>Alnus oblongifolia</u> <u>Juniperus deppeana</u> <u>Platanus wrightii</u> <u>Populus angustifolia</u> <u>Populus fremontii</u> <u>Quercus arizonica</u> <u>Quercus gambelii</u>	Arizona alder Alligator juniper Arizona sycamore Narrowleaf cottonwood Fremont cottonwood Arizona white oak Gambel oak
Medium trees, 20-40 ft	<u>Acer glabrum</u> <u>Acer grandidentatum</u> <u>Acer negundo</u> <u>Fraxinus velutina</u> <u>Juglans major</u> <u>Prosopis juliflora</u> <u>Prunus</u> spp. <u>Quercus emoryi</u> <u>Salix</u> spp. <u>Sambucus</u> spp.	Rocky Mountain maple Bigtooth maple Box-elder Velvet ash Arizona walnut Mesquite Wild cherry Emory oak Willow Elderberry
Low trees and tall shrubs, 10-20 ft	<u>Morus microphylla</u> <u>Quercus palmeri</u> <u>Sapindus drummondii</u> <u>Tamarix pentandra</u>	Texas mulberry Palmer oak Western soapberry Tamarisk
Low to medium shrubs, under 10 ft	<u>Baccharis glutinosa</u> <u>Jamesia americana</u> <u>Rhus glabra</u> <u>Rubus</u> spp.	Seepwillow Cliffbush Scarlet sumac Raspberry
Lesser vegetation	<u>Carex</u> spp. <u>Eleocharis</u> spp. <u>Juncus</u> spp. <u>Parthenocissus inserta</u> <u>Pteridium aquilinum</u> <u>Rorippa</u> spp. <u>Typha</u> spp. <u>Vitis arizonica</u>	Sedge Spikerush Rush Virginia creeper Bracken fern Watercress Cat-tail Canyon grape
<u>Habitat: Montane Conifer Forest--Rocky Mountain Fasciation</u>		
Tall trees, over 40 ft	<u>Abies concolor</u> <u>Juniperus deppeana</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u> <u>Quercus arizonica</u> <u>Quercus gambelii</u>	White fir Alligator juniper Limber pine Ponderosa pine Trembling aspen Douglas-fir Arizona white oak Gambel oak
Medium trees, 20-40 ft	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus edulis</u>	Utah juniper Rocky Mountain juniper Pinyon pine
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus breviflorus</u> <u>Cercocarpus ledifolius</u> <u>Robinia neomexicana</u> <u>Sambucus cerulea</u>	Hairy mountain-mahogany Curlleaf mountain-mahogany New Mexican locust Canadian elder

continued

Table M3120-60.1 (Continued)

Growth form	Plant associations	
<u>Montane Conifer Forest (Continued)</u>		
Low to medium shrubs, under 10 ft	<u>Arctostaphylos patula</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Berberis repens</u> <u>Ceanothus fendleri</u> <u>Chamaebatia millefolium</u> <u>Chrysothamnus parryi</u> <u>Cowania mexicana</u> <u>Fallugia paradoxa</u> <u>Fendlerella utahensis</u> <u>Gutierrezia sarothrae</u> <u>Holodiscus dumosus</u> <u>Jamisia americana</u> <u>Philadelphus microphyllus</u> <u>Physocarpus monogynus</u> <u>Ribes cereum</u> <u>Rubus strigosus</u> <u>Symphoricarpos oreophilus</u>	Greenleaf manzanita Black sagebrush Big sagebrush Oregon-grape Buckbrush Fernbush Parry rabbit brush Cliffrose Apache plume Fendlerella Snakeweed Ocean spray Cliffbush Mock orange Ninebark Wax currant Raspberry Snowberry
Lesser vegetation - grasses and forbs	<u>Ambrosia psilostachya</u> <u>Artemisia ludoviciana</u> <u>Blepharoneuron tricholepis</u> <u>Bouteloua gracilis</u> <u>Bromus marginatus</u> <u>Erigeron divergens</u> <u>Erigeron flagellaris</u> <u>Festuca arizonica</u> <u>Koeleria cristata</u> <u>Muhlenbergia montana</u> <u>Muhlenbergia rigens</u> <u>Muhlenbergia wrightii</u> <u>Oxytropis lamberti</u> <u>Pachystima myrsinites</u> <u>Poa fendleriana</u> <u>Sitanion hystrix</u> <u>Sporobolus interruptus</u> <u>Thalictrum fendleri</u> <u>Vicia americana</u>	Ragweed Sagebrush Pine dropseed Blue grama Mountain brome Fleabane Wild daisy Arizona fescue Mountain junegrass Mountain muhly Deergrass Spike muhly Locoweed Myrtle boxleaf Muttongrass Squirreltail Black dropseed Meadow-rue American vetch
<u>Habitat: Subalpine Conifer Forest--Rocky Mountain Fasciation</u>		
Tall trees, potentially over 40 ft	<u>Abies concolor</u> <u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Picea pungens</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u>	White fir Alpine fir Engelmann spruce Blue spruce Trembling aspen Douglas-fir
Medium trees, 20-40 ft	<u>Acer glabrum</u> <u>Alnus tenuifolia</u> <u>Pinus aristata</u> <u>Pinus flexilis</u>	Rocky Mountain maple Mountain alder Bristle-cone pine Limber pine
Low trees and tall shrubs, 10-20 ft	<u>Prunus emarginata</u> <u>Salix scouleriana</u>	Wild cherry Mountain willow
Low to medium shrubs, under 10 ft	<u>Berberis repens</u> <u>Fragaria ovalis</u> <u>Juniperus communis</u> <u>Lonicera involucrata</u> <u>Potentilla fruticosa</u> <u>Ribes</u> spp. <u>Ribes cereum</u> <u>Sambucus racemosa</u> <u>Symphoricarpos oreophilus</u> <u>Vaccinium oreophyllum</u>	Oregon-grape Strawberry Dwarf juniper Black-fruited honeysuckle Bush cinquefoil Gooseberry Wax currant Red elderberry Snowberry Whortleberry
Grasses and forbs	<u>Arctostaphylos uva-ursi</u> <u>Blepharoneuron tricholepis</u> <u>Bromus</u> spp. <u>Festuca arizonica</u> <u>Festuca rubra</u> <u>Geranium richardsonii</u>	Bearberry Pine dropseed Brome Arizona fescue Red fescue Cranesbill geranium

continued

Table M3120-60.1 (Concluded)

Growth form	Plant associations	
<u>Subalpine Conifer Forest (Continued)</u>		
Grasses and forbs (Continued)	<u>Muhlenbergia montana</u> <u>Pachystima myrsinites</u> <u>Phleum alpinum</u> <u>Primula</u> spp. <u>Trisetum spicatum</u> <u>Vicia americana</u>	Mountain muhly Myrtle boxleaf Mountain timothy Primrose Spike trisetum American vetch
<u>Habitat: Subalpine and Montane Grassland</u>		
Low to medium shrubs, under 10 ft	<u>Sambucus racemosa</u>	Red elderberry
Lesser vegetation	<u>Achillea lanulosa</u> <u>Agoseris</u> spp. <u>Agropyron</u> spp. <u>Agropyron trachycaulum</u> <u>Agrostis</u> spp. <u>Blepharoneuron tricholepis</u> <u>Bromus</u> spp. <u>Bromus carinatus</u> <u>Carex</u> spp. <u>Castilleja</u> spp. <u>Danthonia</u> spp. <u>Delphinium</u> spp. <u>Deschampsia caespitosa</u> <u>Erigeron</u> spp. <u>Festuca</u> spp. <u>Festuca thurberi</u> <u>Helenium hoopesii</u> <u>Helianthella quinquevenervis</u> <u>Hordeum jubatum</u> <u>Iris missouriensis</u> <u>Juncus</u> spp. <u>Koeleria cristata</u> <u>Lathyrus leucanthus</u> <u>Lotus</u> spp. <u>Lupinus</u> spp. <u>Melica bulbosa</u> <u>Monarda</u> spp. <u>Muhlenbergia montana</u> <u>Muhlenbergia virescens</u> <u>Oxytropis lamberti</u> <u>Phleum alpinum</u> <u>Phlox caespitosa</u> <u>Poa</u> spp. <u>Poa fendleriana</u> <u>Poa pratensis</u> <u>Potentilla</u> spp. <u>Pteridium aquilinum</u> <u>Ranunculus</u> spp. <u>Senecio serra</u> <u>Solidago</u> spp. <u>Sphaeralcea fendleri</u> <u>Stipa columbiana</u> <u>Stipa lettermani</u> <u>Taraxacum officinale</u> <u>Thalictrum fendleri</u> <u>Trifolium fendleri</u> <u>Trisetum spicatum</u> <u>Verbascum thapsus</u> <u>Vicia americana</u> <u>Viola</u> spp.	Yarrow Mountain dandelion wheatgrass Slender wheatgrass Ticklegrass Pine dropseed Brome Mountain brome Sedge Indian paintbrush Oat grass Larkspur Tufted hairgrass Fleabane Fescue Thurber fescue Sneezeweed False sunflower Foxtail barley Blue flag Rush Mountain junegrass Aspen peavine Deer vetch Lupine Oniongrass Horsemint Mountain muhly Screwleaf muhly Locoweed Mountain timothy Phlox Bluegrass Muttongrass Kentucky bluegrass Cinquefoil Bracken fern Buttercup Groundsel Goldenrod Globe mallow Subalpine needlegrass Letterman needlegrass Dandelion Meadow-rue Mountain clover Spike trisetum Great mullein American vetch Violet

Table M3120-60.1 [R] Selected Plant Species Common to the Upper Gila Mountains Forest (Riparian Communities)

Growth form	Plant associations	
<u>Temperate Riparian</u>		
Tall trees, over 40 ft	<u>Alnus oblongifolia</u> <u>Juniperus deppeana</u> <u>Platanus wrightii</u>	Arizona alder Alligator juniper Arizona sycamore

continued

Table M3120-60.1 [R] (Concluded)

Growth form	Plant associations	
	<u>Populus angustifolia</u> <u>Populus fremontii</u> <u>Quercus arizonica</u> <u>Quercus gambelii</u>	Narrowleaf cottonwood Fremont cottonwood Arizona white oak Gambel oak
Medium trees, 20-40 ft	<u>Acer glabrum</u> <u>Acer grandidentatum</u> <u>Acer negundo</u> <u>Cupressus arizonica</u> <u>Fraxinus velutina</u> <u>Juglans major</u> <u>Prosopis juliflora</u> <u>Prunus</u> spp. <u>Quercus emoryi</u> <u>Salix</u> spp. <u>Sambucus</u> spp.	Rocky Mountain maple Bigtooth maple Box-elder Arizona cypress Velvet ash Arizona walnut Mesquite Wild cherry Emory oak Willow Elderberry
Low trees and tall shrubs, 10-20 ft	<u>Morus microphylla</u> <u>Quercus palmeri</u> <u>Sapindus drummondi</u> <u>Tamarix pentandra</u>	Texas mulberry Palmer oak Western soapberry Tamarisk
Low to medium shrubs, under 10 ft	<u>Baccharis emoryi</u> <u>Baccharis glutinosa</u> <u>Jamesia americana</u> <u>Rhus glabra</u> <u>Rhus radicans</u> <u>Rubus</u> spp.	Emory baccharis Seepwillow Cliffbush Scarlet sumac Poison ivy Raspberry
Lesser vegeta- tion	<u>Carex</u> spp. <u>Eleocharis</u> spp. <u>Juncus</u> spp. <u>Parthenocissus inserta</u> <u>Pteridium aquilinum</u> <u>Rorippa</u> spp. <u>Scirpus americanus</u> <u>Typha</u> spp. <u>Vitis arizonica</u>	Sedge Spikerush Rush Virginia creeper Bracken fern Watercress Three-square bulrush Cat-tail Canyon grape
	<u>Subtropical Riparian</u>	
Tall trees, over 40 ft	<u>Populus fremontii</u> <u>Salix gooddingii</u>	Fremont cottonwood Goodding willow
Medium trees, 20-40 ft	<u>Chilopsis linearis</u> <u>Prosopis juliflora</u> <u>Prosopis pubescens</u> <u>Salix bonplandiana</u> <u>Washingtonia filifera</u>	Desert-willow Mesquite Screwbean mesquite Bonpland willow California fan palm
Low trees and tall shrubs, 10-20 ft	<u>Acacia greggii</u> <u>Celtis reticulata</u> <u>Tamarix pentandra</u>	Cat-claw Netleaf hackberry Saltcedar
Low to medium shrubs, under 10 ft	<u>Allenrolfea occidentalis</u> <u>Atriplex lentiformis</u> <u>Atriplex polycarpa</u> <u>Baccharis</u> spp. <u>Baccharis emoryi</u> <u>Baccharis glutinosa</u> <u>Celtis pallida</u> <u>Condalia lycioides</u> <u>Juncus</u> spp. <u>Mentzelia</u> spp. <u>Phragmites communis</u> <u>Scirpus</u> spp. <u>Scirpus paludosus</u> <u>Tessaria sericea</u> <u>Typha</u> spp.	Iodinebush Shadscale Desert saltbush Baccharis Emory baccharis Seepwillow Desert hackberry Gray-thorn Rush Blazing-star Reed Bulrush Salt-marsh bulrush Arrow-weed Cat-tail
Lesser vegeta- tion	<u>Bromus rubens</u> <u>Carex</u> spp. <u>Cruciferae</u> spp. <u>Cucurbita palmata</u> <u>Cynodon dactylon</u> <u>Dalea mollis</u> <u>Distichlis spicata</u> <u>Erodium cicutarium</u> <u>Gaea canescens</u> <u>Helianthus annuus</u> <u>Hibiscus</u> spp. <u>Janusia gracilis</u> <u>Lotus rigidus</u> <u>Nemacladus glanduliferus</u> <u>Oenothera</u> spp. <u>Oenothera multijuga</u> <u>Sarcostemma</u> spp. <u>Schismus barbatus</u> <u>Suaeda torreyana</u> <u>Vitis arizonica</u>	Red brome Sedge Mustard Coyote-melon Bermuda grass Indigobush Saltgrass Fillaree Desert-sunflower Sunflower Rose mallow Janusia Deer vetch Nemacladus Evening-primrose Evening-primrose Climbing milkweed Schismus grass Inkweed Canyon grape

Table M3120-60.2 Ecological Characteristics of Selected Plant Species Common to the Upper Gila Mountains Forest

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir (balsam fir) <u>Abies concolor</u> Hoopes M3120	Common in conifer forest, 5,000-10,000 ft	Large evergreen tree, 80-150 ft, conical crown	Cone, 3-5 in, pollinates in spring	Seeds eaten by songbirds; browsed by deer and elk	
Alpine fir (white balsam, white fir, corkbark fir) <u>Abies lasiocarpa</u> (Hook.) Nutt. M3120	Common tree of spruce-fir forest, 8,000-12,000 ft, sun	Medium to large tree, 50-90 ft, narrow crown, shrublike at timberline	Cones, dark-purple, 3-4 in, pollinates in spring	Seeds eaten by songbirds and squirrel; browsed by beaver, elk, deer, sheep; nesting cover for songbirds	
White-thorn (mescal acacia) <u>Acacia constricta</u> Benth. M3120	Washes, slopes, mesas, 2,000-5,000 ft, sun	Spreading shrub, 2-10 ft	Glabrous pods, splitting when ripe, spring	Seeds eaten by dove and quail; browsed by rabbit	Common along washes, a weed on range-lands
Cat-claw (devil's claw, una degato) <u>Acacia greggii</u> Gray M3120	Washes, mesas, to 5,000 ft	Large shrub to small tree, to 25 ft	Pod, 2.5-5 in	Seeds eaten by dove and quail; roosting tree for quail	Often abundant
Rocky Mountain maple <u>Acer glabrum</u> Torr. M3120	Moist soils along streams, 7,000-9,000 ft, sun and shade	Shrub or small tree, deciduous, to 33 ft	Samara, May-June	Seeds eaten by quail, turkey, bear, squirrel, fox; browsed by deer, rabbit, beaver	
Bigtooth maple <u>Acer grandidentatum</u> Nutt. M3120	Moist soil along streams and canyons, 4,700-7,000 ft, sun or shade	Deciduous tree, up to 50 ft, with spreading crown	Samara, Apr.	Same as <u>A. glabrum</u>	
Box-elder <u>Acer negundo</u> L. M3120	Moist soil along streams, 4,000-8,000 ft, sun and shade	Deciduous tree, up to 50 ft, broad rounded crown	Paired samara, Apr.	Same as <u>A. glabrum</u>	
Yarrow <u>Achillea lanulosa</u> Nutt. M3120	Common in pine forest, 5,500-11,500 ft, sun	Perennial herb, with creeping rootstocks, 10-20 in	1-seeded, June-Sept.	Plant eaten by rabbits and sheep	
Palmer agave (mescal century plant) <u>Agave palmeri</u> Engelm. M3120	Locally common in rocky foothills and mountains, grasslands, 3,500-6,500 ft, sun	Leaf cluster, 1.5-4.5 ft	Capsule, many seeded, June-July		
Parry agave (mescal) <u>Agave parryi</u> Engelm. M3120	Common in mountains, 4,500-8,000 ft, sun	Numerous crowded leaves, forming a rounded cluster, 2-3 ft diameter	Capsule		May spread by underground sprouts
Mountain dandelion <u>Agoseris</u> spp. Raf. M3120	Meadows, open coniferous forest, 6,500-10,000 ft, sun	Perennial herb, 8-24 in	Achene, summer-fall	Seeds eaten by sage grouse	
Wheatgrass <u>Agropyron</u> spp. Gaertn. M3120	Forest edges, mountain meadows, above 7,000 ft, sun	Perennial grass, up to 4 ft	Achene, summer-fall	Plant eaten by deer and elk	
Slender wheatgrass <u>Agropyron trachycaulum</u> Schwein. M3120	Canyons, forest slopes, meadows, below 9,000 ft	Tufted perennial grass, 15-40 in	Grain, June-Nov.	Plant eaten by rabbits, antelope, elk, deer	Excellent forage grass
Ticklegrass (spike redtop) <u>Agrostis</u> spp. L. M3120	Forest edges and meadows, above 7,000 ft, sun	Tufted perennial grass, up to 3 ft	Grain, summer-fall	Plant eaten by elk and deer	

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Arizona alder <i>Alnus oblongifolia</i> Torr. M3120	Moist soil along streams, canyons, 5,000-7,000 ft, sun	Tree, up to 60 ft, round, open crown	Cone, with nutlets, Mar.	Seeds eaten by songbirds; browsed by deer, elk, rabbits	Checks erosion
Mountain alder (thinleaf alder) <i>Alnus tenuifolia</i> Nutt. M3120	Along streams and canyons, 7,000-9,000 ft, sun and shade	Large shrub to small tree, to 30 ft	Cone, with small nutlets, Apr.-May	Seeds eaten by songbirds and gamebirds; browsed by deer and rabbits	Forms thickets along streams
Canyon ragweed <i>Ambrosia ambrosioides</i> Cav. M3120	Sandy washes, canyon bottoms, sun	Shrub, to 3 ft	Fruiting heads with lateral spikes		Absent in New Mexico
Triangle bur sage (bur sage) <i>Ambrosia deltoidea</i> Cav. M3120	Alluvial plains, rocky slopes, bajadas, sun	Shrub, .5-2.5 ft	Flattened, spiny fruiting heads		
Serviceberry <i>Amelanchier alnifolia</i> Nutt. M3120	Banks, slopes, mountains, 5,000-10,000 ft, sun	Shrub or small tree, 3-12 ft	Pome, summer-early fall	Fruit eaten by songbirds and bears; browsed by deer and elk	
Mock locust (stinking willow) <i>Amorpha californica</i> Nutt. M3120	Along streams, 5,000-6,500 ft	Shrub, 4-10 ft	Pod, summer		
Cane beardgrass, Cane bluestem <i>Andropogon barbinodis</i> Lag. M3120	Dry rocky or sandy slopes, plains and roadsides, below 6,000 ft, sun	Tufted perennial grass, 30-70 in	Grain, June-Nov.	Seeds eaten by turkey; plant eaten by antelope and deer	Good range plant; drought-resistant
Arizona madrone (madrone) <i>Arbutus arizonica</i> Buckl. M3120	Mountains in oak woodland, 4,000-8,000 ft, sun	Evergreen tree, 20-50 ft, compact crown	Berrylike, fleshy drupe, Apr.-Sept.	Fruit eaten by songbirds and gamebirds; browsed by deer	
Greenleaf manzanita <i>Arctostaphylos patula</i> Greene M3120	Coniferous forest, 7,000-8,500 ft, sun	Low shrub, 3 ft	Several seeded round fruit, May-June	Same as <i>A. arizonica</i>	Very fire-resistant; forms thickets
Manzanita <i>Arctostaphylos pringlei</i> Parry M3120	Dry slopes, often with cypress, 4,000-6,500 ft, sun	Shrub, 6 ft	Several seeded berry, Apr.-June	Same as <i>A. arizonica</i>	
Pointleaf manzanita <i>Arctostaphylos pungens</i> HBK. M3120	Dry slopes, 3,500-8,000 ft, sun	Shrub, 3-5 ft	Several seeded berry, Feb.-May	Same as <i>A. arizonica</i>	Common plant of open chaparral; forms thickets
Bearberry (sandberry, manzanita, kinnikinnick) <i>Arctostaphylos uva-ursi</i> (L.) Spreng. M3120	Poor soils, open coniferous forest, aspen groves above 7,000 ft	Creeping shrub, 5-8 in, forming mats	Many seeded, berrylike, Feb.-June	Fruit eaten by gamebirds; browsed by deer	Widely distributed
Red three-awn (three awn) <i>Aristida longiseta</i> Steud. M3120	Arid, sandy and rocky hills, plateaus, forest openings, 5,000-8,500 ft	Perennial bunchgrass, 4-14 in	Long-awned grains, May-Nov.	Plant eaten by rabbit and deer	Absent in Nevada
Sagebrush <i>Artemisia ludoviciana</i> Nutt. M3120	Dry slopes, canyons, open forest, 2,500-8,000 ft sun	Forb, 1-2.5 ft	Achene, Aug.-Nov.	Plant eaten by rabbits, deer, elk, sheep	Often on limestone

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Black sagebrush <u>Artemisia nova</u> Nels. M3120	Dry slopes, mesas, shallow stony soil, 6,000-8,000 ft, sun	Shrub, 1-3 ft	Achene, Aug.-Sept.	Browsed by rabbits, deer, elk	
Big sagebrush <u>Artemisia tridentata</u> Nutt. M3120	Plains, mesas, rocky slopes, in pinyon pine, 5,000-8,000 ft, sun	Shrub, 1-7 ft	Achene, July-Oct.	Same as <u>A. nova</u>	Good growth indicates deep, fertile nonsaline soil
Seepwillow <u>Baccharis glutinosa</u> Pers. M3120	Moist soil along streams, to 5,500 ft, sun	Willow-like deciduous shrub, to 7 ft	Achene, Mar.-Dec.		Often forming thickets
Barberry (hollygrape) <u>Berberis fremontii</u> Torr. M3120	In conifer woodland, 4,000-7,000 ft	Shrub, 3-9 ft	Berry, late spring-summer	Same as <u>A. nova</u>	
Barberry (red mahonia) <u>Berberis haematocarpa</u> Woot. M3120	Dry rocky soils, 4,500-5,000 ft, sun	Shrub, to 6 ft	Berry, summer	Same as <u>A. nova</u>	
Oregon-grape <u>Berberis repens</u> Lindl. M3120	Coniferous forest, 5,000-8,500 ft	Spreading, low shrub, 1 ft	Berries, round, black, Apr.-June	Same as <u>A. nova</u>	Forms excellent ground cover to check erosion
Pine dropseed (hairy dropseed) <u>Blepharoneuron tricholepis</u> (Torr.) Nash M3120	Rocky slopes, dry open forest, 4,500-9,500 ft, sun	Erect, densely tufted perennial grass, 8-24 in	Grain, July-Nov.	Plant eaten by deer and elk	Good forage species
Side-oats grama <u>Bouteloua curtipendula</u> Mchx. M3120	Rocky slopes, woodlands, forest openings, plains, to 7,000 ft, sun	Erect, tufted perennial grass, 14-40 in	Grain, May-Nov.	Seeds eaten by turkey; plant eaten by rabbits, elk, deer, antelope	Good range grass, fast-growing, highly palatable
Black grama <u>Bouteloua eriopoda</u> Torr. M3120	Dry, sandy plateaus, rocky slopes, 3,500-6,000 ft, sun	Low, tufted perennial grass, 8-35 in	Long awned grain, July-Nov.	Same as <u>B. curtipendula</u>	Drought-adapted climax species, easily overgrazed
Blue grama <u>Bouteloua gracilis</u> HBK. M3120	Open, rocky slopes, plains, forest openings, meadows, 4,000-8,000 ft	Tufted perennial grass, 10-30 in	Grain, July-Nov.	Seeds eaten by turkey; plant eaten by rabbits, elk, deer	Excellent range grass; adapted to drought and heavy grazing
Rothrock grama <u>Bouteloua rothrockii</u> Vasey M3120	Dry sandy soils, mesas, canyons, slopes, below 6,000 ft	Erect perennial grass, 10-24 in	Grain, Aug.-Nov.	Same as <u>B. curtipendula</u>	Important range grass; moderate palatability
California brickellia <u>Brickellia californica</u> Gray M3120	Washes, dry rocky slopes, below 8,000 ft, sun	Shrub, 1.5-3 ft	Achene, fall	Seeds eaten by game-birds	
Brome <u>Bromus</u> spp. L. M3120	Forest edges, mountain meadows, above 7,000 ft	Perennial grass, 16-35 in	Grain, summer-fall	Plant eaten by deer and elk	
Mountain brome (California brome, rescue brome) <u>Bromus carinatus</u> Vahl M3120	Open woods, wastelands, middle and lower elevations	Tufted perennial grass, 16-30 in	Grain, Aug.-Oct.	Seeds eaten by game-birds; plant eaten by rabbits, deer, elk	Weedy species

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mountain brome <i>Bromus marginatus</i> Nees M3120	Woodlands and forest openings, above 5,500 ft	Perennial grass, 16-40 in	Grain, Aug.-Nov.	Plant eaten by deer, elk, antelope	Good forage grass
Sedge <i>Carex</i> spp. L. M3120	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grasslike, erect herb, 2-4 ft	Achenes in spikes, spring	Seeds eaten by game-birds, bear, rabbits, squirrel, fox; plant eaten by deer and elk	
Indian paintbrush <i>Castilleja</i> spp. Mutis M3120	Arid slopes to moist coniferous forest, 2,000-10,000 ft	Annual, perennial forb, 6-20 in	Many-seeded capsule, Mar.-Nov.	Seeds eaten by song-birds; plant eaten by deer	
Buckbrush (deer-brier) <i>Ceanothus fendleri</i> Gray M3120	Foothills, mountains, common in pine forests, 5,000-10,000 ft, sun and shade	Shrub, to 3 ft, forming low thickets	Capsule, 3-celled, Apr.-Oct.	Browsed by deer	
California lilac (desert ceanothus) <i>Ceanothus greggii</i> Gray M3120	Dry slopes, 3,500-7,500 ft	Shrub, 3-6 ft	Capsule, summer	Same as <i>C. fendleri</i>	
Deer brush <i>Ceanothus integerrimus</i> Hook. & Arn. M3120	Chaparral and open coniferous forest, 3,500-7,000 ft, sun and shade	Deciduous shrub, loosely branched, 3-8 ft	Capsule, round, 3-celled, May-Oct.	Same as <i>C. fendleri</i>	
Spiny hackberry (desert hackberry) <i>Celtis pallida</i> Torr. M3120	Foothills and mesas, 1,500-3,500 ft	Spiny, densely branched deciduous shrub, 3-10 ft	Oval drupe, one-seeded, spring	Fruit eaten by dove and quail; browsed by deer	Often forms thickets; ornamental
Netleaf hackberry (cumero, paloblanco, western hackberry) <i>Celtis reticulata</i> Torr. M3120	Streams, canyons, washes, moist soil, 2,500-6,000 ft	Deciduous large shrub to small tree, to 30 ft, spreading crown	Drupe, one-seeded	Fruit eaten by game-birds and fox; browsed by deer	
Blue paloverde (border paloverde) <i>Cercidium floridum</i> Benth. M3120	Desert washes and valleys, to 4,000 ft, sun	Small tree, to 30 ft	Flattened pods, Mar.-May	Seeds eaten by mammals and songbirds	
Yellow paloverde (little-leaf paloverde, little-leaf horse bean, foothill paloverde) <i>Cercidium microphyllum</i> (Torr.) Rose & Johnst. M3120	Foothills, desert slopes, 500-4,000 ft	Small tree, to 25 ft, spreading crown	Cylindric pod, Mar.-May	Seeds eaten by many mammals and birds	
Birchleaf mountain-mahogany <i>Cercocarpus betuloides</i> Nutt. M3120	Mountains, 3,000-8,000 ft	Shrub to small tree, to 20 ft	Hairy achene, summer-fall	Browsed by elk, deer antelope	Absent in New Mexico
Hairy mountain-mahogany (Wright mountain-mahogany) <i>Cercocarpus breviflorus</i> Gray M3120	Dry slopes, mountainsides, 5,000-8,000 ft	Evergreen shrub or tree, to 15 ft or more	Hairy achene, summer-fall	Same as <i>C. betuloides</i>	Absent west of Arizona
Curleaf mountain-mahogany <i>Cercocarpus ledifolius</i> Nutt. M3120	Generally in pine woods, 5,000-9,000 ft	Evergreen tree or shrub, to 20 ft	Hairy achene, spring-summer	Browsed by elk and deer	

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Saguaro (giant cactus) <u>Cereus giganteus</u> Engelm. M3120	Rocky or gravelly soils of foot-hills, canyons, bajadas, washes, 600-3,600 ft	Columnar tree, 9-50 ft	Ovoid to ellipsoid juicy fruits, many small seeds	Fruit eaten by many birds and mammals; nesting sites for many birds	Absent in New Mexico
Organpipe cactus (pitahaya) <u>Cereus thurberi</u> Engelm. M3120	Rocky or sandy hills, mesas, valleys, 1,000-3,500 ft	Large cactus, columnar branches, 9-20 ft	Fleshy, many small seeds		Only in Arizona
Fernbush <u>Chamaebatiaria millefolium</u> (Torr.) Maxim. M3120	Dry rocky slopes, 4,500-8,000 ft, sun	Aromatic leafy shrub, 2-6 ft	Leathery, few-seeded capsule, July-Nov.	Browsed by sheep and deer	Often occurring with juniper and pinyon
Desert-willow (desert catalpa) <u>Chilopsis linearis</u> Cav. M3120	Mostly along washes, in foot-hills and deserts	Large shrub to small tree, to 30 ft	Long, narrow pod		Good soil binder
Rabbit brush <u>Chrysothamnus depressus</u> Cav. M3120	Dry rocky slopes, plains, 5,000-7,000 ft	Small shrub, 4-5 in	Achene, summer-fall	Browsed by rabbits, antelope, deer, elk	
Rabbit brush <u>Chrysothamnus nauseosus</u> Britt. M3120	Dry plains and hills, 5,000-9,000 ft	Shrub, .5-6 ft	Achene, summer-fall		
Parry rabbit brush <u>Chrysothamnus parryi</u> Greene M3120	Open pine forests, 5,500-9,000 ft, sun	Shrub, 1-3 ft	Achene, Aug.-Sept.	Seeds eaten by song-birds; browsed by rabbits, deer, antelope, elk	Sometimes in association with sagebrush
Cliffrose <u>Cowania mexicana</u> D. Don M3120	Rocky hills and plateaus on limestone formations, 3,500-8,000 ft	Evergreen shrub, 3-6 ft	Hairy achene, late spring-fall	Browsed by deer	
Arizona cypress (rough-bark Arizona cypress, smooth cypress, smooth Arizona cypress) <u>Cupressus arizonica</u> Greene M3120	Canyons, mountains, oak woodlands, 3,500-7,200 ft	Medium-sized tree, 30 ft	Round cones, short stalked		Very scattered and localized; probably relic populations
Oat grass <u>Danthonia</u> spp. DC. M3120	Forest edges, mountain meadows, above 7,000 ft	Perennial grass, 4-24 in	Grain, July-Oct.		
Larkspur <u>Delphinium</u> spp. L. M3120	Forest edges, mountain meadows, above 7,000 ft	Perennial herb, 1-5 ft	Follicle, summer-fall		
Tufted hairgrass <u>Deschampsia caespitosa</u> Beauv. M3120	Bogs, moist mountain meadows, streambanks, to 9,500 ft	Densely tufted perennial grass, 2-4 ft	Grain, June-Oct.	Plant eaten by deer, elk, bighorn sheep	Excellent range species; holds well under moderate grazing
Hopbush <u>Dodonaea viscosa</u> Jacq. M3120	Dry, rocky slopes and canyons, often on limestone, 2,000-4,500	Shrub, to 12 ft	Dry with broad wings, Feb.-Oct.		Increases on over-grazed ranges
Hedgehog cactus <u>Echinocereus</u> spp. Engelm. M3120	Rocky hillsides to sandy plains, 2,500-8,000 ft	Stems solitary or clumped, 2 ft	Globular or ellipsoid		

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Rainbow cactus <u>Echinocereus pectinatus</u> Scheide M3120	Limestone hills, 3,500-5,200 ft	Columnar, 4-6 in	Spiny, green, fleshy		
Spikerush <u>Eleocharis</u> spp. R. Br. M3120	Moist soil along streams or in forests, 150- 3,000 ft	Upright herb, leaf- less, 1-3 ft	Achenes in spike- lets, spring	Seeds eaten by game- birds; plant eaten by rabbits and muskrat	
Woolspike balsamscale <u>Elyonurus barbiculmus</u> Hack. M3120	Dry, rocky slopes and plains, desert grass- lands, juniper-- oak woodlands	Perennial grass, 16-32 in	Grain, July-Nov.		Good forage grass
Brittle bush (incienso) <u>Encelia farinosa</u> Gray M3120	Dry rocky slopes and mesas, to 3,000 ft	Low branching	Achene, Nov.-May		Common to locally abundant
Mormon tea <u>Ephedra viridis</u> Cov. M3120	Arid slopes, me- sas, 3,000-7,000 ft	Erect shrub, 1-3 ft	Naked seed, sum- mer	Seeds eaten by quail; browsed by antelope, deer, rabbit	
Plains lovegrass <u>Eragrostis intermedia</u> Hitchc. M3120	Sandy or rocky slopes and plains	Tufted erect per- ennial grass, 22-35 in	Grain, July-Nov.		Used to reseed rangeland; good soil binder
Fleabane <u>Erigeron</u> spp. L. M3120	Forest edge, open ground, mountain meadows, above 7,000 ft	Perennial herb, 1-3 ft	Achene, summer- fall		
Fleabane (wild daisy) <u>Erigeron divergens</u> T. & G. M3120	Dry slopes, mesas, to open pine woods, 1,000-9,000 ft, sun	Forb, 6-30 in	Achene, Feb.-Oct.		
Wild daisy (fleabane) <u>Erigeron flagellaris</u> Gray M3120	Open coniferous forest, mountain meadows, 3,000- 9,500 ft	Forb, 6-30 in	Achene, Apr.- Sept.		
Yerba santa <u>Eriodictyon</u> <u>angustifolium</u> Nutt. M3120	Dry slopes, 2,000- 7,000 ft	Shrub, up to 6.5 ft	Capsule, summer- fall	Browsed by deer	
Deer buckwheat <u>Eriogonum wrightii</u> Torr. M3120	Arid lands, 3,000- 7,000 ft	Herb or shrub, to 2.5 ft	Achene, June-Oct.	Seeds eaten by game- birds and songbirds; plant eaten by deer and rabbits	Common throughout desert
Coral bean (southwestern coral bean, western coral bean, chilicote, Indian bean) <u>Erythrina</u> <u>flabelliformis</u> Kearn. M3120	Warm, dry, rocky slopes, canyons, foothills, 3,000- 5,500 ft	Shrub or small tree, to 15 ft	Several-seeded pod		
Apache plume <u>Fallugia paradoxa</u> Endl. M3120	Dry, rocky slopes, 4,000-5,000 ft	Shrub, 1-5 ft	Achene, summer		
Fendlerella <u>Fendlerella utahensis</u> (Wats.) Heller M3120	Dry, open pine woods, 5,000- 8,000 ft, sun	Small, much-branched shrub, 1-3 ft	Capsule, June- Sept.		

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Barrel cactus <u>Ferocactus wislizenii</u> (Engelm.) Britt. & Rose M3120	Rocky, gravelly or sandy soils of hills, canyons, washes, alluvial fans, 1,000- 5,600 ft	Barrel to columnar, 2-10 ft	Fleshy, many seeded, yellow, July-Sept.	Fruit eaten by many mam- mals	
Fescue <u>Festuca</u> spp. L. M3120	Forest edges, mountain meadows, above 6,000 ft	Perennial grass, 16-40 in	Grain, summer- fall	Seeds eaten by turkey and songbirds; plant eaten by deer and elk	
Arizona fescue <u>Festuca arizonica</u> Vasey M3120	Forest, mountain meadows, 6,000- 10,000 ft	Densely tufted per- ennial grass, 18- 36 in	Grain, June-Sept.	Same as <u>Festuca</u> spp.	
Red fescue <u>Festuca rubra</u> L. M3120	Meadows, hills, bogs, marshes, at higher eleva- tions	Loosely tufted per- ennial grass, 16-40 in	Grain, July-Sept.	Seeds eaten by turkey; plant eaten by deer and elk	
Thurber fescue <u>Festuca thurberi</u> Vasey M3120	Dry slopes, rocky hills, 4,500- 11,500 ft	Densely tufted, erect perennial grass, 24-36 in	Grain, summer- fall	Same as <u>Festuca</u> spp.	Only in Colorado, New Mexico, Utah, Wyoming
Ocotillo (coachwhip, candlewood) <u>Fouquieria splendens</u> Engelm. M3120	Dry slopes, me- sas, to 5,000 ft	Thorny, deciduous shrub with tall, unbranched whiplike stems, 6-27 ft	Capsule, 3-celled, Splitting when ripe, Apr.-June	Browsed by bighorn sheep	
Strawberry <u>Fragaria ovalis</u> (Lehm.) Rydb. M3120	Moist meadows, coniferous forest, 7,000-11,000 ft, sun or shade	Perennial shrub with connecting runners 4-6 in	Achenes embedded in fleshy aggre- gate fruit, May- Oct.	Fruit eaten by game- birds, songbirds, rabbits, squirrel, deer	
Velvet ash <u>Fraxinus velutina</u> Torr. M3120	Moist soils of streambanks, washes, canyons, 2,500-7,000 ft, sun	Small to medium tree, round crown, to 40 ft	Long winged sa- mara, Mar.-May	Seeds eaten by game- birds, songbirds, squirrel, deer; nest- ing cover for squirrel and songbirds	
Flannel bush (California fremont) <u>Fremontia californica</u> Torr. M3120	Dry north facing slopes, canyons, 3,500-6,000 ft	Shrub, 4-12 ft	Capsule, summer		
Silk-tassel <u>Garrya flavescens</u> Wats. M3120	Dry slopes, 3,000- 8,000 ft	Evergreen shrub, to 6 ft	Berrylike, spring	Fruit eaten by turkey; browsed by deer	
Silk-tassel <u>Garrya wrightii</u> Torr. M3120	Dry slopes, 3,000- 8,000 ft, sun	Large evergreen shrub, 6-10 ft	Berry, Mar.-Aug.	Same as <u>G. flavescens</u>	
Cranesbill geranium <u>Geranium richardsonii</u> Fish. & Traut. M3120	Coniferous forest, 6,500-11,500 ft, sun and shade	Perennial forb, 12-30 in	Capsule, 5-lobed, Apr.-Oct.	Seeds eaten by dove, quail, towhee; plant eaten by deer	
Snakeweed (broom snakeweed) <u>Gutierrezia sarothrae</u> (Pursh) Britt. & Rusby M3120	Plains, slopes, in upper desert, desert grasslands, oak woodlands, 3,000-7,000 ft	Shrub, .5-1 ft	Small achene, July-Nov.	Seeds eaten by quail; browsed by rabbits, antelope, deer	Invader of over- grazed ranges
Turpentine-brush <u>Haplopappus</u> <u>laricifolius</u> Gray M3120	Mesas, slopes, canyons, 3,000- 6,000 ft	Shrub, 1-3 ft	Achene, cylindric, Aug.-Nov.		

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sneezeweed <i>Helenium hoopesii</i> Gray M3120	Conifer forest, mountain meadows, 7,000-11,000 ft	Perennial herb, 1-3.5 ft	Achene, turbinate, June-Sept.		
False sunflower <i>Helianthella quinquerivis</i> (Hook.) Gray M3120	Mountain meadows, woods, 5,000-10,000 ft	Perennial herb, 8-24 in	Achene, July-Oct.		
Crucifixion thorn (holocantha, corona de cristo) <i>Holacantha emoryi</i> Gray M3120	Desert valleys on clay soil, sand dunes, 500-2,000 ft	Spiny shrub to small tree, to 12 ft	Drupelike carpels, June-July		Absent in New Mexico
Ocean spray (foam bush, mountain spray, cream-bush) <i>Holodiscus dumosus</i> (Nutt.) Heller M3120	Pine or spruce forests, often on cliffs, 5,500-10,000 ft, sun	Aromatic, deciduous shrub, 3 ft	One-seeded follicle, June-Sept.		
Foxtail barley <i>Hordeum jubatum</i> L. M3120	Moist soils along streams and lakes, above 5,000 ft	Annual or perennial grass, 12-24 in	Long awned grain, June-Oct.		Invades disturbed areas
Blue flag (Rocky Mountain iris, flag) <i>Iris missouriensis</i> Nutt. M3120	Wet meadows, 6,000-9,500 ft	Perennial forb, 8-15 in	Capsule, late summer-fall		
Cliffbush <i>Jamesia americana</i> T. & G. M3120	Moist canyons, along streams in coniferous forests, 7,500-9,500 ft, sun and shade	Deciduous shrub, 1-6 ft	Capsule, dry beaked, June-July		
Arizona walnut <i>Juglans major</i> (Torr.) Heller M3120	Moist soil along streams, canyons, 3,500-7,000 ft, sun	Tree, 50 ft, round crown	Round nut with hairy husk spring	Seeds eaten by songbirds, squirrel, fox	
Rush <i>Juncus</i> spp. L. M3120	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grasslike herbs, 2-4 ft	Capsule, spring	Forage	
Dwarf juniper (ground-cedar) <i>Juniperus communis</i> L. M3120	Mountain and forest, above 8,000 ft	Dense aromatic evergreen, usually prostrate shrub, 1-3 ft	Cone, small round berrylike, pollinates, spring	Fruit eaten by songbirds, deer, quail, turkey, bear, fox	
Alligator juniper <i>Juniperus deppena</i> Steud. M3120	Moist soil along streams or scattered on hillside in oak woodland or ponderosa pine forest, 4,500-8,000 ft, sun	Tree, 20-65 ft, round crown	Cone, berrylike, fleshy, pollinates in spring	Fruit eaten by deer, quail, turkey, bear, fox	
One-seeded juniper <i>Juniperus monosperma</i> (Engelm.) Sarg. M3120	Dry hills, mesas, 3,000-7,000 ft, foothills, pinyon-juniper woodland	Shrub to small evergreen tree, conical crown, 10-25 ft	Cone, 1-seeded, berrylike, matures in 1 yr	Important food and cover for numerous species	Most common juniper in New Mexico
Utah juniper (western juniper) <i>Juniperus osteosperma</i> (Torr.) Little M3120	Dry plains, plateaus, hills, often in pure stands or with pinyon, 3,000-7,500 ft, sun	Small evergreen tree, broad, round crown, 15-40 ft	Cone, brown, berrylike, pollinates in spring	Same as <i>J. monosperma</i>	Most common juniper in Arizona

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Rocky Mountain juniper (western juniper) <u>Juniperus scopulorum</u> Sarg. M3120	Scattered in mountains and canyons of pinyon--juniper woodland and lower ponderosa pine, 5,000-9,000 ft, sun	Small to medium evergreen tree, narrow, pointed open crown, 20-50 ft	Cone, berrylike, pollinates in spring	Same as <u>J. monosperma</u>	Fastest growing juniper
Mountain junegrass (prairie junegrass) <u>Koeleria cristata</u> (L.) Pers. M3120	Prairie, open woods, sandy soils, rocky slopes, below 9,000 ft	Tufted or bunched perennial grass, 14-28 in	Grain, May-Oct.	Plant eaten by deer and elk	Good forage; rarely locally abundant
White ratany <u>Krameria grayi</u> Rose & Painter M3120	Dry plains, mesas, 500-5,000 ft	Low, branched shrub, 1-2 ft	Round, thick walled, spiny, 1-seeded, Apr.-Sept.		Absent in New Mexico; relished by livestock
Ratany <u>Krameria parvifolia</u> Benth. M3120	Dry rocky slopes, gravelly plains, 500-5,000 ft	Shrub, 1-1.5 ft	Small burr with several spines, Apr.-Oct.		Relished by livestock
Creosote bush (greasewood) <u>Larrea divaricata</u> Cav. M3120	Alluvial plains, foothills, slopes, to 4,000 ft	Shrub, usually 3-6 ft	Capsule, 5-celled, spiny, spring	Browsed by rabbits and small mammals	Most common and widely distributed shrub in desert
Aspen peavine (peavine) <u>Lathyrus leucanthus</u> Rydb. M3120	Open dry woodland, meadows, 6,500-11,500 ft	Perennial herb, 6-24 in	Legume, summer-fall		
Black-fruited honeysuckle <u>Lonicera involucrata</u> (Richards) Banks M3120	Open coniferous forest, often along streams, 7,500-10,500 ft, sun and shade	Erect or twining deciduous shrub, 1-10 ft, tending to form thickets	Berrylike, June-July	Nectar is primary food for hummingbirds	
Deer vetch (deer clover) <u>Lotus</u> spp. L. M3120	Forest edges, mountain meadows, 3,000-9,000 ft	Perennial herb, 8-16 in	Legume, summer-fall	Good forage	Good for erosion control
Lupine <u>Lupinus</u> spp. L. M3120	Dry slopes, mesas, open forest, 100-10,000 ft, sun	Annual or perennial forb with terminal cluster flowers, 6-24 in	Flat pods, constricted between seeds, spring-fall	Seeds eaten by songbirds, quail, turkey, bear	Some species poisonous to livestock
Wolfberry <u>Lycium</u> spp. L. M3120	Plains, slopes, hills and washes with alluvial soil, 1,000-7,000 ft	Spreading to erect spiny shrub, 3-9 ft	Many-seeded berry	Fruit eaten by dove and quail	
Wolftail (Texas-timothy) <u>Lycurus phleoides</u> HBK. M3120	Open rocky slopes, plains, below 8,000 ft	Tufted erect perennial, 8-25 in	Awed grain, July-Nov.		Valuable range grass
Cream cactus <u>Mammillaria gumifera</u> Engelm. M3120	Rocky or gravelly limestone soils, 4,000-4,500 ft	Globose to 4 in	Smooth berry, summer		
Fish-hook cactus <u>Mammillaria microcarpa</u> Engelm. M3120	Sandy gravel of canyons, washes, alluvial fans and plains, 1,000-5,000 ft	Cylindroid cactus, 3-6 in	Smooth berry with small seeds, summer		Only in Arizona
Oniongrass <u>Melica bulbosa</u> Port. & Coult. M3120	Rocky woodlands, hills, 3,000-8,000 ft	Perennial grass, 12-24 in	Grain, summer-fall		New Mexico and Colorado; absent in Arizona

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Wait-a-minute bush (cat-claw, wait-a-bit) <u>Mimosa biuncifera</u> Benth. M3120	Dry soil on mesas, rocky slopes, 3,000-6,000 ft	Spiny deciduous shrub, 2-6 ft	Legume, many seeded, May-Aug.	Browsed by deer; cover for deer and rabbits	Often forms large, dense thickets; good soil binder
Horsemint (beebalm) <u>Monarda</u> spp. L. M3120	Open coniferous forests, mountain meadows above 7,000 ft	Perennial herb, 12- 30 in	Nutlets, summer- fall		
Texas mulberry <u>Morus microphylla</u> Buckl. M3120	Moist soil along streams, washes, canyons, rocky slopes below cliffs, 2,000- 6,000 ft, sun or shade	Large shrub or small tree, in dense clumps, up to 20 ft	Oblong cluster of berries, Apr.	Fruit eaten by song- birds, fox, squirrels	
Bullgrass <u>Muhlenbergia emersleyi</u> Vasey M3120	Rocky slopes, ledges, forest openings, drier soils below 6,500 ft	Erect perennial grass, 20-40 in	Grain, June-Nov.		Good soil binder on steep slopes
Mountain muhly <u>Muhlenbergia montana</u> Hitchc. M3120	Rocky slopes, ledges, woodlands, forest openings, 4,500-9,500 ft	Tufted perennial grass, 6-26 in	Grain, Aug.-Oct.	Seeds eaten by turkey; plant eaten by deer and elk	
Bush muhly <u>Muhlenbergia porteri</u> Scribn. M3120	Dry mesas, rocky slopes, canyons, 2,000-6,000 ft	Erect perennial grass, 12-40 in	Grain, Aug.-Nov.	Plant eaten by elk	Highly palatable; largely grazed out
Deergrass <u>Muhlenbergia rigens</u> (Benth.) Hitchc. M3120	Gravelly or sandy canyon bottoms, washes, in moist soil, occasionally dry plateaus or meadows, 3,000- 7,000 ft	Perennial grass, 2-5 ft	Grain, June-Oct.	Seeds eaten by turkey; plant eaten by deer and elk	
Ring muhly (ring grass) <u>Muhlenbergia torreyi</u> Hitchc. M3120	Dry ridges, sandy plateaus, rocky slopes, below 6,500 ft	Perennial grass, 6-12 in	Grain, Aug.-Nov.		Poor range grass; good soil binder
Screwleaf muhly <u>Muhlenbergia virescens</u> Kunth M3120	Rocky slopes, ridges, pine for- ests, 5,000-9,500 ft, shade	Densely tufted per- ennial grass, 16-24 in	Grain, May-July	Seeds eaten by turkey; plant eaten by deer and elk	In Arizona and New Mexico only
Spike muhly <u>Muhlenbergia wrightii</u> Vasey M3120	Woodland, forest openings, dry meadows, 5,500- 9,000 ft	Perennial grass, 1-2 ft	Grain, July-Nov.	Seeds eaten by wild turkey; plant eaten by deer, elk, bighorn sheep	
Ironwood (tesota palo fierro, palo-de-hierro) <u>Olneya tesota</u> Gray M3120	Sandy washes, foothills, to 2,500 ft	Spiny evergreen tree to 30 ft	Pod, May-June	Food and cover for numerous small species	Extremely hard, brittle, heavy wood
Beavertail <u>Opuntia basilaris</u> Engelm. & Bigel. M3120	Sandy flat dunes, valleys in wood- lands, 4,000- 7,000 ft	Clumps, 6-12 in high	Dry, not spiny		
Little prickly pear <u>Opuntia fragilis</u> Nutt. M3120	Sandy to gravelly soils, 4,500- 8,000 ft	Mat-forming plant, 2-4 in	Obovoid dry fruit	Fruit eaten by numerous gamebirds and mammals, especially peccary	
Jumping cholla <u>Opuntia fulgida</u> Engelm. M3120	Sandy soil of plains, mesas, washes, hills	Small cactus tree, 3-15 ft	Fleshy, in chains, June-Aug.	Principal nesting site for cactus wren	Only in Arizona

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Desert Christmas cactus (tesajo, cholla) <i>Opuntia leptocaulis</i> DC. M3120	Mesas, flats, valleys, plains, washes in deserts	Bush or erect small shrub, 1-15 ft	Persistent obovoid, fleshy fruit, May-June		Usually growing within another shrub
Prickly pear <i>Opuntia phaeacantha</i> Engelm. M3120	Sandy soils of plains, washes, hills, deserts, grasslands, 1,500-7,000 ft	Variable clumps, 2-20 ft diameter, 1-3 ft high	Obovoid, many seeded, Apr.-June	Fruit eaten by gamebirds and numerous mammals, including peccary and coyotes	May be invader in overgrazed areas
Cane cholla <i>Opuntia spinosior</i> (Engelm.) Toumey M3120	Deep soils of valleys, plains, hillsides, grasslands, chaparrals, woodlands, 2,000-6,500 ft	Small shrub or cactus trees, 3-8 ft	Persistent, fleshy many seeded, May-June		Characteristic of desert grassland
Indian rice-grass <i>Oryzopsis hymenoides</i> (R. & S.) Ricker M3120	Open sandy plains, hills, woodlands at medium elevations	Densely tufted perennial grass, 12-14 in	Grain, May-Nov.	Seeds eaten by gamebirds; plant eaten by deer	Excellent range-grass in semi-arid areas
Wood-sorrel <i>Oxalis</i> spp. L. M3120	Moist soils, 2,500-9,000 ft	Herbaceous perennial forb with creeping rootstocks, to 1 ft	Capsule, 5-celled, dehiscent, spring-fall	Same as <i>O. hymenoides</i>	Occasionally grown as ornamentals
Locoweed <i>Oxytropis lamberti</i> Pursh M3120	Open sandy areas, 5,000-8,000 ft	Perennial herb, 4-12 in	Legume, summer-fall		Poisonous to livestock and people
Myrtle boxleaf (Oregon boxwood, mountain-lover) <i>Pachystima myrsinites</i> (Pursh) Raf. M3120	Coniferous forests, 6,000-9,000 ft	Low inconspicuous ground cover	Capsule, 2-celled, May	Plant relished by deer	
Virginia creeper <i>Parthenocissus inserta</i> (Kern.) Fritsch M3120	On trees, growing in moist soil along streams, 3,000-7,000 ft, shade	Creeping vine	Berries, 1-4 seeded, spring	Fruit eaten by songbirds, rabbits, fox	
Mock orange <i>Philadelphus microphyllus</i> Gray M3120	Rocky slopes, canyons, chaparral, coniferous forest, 5,000-9,000 ft, sun	Much-branched deciduous shrub, 3-6 ft	Capsule, many seeded, June-July		
Mountain timothy (alpine timothy) <i>Phleum alpinum</i> L. M3120	High mountain meadows and moist seeps, coniferous forests to alpine	Densely tufted perennial grass, 8-20 in	Awed grain, Aug.-Nov.		Can be established on depleted range
Phlox <i>Phlox caespitosa</i> Nutt. M3120	Mountains, 10,500 ft and higher	Half shrub, 1-4 in	Capsule, summer-fall	Browsed by deer and elk	
Ninebark <i>Physocarpus monogynus</i> (Torr.) Coult. M3120	Pine and spruce forests, 8,000-9,500 ft, sun and shade	Small shrub, 1-3 ft	Capsule, few-seeded dehiscent, June-July		
Engelmann spruce <i>Picea engelmanni</i> Parry M3120	Conifer forest, 8,000-12,000 ft, sun	Large evergreen tree, conical crown, drooping branches, 60-100 ft	Round cones, pollinates in spring	Seeds eaten by gamebirds and songbirds; browsed by rabbits	
Blue spruce (Colorado spruce, silver spruce) <i>Picea pungens</i> Engelm. M3120	Coniferous forest, 7,000-11,000 ft, sun	Tree, 40-80 ft, conical crown	Cones, pollinates in spring	Seeds eaten by songbirds, gamebirds, squirrel; browsed by deer, elk, rabbits	

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bristle-cone pine (foxtail pine) <u>Pinus aristata</u> Engelm. M3120	Open grassy stands, spruce--fir up to timberline, 9,700-11,500 ft, sun	Small gnarled evergreen tree, shrub-like at timberline, to 40 ft	Cones, spring		
Mexican pinyon <u>Pinus cembroides</u> Zucc. M3120	Pinyon--juniper woodland, 5,000-7,500 ft	Small evergreen tree, 15-50 ft	Cones, with oily nuts	Seeds eaten by band-tailed pigeons, songbirds, bear, rabbit, deer	
Pinyon pine (Colorado pinyon, Rocky Mountain pinyon) <u>Pinus edulis</u> Engelm. M3120	Pinyon--juniper woodland, 4,000-7,500 ft	Small evergreen, bushy tree, compact spreading crown, 15-35 ft	Cone, egg-shaped, pollinates spring	Seeds eaten by pinyon jay, songbirds, fox, squirrel, gamebirds, deer, bear	
Limber pine (Rocky Mountain white pine) <u>Pinus flexilis</u> James M3120	Widely distributed in coniferous forest above 7,000 ft, sun	Large evergreen tree, widely branched, drooping crown, 50-80 ft	Cone, 4-8 in	Seeds eaten by songbirds, bear, squirrel; browsed by deer and rabbits	
Apache pine (Arizona longleaf pine) <u>Pinus latifolia</u> Sarg. M3120	Mountains along Mexican border, 5,000-8,500 ft, sun	Evergreen tree, 50-70 ft	Prickly scaled cone	Seeds eaten by band-tailed pigeons, songbirds, bear; browsed by rabbit and deer	Scattered in distribution
Chihuahuan pine <u>Pinus leiophylla</u> Schiede & Deppe M3120	Mountains, 5,000-7,800 ft	Tree, 30-80 ft	Cone, spreading, stalked	Same as <u>P. latifolia</u>	
Singleleaf pinyon <u>Pinus monophylla</u> Torr. & Frem. M3120	Drier slopes, 4,000-6,500 ft	Evergreen tree, 15-30 ft	Cone, fall	Seeds eaten by songbirds, gamebirds, fox, squirrel, bear; browsed by deer	
Ponderosa pine <u>Pinus ponderosa</u> Laws. M3120	Plateaus, mountain slopes, in pure or mixed stands, 5,500-8,500 ft, sun	Large evergreen tree, 80-125 ft, straight trunk with narrow, open crown	Cone	Food and nesting sites for tassel-eared squirrels	Most common forest tree in southwest
Arizona sycamore <u>Platanus wrightii</u> Wats. M3120	Moist soil along streams, canyons, 2,000-6,000 ft, sun	Tree, 40-80 ft, spreading open crown	Achene, Apr.-May	Seeds eaten by songbirds and squirrel; nesting sites for songbirds and squirrel	Prevents excessive erosion
Bluegrass <u>Poa</u> spp. L. M3120	Forest edges, mountain meadows above 4,000 ft	Perennial grass, 10-30 in	Grain, summer-fall	Plant eaten by rabbit, deer, elk	
Muttongrass (Fendler bluegrass) <u>Poa fendleriana</u> Vasey M3120	Mesas, rocky hills, open dry woodlands below 11,500 ft, sun	Perennial grass, 12-20 in	Grain, May-Sept.	Same as <u>Poa</u> spp.	Important range grass
Kentucky bluegrass <u>Poa pratensis</u> L. M3120	Open woods, meadows, disturbed soil, medium to high elevation	Perennial grass, 10-40 in	Grain, summer-fall	Plant eaten by rabbit and deer	Widespread, probably introduced
Narrowleaf cottonwood <u>Populus angustifolia</u> James M3120	Moist soils, along streams, 5,000-7,000 ft, sun	Tree, to 50 ft, narrow crown	Seed capsule, spring	Seeds eaten by gamebirds and squirrel; browsed by rabbit; nesting cover for squirrel and songbirds	Suitable for erosion control

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Fremont cottonwood <u>Populus fremontii</u> Wats. M3120	Moist soils along streams, 150-5,000 ft, sun	Large tree, 50-100 ft, with broad, flat open crown	Seed capsule, in catkins	Seeds eaten by gamebirds; browsed by rabbits; nesting cover for songbirds and raptors	
Trembling aspen (quaking aspen, golden aspen, trembling poplar) <u>Populus tremuloides</u> Michx. M3120	Widely distributed in coniferous forest above 6,000 ft	Tree, slender crown, 20-80 ft	Cottony capsules, early spring	Seeds eaten by gamebirds, songbirds, squirrel; browsed by rabbit, deer, elk	Great aesthetic value in fall; sprouts from cut roots
Cinquefoil <u>Potentilla</u> spp. L. M3120	Open coniferous forest, mountain meadows above 7,000 ft	Perennial herb or shrub, 6-30 in	Achene, summer-fall	Plant eaten by rabbit, songbirds, deer, sheep	
Bush cinquefoil (shrubby cinquefoil) <u>Potentilla fruticosa</u> L. M3120	Along streams and wet meadows, 7,000-9,500 ft, sun and shade	Evergreen shrub, 1-4 ft	Achene, June-Aug.	Browsed by deer and sheep	Excellent to prevent soil erosion
Primrose <u>Primula</u> spp. L. M3120	Moist canyons, alpine meadows, 7,500-12,000 ft, sun and shade	Perennial forbs with leafless stems, 10-20 in	Many-seeded capsules, May-Sept.		
Mesquite (velvet mesquite, honey mesquite) <u>Prosopis juliflora</u> (Sw.) DC. M3120	Sandy alluvial soils, washes, to 5,500 ft	Spiny spreading shrub to tree, 20-50 ft	Pod, Sept.-Oct.	Important for food and cover for numerous species	Resprouts from cut stumps
Wild cherry <u>Prunus</u> spp. L. M3120	Moist soil along streams, pine forests, 4,500-9,000 ft	Shrub to small tree, 10-40 ft	One-seeded drupe, Mar.-May	Fruit eaten by numerous birds and animals	
Wild cherry (bitter cherry) <u>Prunus emarginata</u> (Dougl.) D. Dietr. M3120	Pine forests, 5,000-9,000 ft, sun and shade	Shrub to small tree, with slender upright branches, 8-15 ft	Juicy acidic drupe, Apr.-June	Fruit eaten by songbirds, gamebirds, fox, squirrel, bear; browsed by deer and elk	
Douglas-fir <u>Pseudotsuga menziesii</u> (Mirb.) Franco M3120	Mixed coniferous forest, cold canyons, 5,200-10,000 ft, sun	Large tree, 100-190 ft, with open, broadly conical crown	Cones	Seeds eaten by squirrel; browsed by deer and rabbit	
Bracken fern <u>Pteridium aquilinum</u> (L.) Kuhn M3120	Moist soil, along streams, pine woods, aspen groves, 5,000-8,000 ft, shade	Small ground cover fern, 1-3 ft		Plant eaten by porcupine	Poisonous when eaten in large quantities
Antelope brush (bitterbrush) <u>Purshia tridentata</u> Pursh M3120	Open slopes, mesas, coniferous forests, 4,000-9,000 ft	Shrub, to 9 ft	Hairy achene, summer	Browsed by rabbit, antelope, deer, elk	Prevents soil erosion
Arizona white oak <u>Quercus arizonica</u> Sarg. M3120	Moist soil along streams, canyons, oak woodland foothills, mountains, 5,000-7,600 ft, sun	Tree, with irregular spreading crown, 30-60 ft	Nut (acorn), spring	Food and cover for many birds and mammals	
Emory oak <u>Quercus emoryi</u> Torr. M3120	Moist soil along streams, canyons, oak woodland foothills, mountains, 4,000-7,000 ft, sun	Tree, with spreading crown, 20-50 ft	Nut (acorn), spring	Seeds eaten by gamebirds, bear, fox, rabbit, squirrel, deer, elk; nesting cover for songbirds and squirrel	

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Gambel oak <i>Quercus gambelii</i> Nutt. M3120	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6-70 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel, rabbit, deer, bear	
Gray oak <i>Quercus grisea</i> Liebm. M3120	Dry rocky hillside, 4,500-8,000 ft	Shrub to tree, to 65 ft, evergreen	Nut (acorn), spring	Same as <i>Q. gambelii</i>	
Silverleaf oak (whiteleaf oak) <i>Quercus hypoleucoides</i> A. Camus M3120	Mountain slopes, canyons of oak woodlands, 5,000-7,000 ft, sun	Small evergreen tree with round, spreading crown, 15-30 ft; sometimes clumping shrub, 6 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, bear, squirrel, deer	
Mexican blue oak <i>Quercus oblongifolia</i> Torr. M3120	Foothills, mountains, canyons, 4,500-6,000 ft	Small evergreen tree, to 25 ft	Nut (acorn), spring	Same as <i>Q. hypoleucoides</i>	
Palmer oak <i>Quercus palmeri</i> Engelm. M3120	Moist soil along streams of canyons and mountainsides, 3,500-7,000 ft, sun and shade	Shrub to small tree, 6-25 ft	Nut (acorn), spring	Seeds eaten by gamebirds, songbirds, squirrel, deer, elk; nesting cover for songbirds and squirrel	
Netleaf oak <i>Quercus reticulata</i> Humb. & Bonpl. M3120	Uncommon in mountains, canyons, oak woodlands, 4,000-8,000 ft, sun	Evergreen shrub to tree, with rounded crown, 6-40 ft	Nut (acorn) in clusters, spring	Same as <i>Q. hypoleucoides</i>	
Shrub live oak (scrub oak, turbinella oak) <i>Quercus turbinella</i> Greene M3120	Dry slopes, hill-sides, canyons, 3,000-8,000 ft	Evergreen shrub, to 7 ft	Nut (acorn), late summer to fall	Seeds eaten by many species of birds and small mammals	Often abundant
Buttercup (crowfoot) <i>Ranunculus</i> spp. L. M3120	Forest edge, open areas, mountain meadows, above 7,000 ft	Perennial herb, 6-24 in	Achene, spring-fall	Plant eaten by rabbit, turkey, deer	
Birchleaf buckthorn <i>Rhamnus betulaeifolia</i> Greene M3120	Canyons, along streams in mountains, oak woodland, pine forest, 5,500-7,500 ft	Rounded shrub, 8 ft or less, rarely small tree to 18 ft	Berrylike, 3-seeded, May-June	Fruit eaten by gamebirds, bear, squirrel; browsed by deer	
California buckthorn (coffeeberry) <i>Rhamnus californica</i> Esch. M3120	Common in canyons, along streams, chaparral, open coniferous forest, 3,500-7,000 ft, sun and shade	Evergreen shrub to small tree, 6-20 ft	Berrylike fruit, May-July	Fruit eaten by gamebirds, squirrel, bear, browsed by deer	
Hollyleaf buckthorn (buckthorn, red berry buckthorn) <i>Rhamnus crocea</i> Nutt. M3120	Mountains, chaparral, lower pine forests, dry washes, canyons, 3,000-7,000 ft, sun and shade	Spreading evergreen shrub to small tree, 3-15 ft	Berrylike pome, Mar.-May	Fruit eaten by gamebirds and bear; browsed by deer	
Scarlet sumac (smooth sumac) <i>Rhus glabra</i> L. M3120	Rich moist soil, along streams, canyons, ravines, 5,000-7,000 ft, sun and shade	Tall shrub to small tree, to 8 ft, usually forming thickets	Drupe, 1-seeded, June-Aug.	Fruit eaten by quail; browsed by rabbit and deer	

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sugar sumac (sugar bush, mountain-laurel) <u>Rhus ovata</u> Wats. M3120	Mountain slopes, canyons, in moist soils, 3,000-5,000 ft	Evergreen tree or shrub, to 15 ft	Cluster of berries, late spring		
Squawbush <u>Rhus trilobata</u> Nutt. M3120	Along streams, in canyons, on slopes in chaparral, 2,500-7,500 ft, sun	Aromatic deciduous shrub, 2-7 ft	Berrylike, Mar.-June	Browsed by deer and elk	
Gooseberry <u>Ribes</u> spp. L. M3120	Pine forests, rocky slopes, mid to high elevations	Shrub, to 6 ft tall	Several-seeded berry, May-Sept.	Fruit eaten by game-birds and squirrel; browsed by deer	
Wax currant <u>Ribes cereum</u> Douglt. M3120	Pine forests, sometimes on cliffs, 5,500-9,000 ft, sun	Straggly deciduous shrub, 3-6 ft	Several-seeded juicy berry, May-July	Same as <u>Ribes</u> spp.	
New Mexican locust <u>Robinia neomexicana</u> Gray M3120	Canyons, mountains, forming almost pure thickets on north-facing slopes, 4,000-8,500 ft, sun	Spiny shrub or small tree, to 25 ft	Pod, May-Aug.	Seeds eaten by quail, squirrel, deer	Effective in reducing erosion
Watercress <u>Rorippa</u> spp. Scop. M3120	Moist soil along streams or in streams, 1,500-9,500 ft, shade	Small prostrate forb, 6-18 in	Globose capsule, spring		
Raspberry <u>Rubus</u> spp. L. M3120	Rich moist soils along streams in coniferous forests, 5,000-11,000 ft	Trailing shrub to 5 ft, forming thickets	Fleshy fruit of 1-seeded drupelets, May-Sept.	Fruit eaten by quail, turkey, bear, squirrel	
Raspberry <u>Rubus strigosus</u> Michx. M3120	Rich soil in coniferous forest, 7,000-11,500 ft, sun and shade	Upright deciduous shrub, 4-6 ft	Fleshy aggregate fruit of drupelets, June-July	Fruit eaten by quail, turkey, bear, fox, rabbit, squirrel	
Willow <u>Salix</u> spp. L. M3120	Moist soil along streams, 3,500-9,500 ft, sun	Tree, 15-50 ft	Seed capsules in catkins, Mar.	Seeds eaten by squirrel; browsed by beaver	Prevents erosion and invades burned forest areas
Mountain willow (Scouler willow, fire willow, black willow) <u>Salix scouleriana</u> Barr. M3120	Along streams, in coniferous forests, 8,000-10,000 ft, sun and shade	Large shrub, small tree, 5-25 ft	Seed capsules, early spring	Seeds eaten by squirrel; browsed by grouse, elk, deer	
Elderberry <u>Sambucus</u> spp. L. M3120	Moist soil along streams, canyons, in coniferous forests, 1,000-10,000 ft, shade	Large shrub, small tree, 8-33 ft	Berry, June-Aug.	Fruit eaten by squirrel and fox; browsed by deer and elk	
Canadian elder <u>Sambucus cerulea</u> Raf. M3120	Moist soils in coniferous forest, 6,500-8,500 ft	Many-stemmed shrub, to 20 ft	Globose berry, June-Sept.	Browsed by grouse, deer, elk	
Red elderberry <u>Sambucus racemosa</u> L. M3120	Moist soils in coniferous forest, 7,500-10,000 ft	Shrub, 2-12 ft	Berry, Aug.-Oct.	Same as <u>S. cerulea</u>	
Western soapberry (wild china-tree, cherion, jaborcillo) <u>Sapindus drummondii</u> H. & A. M3120	Streambanks, canyon sides in upper desert, desert grassland, oak woodland, 2,500-6,000 ft	Large spreading shrub to small tree, to 25 ft	Berrylike, 1-seeded, remaining until spring		Fruit and foliage poisonous to wildlife

continued

Table M3120-60.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Groundsel (gutterweed) <u>Senecio serra</u> Hook. M3120	Meadows and moist soils along streams, 8,500-10,500 ft	Perennial herb, 2-4 ft	Achene, summer-fall		
Jojoba (goatnut) <u>Simmondsia chinensis</u> Link M3120	Rocky or gravelly well-drained slopes, 1,500-5,000 ft	Shrubs, 3-6 ft	Oily nut	Browsed by deer	Nuts commercially harvested for oil; absent in New Mexico
Squirreltail (bottlebrush squirreltail) <u>Sitanion hystrix</u> Nutt. M3120	Desert slopes to subalpine meadows	Tufted, erect perennial grass, 6-28 in	Stiffly awned grain, year-round depending on habitat		A preferred forage
Goldenrod <u>Solidago</u> spp. L. M3120	Forest openings, mountain meadows, above 7,000 ft	Perennial herb, 1-4 ft	Achene, late summer-fall	Plant eaten by rabbits and deer	
Globe mallow <u>Sphaeralcea fendleri</u> Gray M3120	Coniferous forests and meadows, 3,000-8,000 ft	Perennial herb, 2-4.5 ft	Capsules, summer-fall	Plant eaten by deer	
Sand dropseed <u>Sporobolus cryptandrus</u> Torr. M3120	Exposed sites on sandy soil, below 7,000 ft	Perennial grass, 15-50 in	Grain, July-Nov.	Plant eaten by deer and turkey	
Black dropseed <u>Sporobolus interruptus</u> Vasey M3120	Dry soils in forest openings, meadows, oak woodland, pine forests, 5,000-7,000 ft	Perennial grass, 16-48 in	Grain, July-Oct.	Seeds eaten by turkey; plant eaten by elk and deer	Only in Arizona
Needlegrass <u>Stipa</u> spp. L. M3120	Mountain meadows, woodland openings above 5,000 ft	Perennial grass, 10-30 in	Grain, summer-fall	Plant eaten by deer and elk	
Subalpine needlegrass (Columbian needlegrass) <u>Stipa columbiana</u> Macoun M3120	Meadows, dry plains, forest openings, 5,000-8,000 ft	Perennial grass, 12-30 in	Grain, summer-fall	Plant eaten by deer, elk, sheep	
Letterman needlegrass <u>Stipa lettermani</u> Vasey M3120	Open woodlands, forests above 5,500 ft	Tufted perennial grass, 12-24 in	Grain, Aug.-Nov.	Same as <u>Stipa</u> spp.	
Snowberry <u>Symphoricarpos oreophilus</u> Gray M3120	Slopes and along streams in mountains, coniferous forests, 5,500-9,000 ft	Erect or trailing shrub, 1-6 ft	Berries, Apr.-Aug.	Browse for deer	
Tamarisk <u>Tamarix pentandra</u> Pall. M3120	Moist soil along streams, up to 5,000 ft	Large shrub, small tree, usually forming dense thickets, 10-25 ft	Capsules, in spikes, Mar.-Aug.	Seeds eaten by dove; Nesting cover for dove	Often grows in saline soil; usually considered undesirable except for erosion control
Dandelion <u>Taraxacum officinale</u> Weber M3120	Meadows and roadsides up to 9,000 ft	Perennial herb, 5-8 in	Achene, spring-fall	Seeds eaten by quail and turkey; plant eaten by deer	
Meadow-rue <u>Thalictrum fendleri</u> Engelm. M3120	Pine forests, mountain meadows, 5,000-9,500 ft	Perennial herb, 1-2 ft	Achene, spring-fall		

continued

Table M3120-60.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Fluffgrass <u>Tridens puchellus</u> Hitchc. M3120	Dry rocky slopes, plains, below 6,000 ft	Low, tufted perennial or annual grass, 6 in	Grain, Apr.-Nov.		Often abundant on overgrazed land
Mountain clover <u>Trifolium fendleri</u> Greene M3120	Moist rich soils, conifer forests and meadows, 7,000-9,500 ft	Perennial herb, 4-20 in	Legume, summer-fall	Plant eaten by turkey, quail, deer	
Spike trisetum <u>Trisetum spicatum</u> L. M3120	Alpine meadows, slopes, boulder fields, 10,000-12,000 ft	Densely tufted erect perennial grass, 6-20 in	Grain, July-Oct.		
Cat-tail <u>Typha</u> spp. L. M3120	Moist soil along streams, ditches, lakes, ponds to 7,000 ft, sun and shade	Tall perennial herb with round stem, 3-8.5 ft	Fruit and flowers in long, terminal spikes, June-July	Seeds eaten by duck and geese	
Whortleberry (blueberry) <u>Vaccinium oreophyllum</u> Rydb. M3120	Open woods, hill-sides, 8,000-11,000 ft, sun	Low deciduous shrub with angled twig, 1-2 ft	Round juicy berry, June-July	Fruit eaten by fox, turkey, deer	
Great mullein <u>Verbascum thapsus</u> L. M3120	Forest edges, meadows, roadsides, open areas, 5,000-7,000 ft	Biennial forb, to 6 ft	Capsule, summer-fall		Introduced
American vetch <u>Vicia americana</u> Muhl. M3120	Conifer woodlands, meadows, to 10,500 ft	Perennial forb, 4-18 in	Legume, summer-fall	Seeds eaten by dove, quail, turkey, grouse	
Violet <u>Viola</u> spp. L. M3120	Open conifer forest, mountain meadows, above 7,000 ft	Perennial herb, 3-8 in	Capsule, spring-summer	Seeds eaten by quail; plant eaten by rabbit	Some species introduced
Canyon grape <u>Vitis arizonica</u> Engelm. M3120	Moist soil along streams, canyons, often climbing on trees, 2,000-7,000 ft, shade	Climbing or trailing woody vine	Berry, 1-seeded, Apr.-July	Fruit eaten by numerous gamebirds and mammals	Vines aid in preventing erosion along streams
Spanish dagger (datil, fleshy-fruited yucca, yucca) <u>Yucca baccata</u> Torr. M3120	Dry, rocky slopes of desert grasslands and conifer woodland, 3,000-8,000 ft	Shrub to small tree, 1-20 ft	Large fruit, 6 in long	Nectar for hummingbirds; cover for woodpeckers	

Table M3120-60.2 [R] Ecological Characteristics of Selected Plant Species Common to the Upper Gila Mountains Forest (Riparian Communities)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Cat-claw (devil's claw, una degato) <u>Acacia greggii</u> Gray M3120	Washes, mesas, to 5,000 ft	Large shrub to small tree	Pod, 2.5-5 in	Seeds eaten by dove and quail; roosting tree for quail	Often abundant
Rocky Mountain maple <u>Acer glabrum</u> Torr. M3120	Moist soils along streams, 7,000-9,000 ft, sun and shade	Shrub or small tree, deciduous, to 33 ft	Samara, May-June	Seeds eaten by quail, turkey, bear, squirrel, fox; browsed by deer, beaver, rabbit	
Bigtooth maple <u>Acer grandidentatum</u> Nutt. M3120	Moist soil along streams and canyons, 4,700-7,000 ft, sun or shade	Deciduous tree, up to 50 ft, with spreading crown	Samara, Apr.	Same as <u>A. glabrum</u>	
Box-elder <u>Acer negundo</u> L. M3120	Moist soil along streams, 4,000-8,000 ft, sun and shade	Deciduous tree, up to 50 ft, broad rounded crown	Paired samara, Apr.	Same as <u>A. glabrum</u>	
Iodinebush (pickleweed) <u>Allenrolfea occidentalis</u> (Wats.) Ktze. M3120	Highly alkaline flats and sinks, salt marshes, floodplains	Shrub, 1-5 ft	Berry-like, May-Nov.		
Arizona alder <u>Alnus oblongifolia</u> Torr. M3120	Moist soil along streams, canyons, 5,000-7,000 ft, sun	Tree up to 60 ft, round open crown	Cone with nutlets, March	Seeds eaten by songbirds; browsed by deer, elk, rabbit	Checks erosion
Shadscale (quailbrush, big saltbush, lenscale) <u>Atriplex lentiformis</u> (Torr.) Wats. M3120	Alkaline soils, below 7,000 ft	Erect shrub, 3-9 ft	Ovate flattened fruit	Seeds eaten by waterfowl and quail; browsed by rabbit, deer, antelope	Halophyte occurring with <u>Sarcobatus</u> spp.
Desert saltbush (cattle spinach) <u>Atriplex polycarpa</u> Torr. M3120	Alkaline plains 400-3,000 ft	Round shrubs, 3 ft	Flat and disc-like	Seeds eaten by quail and songbirds; browsed by rabbit and deer	
Baccharis <u>Baccharis</u> spp. L. M3120	Along water courses, 500-8,000 ft	Deciduous shrubs, to 7 ft	Achene, Apr.-Feb.		
Emory baccharis <u>Baccharis emoryi</u> Gray M3120	Along water courses, 500-5,000 ft	Deciduous shrub, to 6 ft	Achene, Sept.-Nov.		
Seepwillow <u>Baccharis glutinosa</u> Pers. M3120	Moist soil along streams, to 5,500 ft, sun	Willow-like deciduous shrub, to 7 ft	Achene, Mar.-Dec.		Often forming thickets
Red brome <u>Bromus rubens</u> L. M3120	Road sides, waste places	Small grass	Grain	Seeds eaten by numerous birds and mammals	Introduced from Europe
Sedge <u>Carex</u> spp. L. M3120	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grass-like erect herb	Achenes in spikes, spring	Seeds eaten by gamebirds, bear, rabbit, squirrel, fox; plant eaten by deer and elk	
Desert hackberry <u>Celtis pallida</u> Torr. M3120	Foothills, mesas, 15,00-3,500 ft	Spiny, densely branched deciduous shrub	Oval, one-seeded drupe	Fruit eaten by dove, quail, numerous small species; browsed by deer	Often forming thickets; ornamental

continued

Table M3120-60.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Netleaf hackberry (cumero, paloblanco, western hackberry) <u>Celtis reticulata</u> Torr. M3120	Streams, canyons, washes, moist soil, 3,500-6,000 ft	Deciduous, large shrub to small tree, to 30 ft	One-seeded drupe	Fruit eaten by game- birds	
Desert-willow (desert catalpa) <u>Chilopsis linearis</u> Cav. M3120	Mostly along washes, in foot- hills and deserts	Large shrub to small tree, to 30 ft	Long, narrow pod		Good soil binder
Gray-thorn (white crucillo, grayleaf abrojo, lotebush) <u>Condalia lycioides</u> Gray M3120	Mesas, slopes, in desert and desert grassland, 1,500- 4,500 ft	Straggly shrub, 3-9 ft	Thin skin one- seeded drupe	Fruit eaten by Gambel's quail, pigeon, dove, fox	Common; often form- ing thickets
Mustard <u>Cruciferae</u> spp. Juss. M3120	Ubiquitous	Herbaceous or suf- frutescent, annual or perennial	Capsule	Seeds eaten by numerous species	
Coyote-melon <u>Cucurbita palmata</u> Wats. M3120	Sandy plains to rocky slopes, to 3,000 ft	Perennial herb, trailing stems	Gourd-like, Apr.- Sept.		
Arizona cypress (rough- bark Arizona cypress smooth cypress, smooth Arizona cypress) <u>Cupressus arizonica</u> Greene M3120	Canyons and moun- tains of oak wood- lands, 3,500-7,200 ft	Medium-sized tree, to 30 ft	Short-stalked cones		Very scattered and localized; probably relic populations
Bermuda grass <u>Cynodon dactylon</u> (L.) Pers. M3120	Moist waste areas, low altitudes	Stoloniferous per- ennial grass	Grain	Seeds eaten by water- fowl and small mammals	Introduced
Indigobush (pea-bush) <u>Dalea mollis</u> Benth. M3120	Sandy, or rocky soil, to 3,000 ft	Low shrub	Pod, Jan-Apr.		
Saltgrass <u>Distichlis spicata</u> (L.) Greene M3120	Saline or alkaline marshes, lakes	Perennial grass, to 1 ft	Grain, summer- fall	Seeds eaten by water- fowl and marsh birds	
Spikerush <u>Eleocharis</u> spp. R. Br. M3120	Moist soil along streams or in for- ests, 150-3,000 ft	Upright herb, leafless, 1-3 ft	Achenes in spike- lets, spring	Seeds eaten by game- birds; plant eaten by rabbit and muskrat	
Fillaree (heron-bill) <u>Erodium cicutarium</u> L. M3120	Rocky or sandy soils, ubiquitous	Prostrate, annual	Ellipsoid seeds, Feb.-June	Seeds eaten by numerous species	Excellent spring forage
Velvet ash <u>Fraxinus velutina</u> Torr. M3120	Moist soils of stream banks, washes, canyons, 2,500-7,000 ft, sun	Small to medium tree, round crown, to 40 ft	Long-winged samara, Mar.-May	Seeds eaten by game- birds, songbirds, squir- rel; browsed by deer; nest cover for squirrel and songbirds	
Desert-sunflower <u>Gerea canescens</u> (Torr.) Gray M3120	Sandy soils, to 3,000 ft	Annual herb	Achene, Jan.-June	Seeds eaten by numer- ous species	

continued

Table M3120-60.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sunflower <u>Helianthus annuus</u> L. M3120	Ubiquitous, 100-7,000 ft	Annual or perennial herb	Seeds mature in summer-fall	Same as <u>G. canescens</u>	Cultivated for seed oil
Rose mallow <u>Hibiscus</u> spp. L. M3120	Marshes, lakes, ponds, streams, wet soils	Perennial, to 6 ft	Capsule, May-Oct.		
Cliffbush <u>Jamesia americana</u> (Torr.) Gray M3120	Moist canyons, along streams, in coniferous forests, 7,500-9,500 ft, sun and shade	Deciduous shrub, 1-6 ft	Dry beaked capsule, June-July		
Janusia <u>Janusia gracilis</u> Gray M3120	Moist to dry, rocky, 1,000-5,000 ft	Twining, tangled, slender stems	Samaras, Apr.-Oct.		
Arizona walnut <u>Juglans major</u> (Torr.) Heller M3120	Moist soil along streams, canyons, 3,500-7,000 ft, sun	Tree, 50 ft round crown	Round nut with hairy husk, spring	Seeds eaten by songbirds, squirrel, fox	
Rush <u>Juncus</u> spp. L. M3120	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grass-like herbs, 2-4 ft	Capsule, spring	Forage	
Alligator juniper <u>Juniperus deppeana</u> Steud. M3120	Moist soil along streams or scattered on hillside in oak woodland or ponderosa pine forest, 4,500-8,000 ft, sun	Tree 20-65 ft, round crown	Berry-like fleshy cone, pollinates in spring	Fruit eaten by deer, quail, turkey, bear, fox	
Deer vetch <u>Lotus rigidus</u> Benth. M3120	Rocky slopes, to 5,500	Perennial or annual, to 1 ft	Pod, Feb.-May	Seeds eaten by gamebirds and browsers	
Blazing-star (stickleaf) <u>Mentzelia</u> spp. L. M3120	Dry, sandy, slopes and mesas, 1,000-8,500 ft	Low shrub, to 3 ft	Oblong, to linear capsule	Seeds eaten by quail	
Texas mulberry <u>Morus microphylla</u> Buckl. M3120	Moist soil along streams, washes, canyons, rocky slopes below cliffs, 2,000-6,000 ft, sun or shade	Large shrub or small tree, in dense clumps, up to 20 ft	Oblong cluster of berries, Apr.	Fruit eaten by songbirds, fox, squirrel	
Nemacladus <u>Nemacladus glanduliferus</u> Jeps. M3120	Ubiquitous, to 5,000 ft	Perennial or annual, to 1 ft	Capsule, Mar.-May		
Evening-primrose (sun-drops) <u>Oenothera</u> spp. L.	Roadsides, marshes, canyons, to 6,000 ft	Herbs, to 1.5 ft	Capsule, Mar.-Oct.	Plant eaten by browsers	
Evening-primrose (sun-drops) <u>Oenothera multijuga</u> Wats. M3120	Washes and canyons, to 5,500 ft	Herbs, to 1.5 ft	Capsule, Apr.-June	Same as <u>Oenothera</u> spp.	

continued

Table M3120-60.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Virginia creeper <u>Parthenocissus inserta</u> (Kern.) Fritsch M3120	On trees, growing in moist soil along streams, 3,000-7,000 ft, shade	Creeping vine	1-4 seeded berries, spring	Fruit eaten by songbirds, rabbit, fox	
Reed <u>Phragmites communis</u> Trin. M3120	Wet places and alkalai sinks, below 5,000 ft	Tall perennials reed, up to 12 ft	Grain, July-Dec.		
Arizona sycamore <u>Platanus wrightii</u> Wats. M3120	Moist soil along streams, canyons, 2,000-6,000 ft, sun	Tree, 40-80 ft, spreading open crown	Achene, Apr.-May	Seeds eaten by songbirds and squirrel; nest cover for songbirds and squirrel	Prevents excessive erosion
Narrowleaf cottonwood <u>Populus angustifolia</u> James M3120	Moist soils, along streams, 5,000-7,000 ft, sun	Tree, to 50 ft, narrow crown	Seed capsule, spring	Seeds eaten by gamebirds and squirrel; browsed by rabbit; nest cover for songbirds and squirrel	Suitable for erosion control
Fremont cottonwood <u>Populus fremontii</u> Wats. M3120	Moist soils along streams, 150-5,000 ft, sun	Large tree, 50-100 ft, with broad, flat open crown	Seed capsule in catkins	Seeds eaten by gamebirds; browsed by rabbit; nest cover for songbirds and raptors	
Mesquite (velvet mesquite, honey mesquite) <u>Prosopis juliflora</u> (Sw.) DC. M3120	Sandy alluvial soils, washes, to 5,500 ft	Spiny spreading shrub to tree, 20-50 ft	Pod, Sept.-Oct.	Important for food and cover for numerous species	Resprouts from cut stumps
Screwbean mesquite (tornillo) <u>Prosopis pubescens</u> Benth. M3120	Bottomlands along desert streams and water holes, up to 4,000 ft	Large shrub or small tree, 6-30 ft	Pod, May	Seeds eaten by dove, quail, numerous other species	
Wild cherry <u>Prunus</u> spp. L. M3120	Moist soil along streams, pine forests, 4,500-9,000 ft	Shrub to small tree, 10-40 ft	One-seeded drupe, Mar.-May	Fruit eaten by numerous birds and animals	
Bracken fern <u>Pteridium aquilinum</u> (L.) Kuhn M3120	Moist soil, along streams, pine woods, aspen groves, 5,000-8,000 ft, shade	Small ground cover fern, 1-3 ft		Plant eaten by porcupine	Poisonous when eaten in large quantities
Arizona white oak <u>Quercus arizonica</u> Sarg. M3120	Moist soil along streams, canyons, oak woodland foothills, mountains, 5,000-7,600 ft	Tree with irregular spreading crown, 30-60 ft	Nut (acorn), spring	Food and cover for many birds and mammals	
Emory oak <u>Quercus emoryi</u> Torr. M3120	Moist soil along streams, canyons, oak woodland foothills, mountains, 4,000-7,000 ft, sun	Tree, with spreading crown 20-50 ft	Nut (acorn), spring	Seeds eaten by gamebirds, bear, fox, squirrel; browsed by rabbit, deer, elk; nest cover for songbirds and squirrel	
Gambel oak <u>Quercus gambelii</u> Nutt. M3120	Widespread in mountains, plateaus, pine forests, 5,000-8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6-70 ft	Nut (acorn), spring	Seeds eaten by songbirds, gamebirds, squirrel, bear; browsed by rabbit and deer	
Palmer oak <u>Quercus palmeri</u> Engelm. M3120	Moist soil along streams of canyons and mountainsides, 3,500-7,000 ft, sun and shade	Shrub to small tree, 6-25 ft	Nut (acorn), spring	Seeds eaten by gamebirds, songbirds, squirrel; browsed by deer and elk; nest cover for songbirds and squirrel	

continued

Table M3120-60.2 [R] (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Watercress <u>Rorippa</u> spp. Scop. M3120	Moist soil along streams or in streams, 1,500-9,500 ft, shade	Small prostrate forb, 6-18 in	Globose capsule, spring		
Raspberry <u>Rubus</u> spp. L. M3120	Rich moist soils along streams, in coniferous forests, 5,000-11,000 ft	Trailing shrub, to 5 ft, forming thickets	Fleshy fruit of one-seeded drupelets, May-Sept.	Fruit eaten by quail, turkey, bear, squirrel	
Willow <u>Salix</u> spp. L. M3120	Moist soil along streams, 3,500-9,500 ft, sun	Tree, 15-50 ft	Seed capsules in catkins, Mar.	Browsed by beaver; seeds eaten by squirrel	Prevents erosion and invades burned forest areas
Bonpland willow <u>Salix bonplandiana</u> HBK. M3120	Along streams, 2,500-5,000 ft	Tree, to 25 ft, rarely 50 ft	Capsules	Seeds eaten by numerous species birds, small mammals, browsers	
Goodding willow <u>Salix gooddingii</u> Ball M3120	Along streams and rivers, 150-5,000 ft	Tree, 20-50 ft	Capsule, spring	Same as <u>S. bonplandiana</u>	Important for streambank protection
Elderberry <u>Sambucus</u> spp. L. M3120	Moist soil along streams, canyons, in coniferous forests, 1,000-10,000 ft, shade	Large shrub, small tree, 8-33 ft	Berry, June-Aug.	Fruit eaten by squirrel and fox; browsed by deer and elk	
Western soapberry (wild china-tree, cherionia, jaboncillo) <u>Sapindus drummondii</u> (Hook) Arn. M3120	Stream banks, canyon sides in upper desert, desert grassland, oak woodland, 2,500-6,000 ft	Large spreading shrub to small tree, to 25 ft	One-seeded berry-like remaining		Fruit and foliage poisonous to wildlife
Climbing milkweed <u>Sarcostemma</u> spp. R. Br. M3120	Streams, washes, moist places, to 6,000 ft	Stems twining along ground or over bushes	Follicle, Mar.-Oct.		
Schismus grass <u>Schismus barbatus</u> (L.) Thell. M3120	Open desert and waste areas, 1,000-4,000 ft	Low annual	Grain, spring-fall		
Bulrush <u>Scirpus</u> spp. L. M3120	Marshes, ponds, streams, rivers, to 9,000 ft	Perennial, to 6 ft	Achene, spring-fall	Seeds eaten by waterfowl, marsh birds; plant eaten by muskrats	
Three-square bulrush (sword-grass) <u>Scirpus americanus</u> Pers. M3120	Low moist soils, in water and about seeps	Rhizomatous perennial, culms to 5 ft	Achene, spikelet, spring-summer	Same as <u>Scirpus</u> spp.	
Salt-marsh bulrush <u>Scirpus paludosus</u> L. M3120	Marshes, saltflats, in mud around lakes and along streams	Erect rush, 1-3.5 ft	Spiked achenes, year-round	Seeds eaten by waterfowl, shorebirds, quail, songbirds; plant eaten by muskrat	Subspecies of <u>S. maritimus</u>
Inkweed (Torrey sea blite, iodine weed) <u>Suaeda torreyana</u> Wats. M3120	Saline flats with subsurface soil moisture below 5,000 ft	Shrub, 2-3 ft	Utricle enclosed by fleshy perianth		
Tamarisk (saltcedar) <u>Tamarix pentandra</u> Pall. M3120	Moist soil along streams; up to 5,000 ft	Large shrub, small tree, usually forming dense thickets	Capsules in spikes, Mar.-Aug.	Nest cover for dove	Often grows in saline soil; usually considered undesirable except for erosion control

continued

Table M3120-60.2 [R] (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Arrow-weed <i>Tessaria sericea</i> Nutt. M3120	Along streams, rivers, marshes	Shrub, to 3 ft or more, willow-like	Achene, summer	Cover	
Cat-tail <i>Typha</i> spp. L. M3120	Moist soil along streams, ditches, lakes, ponds, to 7,000 ft, sun and shade	Tall perennial herb with round stem, 3-8.5 ft	Fruit and flowers in long, terminal spikes, June-July	Seeds eaten by ducks, geese	
Canyon grape <i>Vitis arizonica</i> Engelm. M3120	Moist soil along streams, canyons, often climbing on trees, 2,000- 7,000 ft, shade	Climbing or trailing woody vine	One-seeded berry, Apr.-July	Fruit eaten by numerous gamebirds and mammals	Vines aid in pre- venting erosion along streams
California fan palm <i>Washingtonia filifera</i> Wendl. M3120	Canyons of Kofa Mountains, 2,500 ft	Tree, to 30 ft	Small drupe		Native; rare in wild but planted extensively in Arizona

61 PROVINCE P3130 Colorado Plateau

SECTION P3131 JUNIPER—PINYON WOODLAND AND SAGEBRUSH—SALTBUSH MOSAIC

SECTION P3132 GRAMA—GALLETA STEPPE AND JUNIPER—PINYON WOODLAND MOSAIC

This continental area of elevated plains, plateaus, mesas, and mountains is divided by Bailey (1976) into a Juniper—Pinyon Woodland and Sagebrush—Saltbush Mosaic Section (P3131) and a Grama—Galleta and Juniper—Pinyon Woodland Mosaic Section (P3132). Bailey does not provide reasons for this division but it appears to be based primarily on the fact that grasses are more prevalent in the latter section, whereas shrubs of the Great Basin Desert are more prevalent in Section P3131. Both sections contain extensive areas of cold-adapted, Great Basin conifer woodland with greater or lesser areas of grassland and/or desertscrub. Since these two sections contain essentially the same vegetational communities and species, they are treated as a single unit here.

The climate in both sections ranges from cold temperate to Arctic-boreal; the growing season averages less than 200 days, usually less than 150. Mean annual precipitation for both sections is from about 8 to 30 inches.

Elevations range from about 3500 to over 12,000 feet in the Sierra Blanca Mountains near Ruidosa; most of the province is over 4000 feet. Most of the area is drained by the Colorado River, except in the east where it is drained by the Rio Grande and Pecos rivers.

Below 5500 feet (slightly higher in some locations), large areas in Section P3131 are vegetated by Great Basin desertscrub. Smaller areas below this elevation in Section P3132, particularly along the San Juan and Rio Grande rivers, are also Great Basin desertscrub. Conversely,

Plains and Great Basin grasslands occupy a large percentage of the areas below 5500 feet in Section P3132, whereas only a few relatively small areas of Section P3131 are covered by Great Basin grassland.

Between elevations of 6500 and 7500 feet, conifer woodland is well-developed in both sections. Above 7500 feet (sometimes as low as 5500 feet, depending on slope exposure and other local conditions), montane conifer forest or montane chaparral replaces the conifer woodland. These in turn are replaced above 8500 feet by subalpine conifer forests or subalpine meadow grasslands.

See section 52 for a general discussion of succession and climax communities in this region.

Great Basin Desertscrub

The Great Basin desertscrub reaches its southern limit in this province, occupying large areas in southern Utah, southwest Colorado, northwest New Mexico, and northern Arizona. Elevations range between 3500 and 6500 feet with most of it above 4000 feet subject to frequent periods of freezing temperatures. Mean annual precipitation is between 7 and 11 inches, occasionally 13 inches, and precipitation is more evenly distributed throughout the year than in other desert areas (Shreve 1942 a,b,c).

The salient features of this community are its simplicity of composition and its fidelity to the distribution of soil types. Pure or nearly pure stands of shrubs cover many miles of valleys and outwash slopes. A change in soil type brings a rapid transition to a different but equally monotonous association of similar extent. Only where there is rock in place, much sand, or a broken, irregular surface, is there a more varied assemblage (Shreve 1942a,b,c). Two major vegetational subdivisions comprise this biotic community, according to Cronquist et al. (1972)—a shadscale and a sagebrush subdivision. **Shadscale subdivision** — The shadscale subdivision is

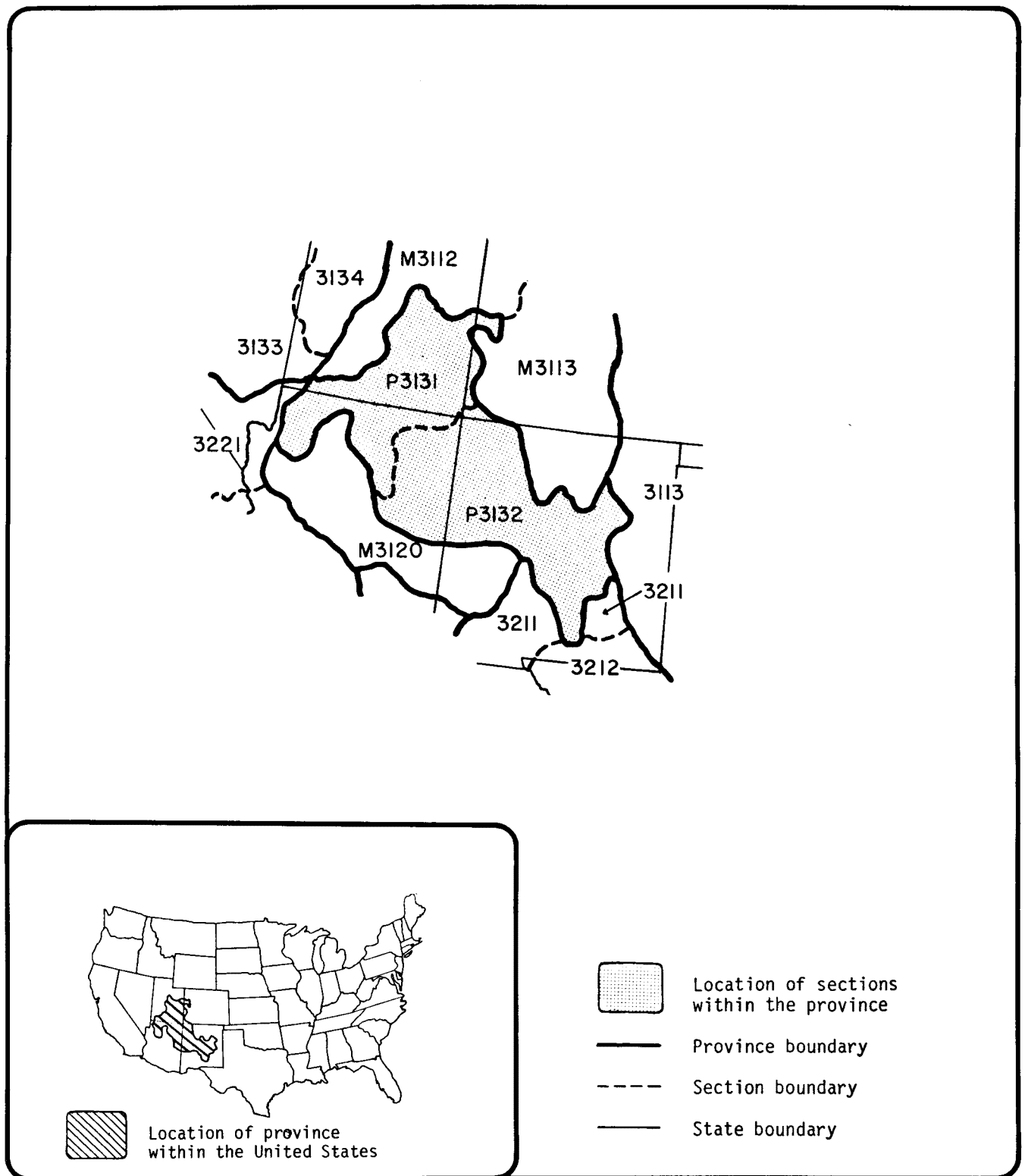


Figure 61.1 Province P3130, Colorado Plateau; Section P3131, Juniper—Pinyon Woodland + Sagebrush—Saltbrush Mosaic, and P3132, Grama—Galleta Steppe + Juniper—Pinyon Woodland Mosaic.

dominated by these low, widely spaced, small-leaved shrubs which normally cover only about 10 percent of the ground area. Annual precipitation is less than 9 inches. Within this subdivision are several major plant communities, each controlled by differences in tolerance to soil salinity. The most widespread communities in Section P3131 are those dominated by shadscale and blackbrush. Other important species, locally dominant in P3131 and P3132, are rabbit brush, winter-fat, black sage, and horsebrush. Greasewood exclusively occupies numerous drainage bottoms.

Sagebrush subdivision — The sagebrush subdivision occupies slopes, broad valleys, foothills, and rocky sides of mountains generally above the shadscale and other communities. Sagebrush communities are best developed on well-drained soils and average annual precipitation generally exceeds 9 inches. It is composed of relatively large (2-6 feet) shrubs covering 15 to 40 percent of the ground area—big sagebrush being a common dominant species. Bunchgrasses may be abundant, and it is believed that sagebrush has encroached on previously bunchgrass-dominated areas following severe overgrazing (Christenson and Johnson 1964).

Plains Grassland and Great Basin Grassland

The Plains and Great Basin grasslands occur as a continuum of intergradation; each community is distinct at the geographical extremes. The westward extension of the Great Plains reaches widely into this province from the east with depauperate remnants occurring as far west as Iron County in southwestern Utah. In Section P3132, Plains grassland primarily was, and in part remains, dominated by grama grass, with blue, hairy, side-oats, and other grama species codominating with galleta grass between 5000 and 7500 feet elevation. These grasslands are maintained under 11 to 18 inches average annual precipitation. The summer precipitation (April to August) varies from almost 75 percent of the annual total in northeastern New Mexico to just over 50 percent in northern Arizona.

Characteristic shrubs in the Plains grassland are snakeweed, rabbit brush, small soapweed, winter-fat, and most importantly, four-wing saltbush. Several cacti which are also indicative of this community include species of prickly pear, cholla, and hedgehog cactus. Common herbaceous plants are stickleleaves, thistles, locoweeds, blazing-star, prairie clover, milkwort, and slender scurf pea (Castetter 1956).

Grass and shrub species of Great Basin affinity increase in abundance toward the western half of this area. These include western wheatgrass, Indian ricegrass, needle-and-thread, big sagebrush, and Whipple cholla. Grasslands in southern Utah, the Arizona Strip, and much of the Navajo Reservation could properly be considered representative of a Great Basin grassland fasciation or at least a broad Plains-Great Basin ecotone.

Great Basin or Rocky Mountain Conifer Woodland

This structurally simple conifer woodland generally occurs on plateaus and mesas between 5500 and 7500 feet elevation. The pinyon pines reach greatest size and

density above 6500 feet. Below 6500 feet, the woodland is often characterized by junipers in pure stands without pinyons.

The Great Basin or Rocky Mountain conifer woodland occurs on highly varied soils, from rocky to sandy, and shallow to deep. The preferred habitat appears to be on thin soils, however, and it is well-established that junipers have widely extended their range into former grasslands during the last 100 years.

Colorado pinyon is the common species of pinyon throughout the area. Single-leaf pinyon occurs locally in the western portions of Section P3131 where Utah juniper is the most prevalent juniper. Rocky Mountain juniper and one-seeded juniper are the characteristic species in Section P3132.

According to general location and section, there may be an understory of either grassland or sagebrush beneath and between the woodland. Grasses were once more or less abundant throughout. In addition, barberry, cliffrose, and mountain-mahogany are characteristic associates, particularly in the northwestern areas. Annual precipitation is 12 to 21 inches, predominately in the form of snow during winter.

Montane Chaparral

The montane chaparral occurs above the Great Basin woodland community, from 5500 to above 7500 feet, in southern Utah, southwestern Colorado, central New Mexico, and locally elsewhere in this province. It is dominated by facultative brush forms of Gambel oak, western choke-cherry, mountain-mahogany, snowberry, or serviceberry. This community, here at its southern terminus, tends to mix with the montane conifer forest which it largely replaces farther northwest. An average yearly precipitation of from 15 to 25 inches may be expected. Browse plants and grasses are scattered throughout or absent depending on range condition and density of the brush. Sagebrush is more or less prevalent throughout.

Rocky Mountain Montane Conifer Forest

The Rocky Mountain montane conifer forest is a major forest type that covers the Manti-La Sal, Lukachukai, Chuska, Zuni, Cibola, Sandia, Manzano, and Sacramento mountains and other elevated areas from approximately 7000 to 8500 feet, locally higher on south slopes to 9500 feet. Annual precipitation ranges from 18 to 22 inches. The dominant species in the montane conifer forest are ponderosa pine, Douglas-fir, white fir, and in old burns above 7500 feet, trembling aspen. Gambel oak is the most common tree associated with ponderosa pine. In the lower part of the pine forest, pinyon, juniper, and sagebrush may be mingled with the pines; Douglas-fir occurs on north slopes and above 7500 feet.

Subalpine Conifer Forest— Rocky Mountain Fasciation

The subalpine conifer forest—Rocky Mountain fasciation is restricted to areas above 8500 feet in the Chuska, Mount Taylor, Magdalena, Sandia, Capitan,

Sacramento, and Sierra Blanca mountains. These high elevated forests are characterized by stands of Engelmann spruce, firs, other conifers, and trembling aspen.

Shrubs, forbs, and grasses, nearly absent under the dense tree canopy of virgin spruce—fir forests, are largely confined to openings in the forest. Following logging, fire, or other removal of overstory vegetation, numerous shrubs, forbs, and grasses appear. Dense stands of aspen frequently develop, representing one of the few well-defined seral stages in the Southwest.

Subalpine and Montane Grassland

Subalpine and montane grassland occurs between 7500 and 10,000 feet elevation in areas with high rates of evaporation and physical properties unsuitable for tree growth (Brown and Lowe 1974). In high mountain meadows, a near-timberline situation of stunted trees (perhaps 5 feet high) often exists directly at the grassland—forest border.

Precipitation varies from 20 to 35 inches according to elevation of occurrence in the coniferous forests. Not to be confused with subalpine and montane grassland are the short-grass prairie understories of the ponderosa pine forest at its lower elevations, between 6000 and 8000 feet. Mountain timothy, mountain hairgrass and bluegrass are often dominant at wetter, colder, higher elevations, with fescue, subalpine needlegrass, and others dominant in lower, drier sites.

The larger mountain meadows characteristically have higher, drier, grassier areas and a lower, wetter clover and dandelion area. Forbs may outnumber grasses 10 to 1 in these wetter meadow areas where species of mountain clover, fleabane, mountain dandelion, yarrow, cinquefoil, buttercup, sedge, and rush are characteristic and often abundant.

Table P3130-61.1 [P3131, P3132] Selected Plant Species Common to the Juniper—Pinyon Woodland and Sagebrush—Saltbush Mosaic and Grama—Galleta Steppe and Juniper—Pinyon Woodland Mosaic

Growth form	Plant associations		
<u>Habitat: Great Basin Desertscrub--Shadscale Association</u>			
Low to medium shrubs, under 10 ft	<u>Artemisia spinescens</u>	Sagebrush	
	<u>Atriplex canescens</u>	Four-wing saltbush	
	<u>Atriplex confertifolia</u>	Shadscale	
	<u>Atriplex lentiformis</u>	Big saltbush	
	<u>Atriplex nuttallii</u>	Gardner saltbush	
	<u>Cardaria draba</u>	Hoary cress	
	<u>Chrysothamnus viscidiflorus</u>	Rabbit brush	
	<u>Coleogyne ramosissima</u>	Blackbrush	
	<u>Ephedra nevadensis</u>	Mormon tea	
	<u>Eriogonum ovalifolium</u>	Cushion buckwheat	
	<u>Eurotia lanata</u>	Winter-fat	
	<u>Grayia spinosa</u>	Spiny hop-sage	
	<u>Gutierrezia sarothrae</u>	Snakeweed	
	<u>Haplopappus lanceolatus</u>	Goldenweed	
	<u>Kochia americana</u>	Summer cypress	
	<u>Lycium cooperi</u>	Box thorn	
	<u>Opuntia spp.</u>	Prickly pear	
	<u>Psoralea polydenius</u>	Indigobush	
	<u>Salsola kali</u>	Russian thistle	
	<u>Sarcobatus vermiculatus</u>	Greasewood	
	<u>Sphaeralcea ambigua</u>	Globe mallow	
	<u>Sphaeralcea grossularifolia</u>	Globe mallow	
	<u>Tetradymia comosa</u>	White felt-thorn	
	<u>Tetradymia glabrata</u>	Bald-leaved felt-thorn	
	<u>Thelypodium sagittatum</u>	Thelipody	
	Lesser vegetation	<u>Bassia hyssopifolia</u>	Five-hook bassia
<u>Distichlis stricta</u>		Desert saltgrass	
<u>Halogeton glomeratus</u>		Halogeton	
<u>Hermidium alipes</u>		Hermidium	
<u>Hilaria jamesii</u>		Galleta grass	
<u>Hutchinsia procumbens</u>		Hutchinsia	
<u>Iva axillaris</u>		Poverty weed	
<u>Oryzopsis hymenoides</u>		Indian rice-grass	
<u>Sitanion hystrix</u>		Squirreltail	
<u>Sporobolus airoides</u>		Alkalai sacaton	
<u>Suaeda nigra</u>		Sea blite	
<u>Habitat: Great Basin Desertscrub--Sagebrush Association</u>			
Low to medium shrubs, under 10 ft	<u>Artemisia spp.</u>	Sagebrush	
	<u>Artemisia tridentata</u>	Big sagebrush	
	<u>Chrysothamnus nauseosus</u>	Rabbit brush	
	<u>Chrysothamnus viscidiflorus</u>	Rabbit brush	
	<u>Coleogyne ramosissima</u>	Blackbrush	
	<u>Ephedra torreyana</u>	Joint-fir	
	<u>Ephedra viridis</u>	Mormon tea	
	<u>Grayia spinosa</u>	Spiny hop-sage	
	<u>Leptodactylon pungens</u>	Shrubby phlox	
	<u>Purshia tridentata</u>	Antelope brush	
	<u>Ribes velutinum</u>	Gooseberry	
	<u>Symphoricarpos spp.</u>	Snowberry	
	<u>Tetradymia glabrata</u>	Bald-leaved felt-thorn	
	Lesser vegetation	<u>Agoseris spp.</u>	Mountain dandelion
		<u>Agropyron dasystachyum</u>	Thickspike wheatgrass
		<u>Agropyron smithii</u>	Western wheatgrass
		<u>Agropyron spicatum</u>	Bluebunch wheatgrass
		<u>Allium acuminatum</u>	Onion
<u>Aristida longiseta</u>		Red three-awn	
<u>Astragalus spp.</u>		Milk-vetch	
<u>Balsamorhiza sagittata</u>		Arrowleaf balsamroot	
<u>Calochortus nuttallii</u>		Mariposa lily	
<u>Castilleja chromosa</u>		Paintbrush	

continued

Table P3130-61.1 [P3131, 3132] (Continued)

Growth form	Plant associations	
<u>Great Basin Desertscrub--Sagebrush Association (Continued)</u>		
Lesser vegetation (Continued)	<u>Chrysopsis villosa</u> <u>Crepis acuminata</u> <u>Delphinium andersonii</u> <u>Elymus cinereus</u> <u>Eriogonum</u> spp. <u>Festuca idahoensis</u> <u>Hymenoxys richardsonii</u> <u>Koeleria cristata</u> <u>Lomatium</u> spp. <u>Lupinus</u> spp. <u>Lupinus caudatus</u> <u>Oryzopsis hymenoides</u> <u>Phlox hoodii</u> <u>Phlox longifolia</u> <u>Poa fendleriana</u> <u>Poa nevadensis</u> <u>Poa sandbergii</u> <u>Sitanion hystrix</u> <u>Sporobolus airoides</u> <u>Stipa comata</u> <u>Viola beckwithii</u> <u>Wyethia amplexicaulis</u> <u>Zigadenus paniculatus</u>	Hairy goldaster Hawksbeard Larkspur Wild rye Wild buckwheat Idaho fescue Pingwing Mountain junegrass Biscuit root Lupine Tailcup lupine Indian rice-grass Hood's phlox Longleaf phlox Muttongrass Nevada bluegrass Sandberg bluegrass Squirreltail Alkali sacaton Needle-and-thread Beckwith's violet Mulesears wyethia Sandcorn
<u>Habitat: Plains Grassland</u>		
Low to medium shrubs, under 10 ft	<u>Artemisia filifolia</u> <u>Atriplex canescens</u> <u>Echinocereus</u> spp. <u>Eurotia lanata</u> <u>Opuntia fragilis</u> <u>Opuntia polycantha</u> <u>Yucca glauca</u>	Sand sagebrush Four-wing saltbush Hedgehog cactus Winter-fat Little prickly pear Plains prickly pear Small soapweed
Lesser vegetation	<u>Agropyron smithii</u> <u>Andropogon gerardii</u> <u>Andropogon scoparius</u> <u>Argemone intermedia</u> <u>Aster</u> spp. <u>Astragalus bisulcatus</u> <u>Astragalus pectinatus</u> <u>Bahia oppositifolia</u> <u>Bouteloua curtipendula</u> <u>Bouteloua gracilis</u> <u>Bouteloua hirsuta</u> <u>Buchloe dactyloides</u> <u>Chenopodium album</u> <u>Chenopodium leptophyllum</u> <u>Chrysopsis villosa</u> <u>Cleome serrulata</u> <u>Cryptantha</u> spp. <u>Eragrostis intermedia</u> <u>Eriogonum microthecum</u> <u>Franseria discolor</u> <u>Grindelia squarrosa</u> <u>Gutierrezia</u> spp. <u>Helianthus petiolaris</u> <u>Hilaria jamesii</u> <u>Koeleria cristata</u> <u>Lepidium densiflorum</u> <u>Liatris punctata</u> <u>Lycurus phleoides</u> <u>Lygodesmia juncea</u> <u>Mentzelia</u> spp. <u>Muhlenbergia</u> spp. <u>Oenothera pallida</u> <u>Oryzopsis hymenoides</u> <u>Oxytropis</u> spp.	Western wheatgrass Big bluestem Little bluestem Prickle poppy Aster White locoweed Narrowleaf poison vetch Plains bahia Side-oats grama Blue grama Hairy grama Buffalo grass Lamb's-quarters Slimleaf goosefoot Hairy goldaster Rocky Mountain beechplant Hidden flower Plains lovegrass Slenderbush erogonum Skeletonleaf bur sage Curlycup gumweed Snakeweed Prairie sunflower Galleta grass Mountain junegrass Prairie pepperweed Blazing-star Wolf tail Rush skeletonplant Stickleaf Muhly Pale evening-primrose Indian rice-grass Crazyweed

continued

Table P3130-61.1 [P3131, 3132] (Continued)

Growth form	Plant associations	
	<u>Plains Grassland (Continued)</u>	
Lesser Vegetation (Continued)	<u>Panicum virgatum</u> <u>Petalostemum</u> spp. <u>Poa arida</u> <u>Polygala</u> spp. <u>Psoralea tenuiflora</u> <u>Salsola</u> spp. <u>Senecio</u> spp. <u>Sorghastrum nutans</u> <u>Sphaeralcea</u> spp. <u>Sporobolus airoides</u>	Switchgrass Prairie clover Plains bluegrass Milkwort Slender scurf pea Russian thistle Groundsel Indian-grass Globe mallow Alkalai sacaton
	<u>Habitat: Great Basin Grassland</u>	
Low to medium shrubs, under 10 ft	<u>Artemisia filifolia</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Atriplex canescens</u> <u>Chrysothamnus nauseosus</u> <u>Ephedra</u> spp. <u>Eurotia lanata</u> <u>Shepherdia</u> spp.	Sand sagebrush Black sagebrush Big sagebrush Four-wing saltbush Rabbit brush Mormon tea Winter-fat Buffaloberry
Lesser vegetation	<u>Agropyron smithii</u> <u>Agropyron spicatum</u> <u>Aristida longiseta</u> <u>Bouteloua gracilis</u> <u>Bromus tectorum</u> <u>Distichlis stricta</u> <u>Elymus</u> spp. <u>Gutierrezia</u> spp. <u>Hilaria jamesii</u> <u>Hordeum jubatum</u> <u>Hymenoxys richardsonii</u> <u>Koeleria cristata</u> <u>Lupinus</u> spp. <u>Opuntia whipplei</u> <u>Oryzopsis hymenoides</u> <u>Phlox</u> spp. <u>Poa</u> spp. <u>Sitanion hystrix</u> <u>Sporobolus airoides</u> <u>Sporobolus cryptandrus</u> <u>Stipa</u> spp. <u>Stipa comata</u>	Western wheatgrass Bluebunch wheatgrass Red three-awn Blue grama Downy chess Desert saltgrass Wild rye Snakeweed Galleta grass Foxtail barley Pingwing Mountain junegrass Lupine Whipple cholla Indian rice-grass Phlox Bluegrass Squirreltail Alkalai sacaton Sand dropseed Needlegrass Needle-and-thread
	<u>Habitat: Conifer Woodland--Rocky Mountain Fasciation</u>	
Tall trees, over 40 ft	<u>Quercus gambelii</u>	Gambel oak
Medium trees, 20-40 ft	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus edulis</u> <u>Pinus monophylla</u>	Utah juniper Rocky Mountain juniper Colorado pinyon Singleleaf pinyon
Low trees and tall shrubs, 10-20 ft	<u>Juniperus monosperma</u> <u>Yucca baccata</u>	One-seeded juniper Spanish dagger
Low to medium shrubs, under 10 ft	<u>Amelanchier utahensis</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Berberis fremontii</u> <u>Ceanothus fendleri</u> <u>Chamaebatiaria millefolium</u> <u>Chrysothamnus nauseosus</u> <u>Cowanina mexicana</u> <u>Ephedra viridis</u> <u>Fallugia paradoxa</u> <u>Opuntia basilaris</u> <u>Opuntia fragilis</u> <u>Opuntia polycantha</u> <u>Purshia tridentata</u> <u>Quercus turbinella</u>	Utah serviceberry Black sagebrush Big sagebrush Barberry Buckbrush Fern bush Rabbit brush Cliffrose Mormon tea Apache plume Beavertail Little prickly pear Plains prickly pear Antelope brush Shrub live oak

continued

Table P3130-61.1 [P3131, 3132] (Continued)

Growth form	Plant associations	
<u>Conifer Woodland--Rocky Mountain Fasciation (Continued)</u>		
Lesser vegetation	<u>Bouteloua curtipendula</u> <u>Bouteloua eriopoda</u> <u>Bouteloua gracilis</u> <u>Festuca arizonica</u> <u>Koeleria cristata</u> <u>Muhlenbergia torreyi</u> <u>Oryzopsis hymenoides</u> <u>Piptochaetium fimbriatum</u> <u>Sitanion hystrix</u> <u>Sporobolus cryptandrus</u> <u>Stipa</u> spp.	Side-oats grama Black grama Blue grama Arizona fescue Mountain junegrass Ring muhly Indian rice-grass Pinyon rice-grass Squirreltail Sand dropseed Needlegrass
<u>Habitat: Montane Chaparral</u>		
Tall trees, over 40 ft	<u>Pinus ponderosa</u>	Ponderosa pine
Medium trees, 20-40 ft	<u>Juniperus</u> spp. <u>Pinus edulis</u>	Juniper Colorado pinyon
Low trees and tall shrubs, 10-20 ft	<u>Acer grandidentatum</u> <u>Celtis reticulata</u> <u>Cercocarpus ledifolius</u> <u>Prunus virginiana</u> <u>Ptelea trifoliata</u> <u>Quercus gambelii</u> <u>Robinia neomexicana</u> <u>Sambucus</u> spp.	Bigtooth maple Netleaf hackberry Curlleaf mountain-mahogany Western choke-cherry Hop-tree Gambel oak New Mexican locust Elderberry
Low to medium shrubs, under 10 ft	<u>Amelanchier alnifolia</u> <u>Artemisia</u> spp. <u>Berberis repens</u> <u>Ceanothus fendleri</u> <u>Ceanothus velutinus</u> <u>Cercocarpus montanus</u> <u>Cowania mexicana</u> <u>Petalostemum</u> spp. <u>Purshia tridentata</u> <u>Rhus trilobata</u> <u>Ribes</u> spp. <u>Rosa</u> spp. <u>Symphoricarpos</u> spp.	Serviceberry Sagebrush Oregon-grape Buckbrush Tobacco brush Mountain-mahogany Cliffrose Prairie clover Antelope brush Squawbush Gooseberry Wild rose Snowberry
Lesser vegetation	<u>Achillea</u> spp. <u>Agropyron spicatum</u> <u>Campanula rotundifolia</u> <u>Geranium</u> spp. <u>Koeleria cristata</u> <u>Poa</u> spp. <u>Senecio serra</u> <u>Thalictrum fendleri</u>	Yarrow Bluebunch wheatgrass Bluebell Geranium Mountain junegrass Bluegrass Groundsel Meadow-rue
<u>Habitat: Montane Conifer Forest--Rocky Mountain Fasciation</u>		
Tall trees, over 40 ft	<u>Abies concolor</u> <u>Juniperus deppeana</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u> <u>Quercus arizonica</u> <u>Quercus gambelii</u>	White fir Alligator juniper Limber pine Ponderosa pine Quaking aspen Douglas-Fir Arizona white oak Gambel oak
Medium trees, 20-40 ft	<u>Juniperus osteosperma</u> <u>Juniperus scopulorum</u> <u>Pinus edulis</u>	Utah juniper Rocky Mountain juniper Colorado pinyon
Low trees and tall shrubs, 10-20 ft	<u>Cercocarpus breviflorus</u> <u>Cercocarpus ledifolius</u> <u>Robinia neomexicana</u> <u>Sambucus cerulea</u>	Hairy mountain-mahogany Curlleaf mountain-mahogany New Mexican locust Canadian elder

continued

Table P3130-61.1 [P3131, 3132] (Continued)

Growth form	Plant associations	
Montane Conifer Forest--Rocky Mountain Fasciation (Continued)		
Low to medium shrubs, under 10 ft	<u>Arctostaphylos patula</u> <u>Artemisia nova</u> <u>Artemisia tridentata</u> <u>Berberis repens</u> <u>Ceanothus fendleri</u> <u>Chamaebatia millefolium</u> <u>Chrysothamnus parryi</u> <u>Cowania mexicana</u> <u>Fallugia paradoxa</u> <u>Fendlerella utahensis</u> <u>Gutierrezia sarothrae</u> <u>Holodiscus dumosus</u> <u>Jamesia americana</u> <u>Ribes cereum</u> <u>Rubus strigosus</u> <u>Symphoricarpos oreophilus</u>	Greenleaf manzanita Black sagebrush Big sagebrush Oregon-grape Buckbrush Fernbush Parry rabbit brush Cliffrose Apache plume Fendlerella Snakeweed Ocean spray Cliffbush Wax currant Raspberry Snowberry
Lesser vegetation	<u>Ambrosia psilostachya</u> <u>Artemisia</u> spp. <u>Artemisia ludoviciana</u> <u>Blepharoneuron tricholepis</u> <u>Bouteloua gracilis</u> <u>Bromus marginatus</u> <u>Erigeron divergens</u> <u>Erigeron flagellaris</u> <u>Festuca arizonica</u> <u>Koeleria cristata</u> <u>Muhlenbergia montana</u> <u>Muhlenbergia rigens</u> <u>Muhlenbergia wrightii</u> <u>Oxytropis lamberti</u> <u>Pachystima myrsinites</u> <u>Poa fendleriana</u> <u>Sitanion hystrix</u> <u>Sporobolus interruptus</u> <u>Thalictrum fendleri</u> <u>Vicia americana</u>	Ragweed Sagebrush Sagebrush Pine dropseed Blue grama Mountain brome Fleabane Wild daisy Arizona fescue Mountain junegrass Mountain muhly Deergrass Spike muhly Locoweed Myrtle boxleaf Muttongrass Squirreltail Black dropseed Meadow-rue American vetch
Habitat: Subalpine Conifer Forest--Rocky Mountain Fasciation		
Tall trees, over 40 ft	<u>Abies concolor</u> <u>Abies lasiocarpa</u> <u>Picea engelmannii</u> <u>Picea pungens</u> <u>Populus tremuloides</u> <u>Pseudotsuga menziesii</u>	White fir Subalpine fir Engelmann spruce Colorado spruce Quaking aspen Douglas-fir
Medium trees, 20-40 ft	<u>Acer glabrum</u> <u>Alnus tenuifolia</u> <u>Pinus aristata</u> <u>Pinus flexilis</u>	Rocky Mountain maple Mountain alder Bristle-cone pine Limber pine
Low trees and tall shrubs, 10-20 ft	<u>Berberis repens</u> <u>Fragaria ovalis</u> <u>Juniperus communis</u> <u>Lonicera involucrata</u> <u>Potentilla fruticosa</u> <u>Ribes</u> spp. <u>Ribes cereum</u> <u>Sambucus racemosa</u> <u>Symphoricarpos oreophilus</u> <u>Vaccinium oreophyllum</u>	Oregon-grape Strawberry Dwarf juniper Black-fruited honeysuckle Bush cinquefoil Gooseberry Wax currant Red elderberry Snowberry Whortleberry
Lesser vegetation	<u>Arctostaphylos uva-ursi</u> <u>Blepharoneuron tricholepis</u> <u>Bromus</u> spp. <u>Festuca arizonica</u> <u>Geranium richardsonii</u> <u>Muhlenbergia montana</u> <u>Pachystima myrsinites</u> <u>Phleum alpinum</u> <u>Primula</u> spp. <u>Trisetum spicatum</u> <u>Vicia americana</u>	Bearberry Pine dropseed Brome Arizona fescue Cranesbill geranium Mountain muhly Myrtle boxleaf Mountain timothy Primrose Spike trisetum American vetch

continued

Table P3130-61.1 [P3131, 3132] (Concluded)

Growth form	Plant association	
<u>Habitat: Subalpine and Montane Grassland</u>		
Low to medium shrubs, under 10 ft	<u>Sambucus racemosa</u>	Red elderberry
Lesser vegetation	<u>Achillea lanulosa</u>	Yarrow
	<u>Agoseris</u> spp.	Mountain dandelion
	<u>Agropyron</u> spp.	Wheatgrass
	<u>Agropyron trachycaulum</u>	Slender wheatgrass
	<u>Agrostis</u> spp.	Ticklegrass
	<u>Blepharoneuron tricholepis</u>	Pine dropseed
	<u>Bromus</u> spp.	Brome
	<u>Bromus carinatus</u>	Mountain brome
	<u>Carex</u> spp.	Sedge
	<u>Castilleja</u> spp.	Indian paintbrush
	<u>Danthonia</u> spp.	Oat grass
	<u>Delphinium</u> spp.	Larkspur
	<u>Deschampsia caespitosa</u>	Tufted hairgrass
	<u>Erigeron</u> spp.	Fleabane
	<u>Festuca</u> spp.	Fescue
	<u>Festuca thurberi</u>	Thurber fescue
	<u>Helenium hoopesii</u>	Sneezeweed
	<u>Helianthella quinquenervis</u>	False sunflower
	<u>Hordeum jubatum</u>	Foxtail barley
	<u>Iris missouriensis</u>	Blue flag
	<u>Juncus</u> spp.	Rush
	<u>Koeleria cristata</u>	Mountain junegrass
	<u>Lathyrus leucanthus</u>	Peavine
	<u>Lotus</u> spp.	Deer vetch
	<u>Lupinus</u> spp.	Lupine
	<u>Melica bulbosa</u>	Oniongrass
	<u>Monarda</u> spp.	Horsemint
	<u>Muhlenbergia montana</u>	Mountain muhly
	<u>Muhlenbergia virescens</u>	Screwleaf muhly
	<u>Oxytropis lamberti</u>	Locoweed
	<u>Phleum alpinum</u>	Mountain timothy
	<u>Poa</u> spp.	Bluegrass
	<u>Poa fendleriana</u>	Muttongrass
	<u>Poa pratensis</u>	Kentucky bluegrass
	<u>Potentilla</u> spp.	Cinquefoil
	<u>Pteridium aquilinum</u>	Bracken fern
	<u>Ranunculus</u> spp.	Buttercup
	<u>Senecio serra</u>	Groundsel
	<u>Solidago</u> spp.	Goldenrod
	<u>Sphaeralcea fendleri</u>	Globe mallow
	<u>Stipa columbiana</u>	Subalpine needlegrass
	<u>Stipa lettermani</u>	Letterman needlegrass
	<u>Taraxacum officinale</u>	Dandelion
	<u>Thalictrum fendleri</u>	Meadow-rue
	<u>Trifolium fendleri</u>	Mountain clover
	<u>Trisetum spicatum</u>	Spike trisetum
	<u>Verbascum thapsus</u>	Great mullein
	<u>Vicia americana</u>	American vetch
	<u>Viola</u> spp.	Violet

Table P3130-61.2 Ecological Characteristics of Selected Plant Species Common to the Colorado Plateau

Species	Habitat	Form	Fruit	General wildlife use	Notes
White fir (balsam fir) <u>Abies concolor</u> Hoopes P3131, P3132	Common in conifer forest, 5,500-10,000 ft	Large evergreen tree, 80-150 ft, conical crown	Cone, 3-5 in, pollinates in spring	Seeds eaten by songbirds; browsed by deer and elk	
Subalpine fir (White balsam, white fir, corkbark fir) <u>Abies lasiocarpa</u> (Hook.) Nutt. P3131, P3132	Common tree of spruce--fir forest, 8,000-12,000 ft, sun	Medium to large tree, 50-90 ft, narrow crown, shrub-like at timberline	Dark purple cones, 3-4 in, pollinates in spring	Seeds eaten by songbirds and squirrel; browsed by beaver, elk, deer, sheep; nesting cover for songbirds	
Rocky mountain maple <u>Acer glabrum</u> Torr. P3131, P3132	Moist soils along streams, 7,000-9,000 ft, sun and shade	Shrub or small tree, deciduous to 33 ft	Samara, May-June	Seeds eaten by quail, turkey, bear, squirrel, fox; browsed by deer, rabbit, beaver	
Bigtooth maple <u>Acer grandidentatum</u> Nutt. P3131, P3132	Moist soil along streams and canyons, 4,700-7,000 ft, sun or shade	Deciduous tree, up to 50 ft with spreading crown	Samara, Apr.	Same as <u>A. glabrum</u>	
Yarrow (milfoil) <u>Achillea</u> spp. L. P3131, P3132	Conifer forest, 5,500-11,500 ft	Perennial forb, to 1.5 ft	Flattened achene, June-Sept.	Plant eaten by rabbit and sheep	
Yarrow <u>Achillea lanulosa</u> Nutt. P3131, P3132	Common in pine forest, 3,500-11,500 ft, sun	Perennial herb with creeping rootstocks, 10-20 in	1-seeded, June-Sept.	Same as <u>Achillea</u> spp.	
Mountain dandelion <u>Agoseris</u> spp. Raf. P3131, P3132	Meadows, open coniferous forest, 6,500-10,000 ft, sun	Perennial herb, 8-24 in	Achene, summer-fall	Seeds eaten by sage grouse	
Wheatgrass <u>Agropyron</u> spp. Gaertn. P3131, P3132	Forest edges, mountain meadows, above 7,000 ft, sun	Perennial grass, up to 4 ft	Achene, summer-fall	Plant eaten by deer and elk	
Thickspike wheatgrass <u>Agropyron dasystachyum</u> Scribn. P3131, P3132	Dry plains and hillsides	Grass, perennial	Grain, summer-fall	Plant eaten by rabbit, antelope, deer	Widespread
Western wheatgrass <u>Agropyron smithii</u> Rydb. P3131, P3132	Dry hills, sandy bottomlands, forest openings	Perennial grass, 12-24 in	Achene, May-Oct.	Plant eaten by rabbit, antelope, elk, deer, sheep	Valuable range grass; good soil binder
Bluebunch wheatgrass <u>Agropyron spicatum</u> Pursh P3131, P3132	Dry rocky slopes, open woodland	Bunchgrass, 15-40 in	Grain, July-Sept.	Plant eaten by rabbit, elk, deer, antelope	
Slender wheatgrass <u>Agropyron trachycaulum</u> Schwein. P3131, P3132	Canyons, forest slopes, meadows, below 9,000 ft	Tufted perennial grass	Grain, June-Nov.	Same as <u>A. spicatum</u>	Excellent forage grass
Ticklegrass (spike redtop) <u>Agrostis</u> spp. L. P3131, P3132	Forest edges and meadows, above 7,000 ft, sun	Tufted perennial grass, up to 3 ft	Grain, summer-fall	Plant eaten by elk and deer	
Onion <u>Allium acuminatum</u> Hook. P3131, P3132	Dry plains, hills, 2,000-7,000 ft	Erect herb to 11 in	Capsule, also underground bulb		

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mountain alder (thinleaf alder) <i>Alnus tenuifolia</i> Nutt. P3131, P3132	Along streams and canyons, 7,000- 5,000 ft, sun and shade	Large shrub to small tree, to 50 ft	Cone, with small nutlets, Apr.-May	Seeds eaten by song- birds and gamebirds; browsed by deer	Forms thickets along streams
Ragweed <i>Ambrosia psilostachya</i> DC. P3131, P3132	Along streams and roadsides, 2,500- 7,000 ft, sun	Weedy forb, 1-3 ft	Achene, July-Oct.	Seeds eaten by turkey and quail; plant eaten by deer, rabbits and antelope	
Serviceberry <i>Amelanchier alnifolia</i> Nutt. P3131, P3132	Banks, slopes, mountains, 5,000- 10,000 ft, sun	Shrub or small tree, 3-12 ft	Pome, summer- early fall	Fruit eaten by song- birds and bear; browsed by deer and elk	
Utah service berry <i>Amelanchier utahensis</i> Koehne P3131, P3132	Dry rocky slopes, 2,000-7,000 ft	Shrub to small tree, 3-18 ft	Berry, summer	Fruit eaten by bear; browsed by deer and elk	
Big bluestem (bluejoint turkeyfoot) <i>Andropogon gerardii</i> Vitm. P3131, P3132	Dry prairies, can- yon bottoms, bluffs, rocky slopes, pine for- est, below 7,500 ft	Erect perennial grass, 3-6 ft	Grain, July-Oct.	Seeds eaten by turkey; browsed by antelope and deer	Good forage species; widespread
Little bluestem <i>Andropogon scoparius</i> Michx. P3131, P3132	Prairies, open woods, dry hills, fields, mountain meadows, pine forests	Densely tufted erect perennial grass, 20-60 in	Long-awned grain, July-Oct.	Same as <i>A. gerardii</i>	
Greenleaf manzanita <i>Arcoctaphylos patula</i> Greene P3131, P3132	Coniferous forest, 7,000-8,500 ft, sun	Low shrub, 3 ft	Several-seeded round fruit, May- June	Fruit eaten by song- birds and gamebirds; browsed by deer	Very fire-resist- ant; form thickets
Bearberry (sandberry, manzanita, kinnikinnik) <i>Arctostaphylos uva-ursi</i> (L.) Spreng. P3131, P3132	Poor soils, open coniferous forest, aspen groves, above 7,000 ft	Creeping shrub, 5-8 in, forming mats	Many-seeded, berrylike, Feb.- June	Fruit eaten by game- birds; browsed by deer	Widely distributed
Prickle poppy (chicalote) <i>Argemone intermedia</i> Sweet P3131, P3132	Dry soils in fields and road- sides, 1,500- 5000 ft	Erect annual to 3 ft	Dehiscent capsule	Seeds eaten by dove and songbirds	
Red three-awn (three-awn) <i>Aristida longiseta</i> Steud. P3131, P3132	Arid, sandy and rocky hills, pla- teaus, forest openings, 5,000- 8,500 ft, sun	Perennial bunch- grass, 4-14 in	Long-awned grains, May-Nov.	Plant eaten by rabbit and deer	
Sagebrush (wormwood) <i>Artemisia</i> spp. L. P3131, P3132	Throughout the sagebrush desert	Herb or shrub, 12-40 in	Achene	Browsed by grouse, rabbit, deer	
Sand sagebrush <i>Artemisia filifolia</i> Torr. P3131, P3132	Loose sandy soil, 4,000-6,000 ft	Undershrub, 12-40 in	Achene	Browsed by grouse, rabbit, antelope, deer	Valuable browse plant in winter and early spring
Sagebrush <i>Artemisia ludoviciana</i> Nutt. P3131, P3132	Dry slope, canyons, open forest, 2,500- 8,000 ft, sun	Forb, 1-2.5 ft	Achene, Aug.-Nov.	Plant eaten by rab- bit, deer, elk, sheep	Often on limestone
Black sagebrush <i>Artemisia nova</i> A. Nels. P3131, P3132	Dry slopes, mesas, shallow stony soil	Shrub, 1-3 ft	Achene, Aug.-Sept.	Browsed by rabbit, deer, elk	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sagebrush (wormwood, budsagebrush, button-sage, budsage) <u>Artemisia spinescens</u> DC. P3131, P3132	Semi-alkaline basins and valleys 2,000-6,000 ft	Small shrub, 4-16 in	Achene	Same as <u>A. filifolia</u>	
Big sagebrush <u>Artemisia tridentata</u> Nutt. P3131, P3132	Plains, mesas, rocky slopes, in pinyon pine, 5,000-8,000 ft	Shrub, 1-7 ft	Achene, July-Oct.	Same as <u>A. nova</u>	Good growth indicates deep, fertile, nonsaline soil
Aster <u>Aster</u> spp. L. P3131, P3132	Dry to wet alluvial soils and roadsides, 100-8,000 ft	Perennial herb to biennial shrub, to 3 ft	Hairy or glabrous achene	Plant eaten by grouse, rabbit, deer	
Milk-vetch <u>Astragalus</u> spp. L. P3131, P3132	Hillsides, open woods, arid slopes, 2,000-10,000 ft	Mostly low herbaceous perennials, to 6 in	Pods, dehiscent or indehiscent	Seeds eaten by quail; plant eaten by antelope	
White locoweed (milk-vetch) <u>Astragalus bisulcatus</u> (Hook.) Gray P3131, P3132	Dry alkaline meadows and hills, 3,000-8,000 ft	Small forb, to 3 ft	Pod	Seeds eaten by quail and turkey; plant eaten by antelope	
Narrowleaf poison vetch <u>Astragalus pectinatus</u> D. Don P3131, P3132	Dry plains and foothills, 3,000-6,500 ft	Erect forb, to 20 in	Oblong pod	Same as <u>A. bisulcatus</u>	
Four-wing saltbush (wingscale, chamiso) <u>Artemisia canescens</u> Pursh P3131, P3132	Moderately alkaline slopes, to 7,000 ft	Shrub, 3-6 ft	Small winged fruit	Seeds eaten by quail; browsed by rabbit, deer, sheep	
Shadscale (spiny saltbush) <u>Atriplex confertifolia</u> Torr. & Frem. P3131, P3132	Alkaline mesas and plains in sagebrush and creosote desert, 2,500-8,000 ft	Shrub, 1-3 ft	Flat winged fruit	Seeds eaten by quail and songbirds; browsed by rabbit and sheep	
Big saltbrush (shadscale, quailbrush, lenscale) <u>Atriplex lentiformis</u> (Torr.) Wats. P3131, P3132	Alkaline soils below 7,000 ft	Erect shrub, 3-9 ft	Ovate flattened fruit	Seeds eaten by waterfowl and quail; browsed by deer, antelope, rabbit	Halophyte occurring with <u>Sarcobatus</u> spp.
Gardner saltbush (shadscale) <u>Atriplex nuttallii</u> Wats. P3131, P3132	Alkaline soils, 4,000-5,000 ft	Low shrub, 8-29 in	Lanceolate fruit	Same as <u>A. lentiformis</u>	
Plains bahia <u>Bahia oppositifolia</u> (Nutt.) DC. P3131, P3132	Alkaline soils, dry plains, 3,000-7,500 ft	Low perennial, forb, to 8 in	Glandular achene		
Arrowleaf balsamroot <u>Balsamorhiza sagittata</u> (Pursh) Nutt. P3131, P3132	Open hillsides and basins, low to moderate elevations	Perennial herb, to 1.5 ft	Achene	Seeds eaten by grouse	
Five-hook bassia <u>Bassia hyssopifolia</u> (Pall.) Ktze. P3131, P3132	Alkaline soils	Prostrate branching annual	Seed free from pericarp	Seeds eaten by quail	
Barberry (hollygrape) <u>Berberis fremontii</u> Torr. P3131, P3132	In conifer woodland, 4,000-7,000 ft	Shrub, 3-5 ft	Berry, late spring-summer	Browsed by rabbit, deer, elk	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Oregon-grape <u>Berberis repens</u> Lindl. P3131, P3132	Coniferous forest, 5,000-8,500 ft	Spreading, low shrub, 1 ft	Round, black berries, Apr.- June	Same as <u>B. fremontii</u>	Forms excellent ground cover to check erosion
Pine dropseed (hairy dropseed) <u>Blepharoneuron</u> <u>tricholepis</u> (Torr.) Nash P3131, P3132	Rocky slopes, dry open forest, 4,500-9,500 ft, sun	Erect, densely tufted perennial grass, 8-24 in	Grain, July-Nov.	Plant eaten by deer and elk	Good forage species
Side-oats grama <u>Bouteloua curtipendula</u> Michx. P3131, P3132	Rocky slopes, wood- lands, forest openings, plains, to 7,000 ft, sun	Erect, tufted per- ennial grass, 14-40 in	Grain, May-Nov.	Seeds eaten by turkey; plant eaten by rabbit, elk, deer, antelope	Good range grass; fast-growing; highly palatable
Black grama <u>Bouteloua eriopoda</u> Torr. P3131, P3132	Dry sandy pla- teaus, rocky slopes, 3,500-6,000 ft, sun	Low, tufted per- ennial grass, 8-35 in	Grain, long-awned, July-Nov.	Same as <u>B. curtipendula</u>	Drought-adapted climax species; easily overgrazed
Blue grama <u>Bouteloua gracilis</u> HBK. P3131, P3132	Open rocky slopes, plains, forest openings, meadows, 4,000-8,000 ft	Tufted perennial grass, 10-30 in	Grain, July-Nov.	Seeds eaten by turkey; plant eaten by rabbit, elk, deer	Excellent range grass, adapted to drought and heavy grazing
Hairy grama <u>Bouteloua hirsuta</u> Lag. P3131, P3132	Rocky slopes, dry sandy mesas, plains and rocky hills, 1,000-6,000 ft	Erect perennial grass, 10-30 in	Hairy grain, July- Nov.	Same as <u>B. gracilis</u>	
Brome <u>Bromus</u> spp. L. P3131, P3132	Forest edges, moun- tain meadows, above 7,000 ft	Perennial grass, 16-35 in	Grain, summer- fall	Plant eaten by deer and elk	
Mountain brome (Calif- ornia brome, rescue brome) <u>Bromus carinatus</u> Vahl. P3131, P3132	Open woods, waste- lands, middle and lower elevations	Tufted perennial grass, 16-30 in	Grain, Aug.-Oct.	Seeds eaten by game- birds; plant eaten by rabbit, deer, elk	Weedy species
Mountain brome <u>Bromus marginatus</u> Nees P3131, P3132	Woodlands and for- est openings, above 5,500 ft	Perennial grass, 16-40 in	Grain, Aug.-Nov.	Plant eaten by deer, elk, antelope	Good forage grass
Downy chess (cheat, downy brome) <u>Bromus tectorum</u> L. P3131, P3132	Slopes, hills, roadsides, 3,000- 9,000 ft	Erect or spreading perennial grass, 12-24 in	Grain, summer-fall	Seeds eaten by game- birds; plant eaten by deer, antelope, elk, bighorn sheep, rab- bit	Widespread weed; introduced
Buffalo grass <u>Buchloe dactyloides</u> Nutt. P3131, P3132	Dry plains	Low spreading per- ennial grass, 2-5 in	Grain	Seeds eaten by snow goose; plant eaten by deer and antelope	Rare in Arizona; otherwise east of Rockies
Mariposa lily (sego lily) <u>Calochortus nuttallii</u> Torr. P3131, P3132	Dry soil, 5,000- 9,000 ft	Erect perennial herb, to 16 in	Flat seeds, with reticulate coats		
Bluebell (harebell) <u>Campanula rotundifolia</u> L. P3131, P3132	Hills, valleys, slopes, 5,000- 13,000 ft	Perennial forb, to 3 ft	Trilocular capsule		
Hoary cress <u>Cardaria draba</u> (L.) Desv. P3131, P3132	Fields, roadsides, disturbed areas, 3,500-8,500 ft	Small perennial shrub, 2-16 in, spreading from roots	Ovoid smooth seed		Considered a weed

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sedge <i>Carex</i> spp. L. P3131, P3132	Moist soil along streams, shady canyons, 5,000-11,500 ft, sun and shade	Perennial grasslike erect herb, 2-4 ft	Achenes, in spikes	Seeds eaten by game-birds, bear, squirrel, fox; plant eaten by rabbit, deer, elk	
Indian paintbrush <i>Castilleja</i> spp. Mutis P3131, P3132	Arid slopes to moist coniferous forest, 2,000-10,000 ft	Annual, perennial forb, 6-20 in	Many-seeded capsule, Mar.-Nov.	Seeds eaten by song-birds; plant eaten by deer	
Paintbrush <i>Castilleja chromosa</i> (A. Nels.) Torr. P3131, P3132	Dry plains, mesas, brushy slopes, 3,000-9,000 ft	Herbaceous perennial, to 16 in	Ovoid seeds	Same as <i>Castilleja</i> spp.	
Buckbrush (deer-brier) <i>Ceanothus fendleri</i> Gray P3131, P3132	Foothills, mountains, common in pine forests, 5,000-10,000 ft, sun and shade	Shrub, to 3 ft, forming low thickets	Capsule, 3-celled, Apr.-Oct.	Browsed by deer	
Tobacco brush <i>Ceanothus velutinus</i> Dougl. P3131, P3132	Open wooded slope, 3,500-10,000 ft	Shrub, 3-6 ft	Capsule, summer-fall	Same as <i>C. fendleri</i>	
Netleaf hackberry (curnero, paloblanco) <i>Celtis reticulata</i> Torr. P3131, P3132	Streams, canyons, washes, moist soil, 2,500-6,000 ft	Deciduous large shrub to small tree, to 30 ft, spreading crown	Drupe, 1-seeded	Fruit eaten by game-birds and fox; browsed by deer	
Hairy mountain-mahogany (Wright mountain-mahogany) <i>Cercocarpus breviflorus</i> Gray P3131, P3132	Dry slopes, mountainsides, 5,000-8,000 ft	Evergreen shrub or tree, to 15 ft or more	Hairy achene, summer-fall	Browsed by elk, deer, antelope	
Curlleaf mountain-mahogany <i>Cercocarpus ledifolius</i> Nutt. P3131, P3132	Generally in pine woods, 5,000-9,000 ft	Evergreen tree or shrub, to 20 ft	Hairy achene, spring-summer	Browsed by elk and deer	
Mountain-mahogany <i>Cercocarpus montanus</i> Raf. P3131, P3132	Drier slopes, rocky hillsides	Shrub, to 3 ft	Achene	Browsed by antelope and deer	
Fernbush (tansybush) <i>Chamaebatiaria millefolium</i> (Torr.) Maxim. P3131, P3132	Dry rocky slopes, 4,500-8,000 ft, sun	Aromatic leafy shrub, 2-6 ft	Capsule, leathery, few-seeded, July-Nov.	Browsed by sheep and deer	Often occurring with juniper and pinyon
Lamb's-quarters (goose-foot) <i>Chenopodium album</i> L. P3131, P3132	Fields, wastelands, disturbed soils	Erect forb, to 10 ft	Black seeds, achene or utricle	Seeds eaten by dove, quail, songbirds	Introduced; widespread
Slimleaf goosefoot <i>Chenopodium leptophyllum</i> (Moq.) Wats. P3131, P3132	Sandy or rocky soil, 5,000-7,000 ft	Erect forb, to 20 in	Shiny seeds, achene or utricle, Aug.-Sept.	Same as <i>C. album</i>	
Hairy goldaster <i>Chrysopsis villosa</i> (Pursh) DC. P3131, P3132	Dry soils, 4,000-10,000 ft	Perennial forb, to 20 in	Achene		
Rabbit brush <i>Chrysothamnus nauseosus</i> Nutt. P3131, P3132	Dry rocky slopes, plains, 5,000-7,000 ft	Small shrub, 4-8 in	Achene, summer-fall	Browsed by rabbit, antelope, deer, elk	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Parry rabbit brush <i>Chrysothamnus parryi</i> Greene P3131, P3132	Open pine forests, 5,500-9,000 ft, sun	Shrub, 1-3 ft	Achene, Aug.-Sept.	Seeds eaten by song- birds; browsed by rab- bit, deer, antelope, elk	Sometimes in associ- ation with sage- brush
Rabbit brush <i>Chrysothamnus</i> <i>viscidiflorus</i> Hook. P3131, P3132	Dry mesas and slopes, 5,000- 9,000 ft	Small shrub, to 20 in	Achene	Browsed by rabbit and deer	
Rocky mountain beeplant (bee spiderflower) <i>Cleome serrulata</i> Pursh P3131, P3132	Sandy soil of plains, draws, roadsides, waste areas, 3,500- 8,500 ft	Erect forb, to 3 ft	Achene	Seeds eaten by dove, pheasant, small mam- mals	
Blackbrush <i>Coleogyne ramosissima</i> Torr. P3131, P3132	Dry slopes and mesas in creosote and sagebrush deserts, 3,000- 5,000 ft	Shrub, 1.5-4.5 ft	Achene, 1-seeded		
Cliffrose <i>Cowania mexicana</i> D. Don. P3131, P3132	Rocky hills and plateaus on lime- stone formations	Evergreen shrub, 3-6 ft	Hairy achene, late spring-fall	Browsed by deer	
Hawksbeard <i>Crepis acuminata</i> Nutt. P3131, P3132	Dry soils to 10,500 ft	Perennial herb, to 28 in	Achene		
Hidden flower (cryptantha) <i>Cryptantha</i> spp. Lehm. P3131, P3132	Dry plains and soils, 2,500- 9,000 ft	Annual or peren- nial form, to 20 in	Nutlet	Fruit eaten by song- birds	
Oat grass <i>Danthonia</i> spp. DC. P3131, P3132	Forest edges, mountain meadows, above 7,000 ft	Perennial grass, 4-24 in	Grain, July-Oct.		
Larkspur <i>Delphinium</i> spp. L. P3131, P3132	Forest edges, mountain meadows, above 7,000 ft	Perennial herb, 1-5 ft	Follicle, summer- fall		
Larkspur <i>Delphinium andersoni</i> Gray P3131, P3132	Sandy, volcanic soil, 5,000- 7,500 ft	Erect branching herb, to 24 in	Black-winged seeds		
Tufted hairgrass <i>Deschampsia caespitosa</i> Beauv. P3131, P3132	Bogs, moist moun- tain meadows, streambanks, to 9,500 ft	Densely tufted per- ennial grass, 2-4 ft	Grain, June-Oct.	Plant eaten by deer, elk, bighorn sheep	Excellent range species; holds well under moderate grazing
Desert saltgrass <i>Distichlis stricta</i> Rydb. P3131, P3132	Moist, alkaline soils, to 6,000 ft	Perennial grass, 4-16 in	Grain, May-Oct.	Seeds eaten by water- fowl	
Hedgehog cactus <i>Echinocereus</i> spp. Engelm. P3131, P3132	Rocky hillsides, to sandy plains, 2,500-8,000 ft	Cylindrical fleshy stems, to 2 ft, solitary awn clumps	Globular or ellip- soid, fleshy		
Wild rye <i>Elymus</i> spp. L. P3131, P3132	Dry open slopes and plains	Perennial grass, 3-12 in	Grain		

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Wild rye <i>Elymus cinereus</i> Scribn. P3131, P3132	Dry plains, slopes, hills, ravines, valleys and riverbanks, 4,500-10,000 ft	Tufted perennial grass, 2-6 ft	Grain, June-Oct.		
Mormon tea (Mexican tea) <i>Ephedra</i> spp. L. P3131, P3132	Dry sandy or rocky soils, 2,000-7,500 ft	Shrub or small tree, 1-6 ft	Cones	Seeds eaten by quail; browsed by rabbit and deer	
Mormon tea <i>Ephedra nevadensis</i> Wats. P3131, P3132	Dry slopes, hills, below 4,500 ft	Shrub, to 4 ft	Naked seed, spring	Seeds eaten by quail; browsed by rabbit, deer, antelope, sheep	
Joint-fir <i>Ephedra torreyana</i> Wats. P3131, P3132	Dry desert areas, 4,000-7,000 ft	Dioecious shrubs, to 4 ft	Seeds in bracts	Seeds eaten by quail; browsed by rabbit, antelope, deer	
Mormon tea <i>Ephedra viridis</i> Cov. P3131, P3132	Arid slopes, mesas, 3,000-7,000 ft	Erect shrub, 1-3 ft	Naked seed, summer	Same as <i>E. torreyana</i>	
Plains lovegrass <i>Eragrostis intermedia</i> Hitchc. P3131, P3132	Sandy or rocky slopes and plains	Tufted erect perennial grass, 22-35 in	Grain, July-Nov.		Used to reseed rangeland; good soil binder
Fleabane <i>Erigeron</i> spp. L. P3131, P3132	Forest edge, open ground, mountain meadows, above 7,000 ft	Perennial herb, 1-3 ft	Achene, summer-fall		
Fleabane (wild daisy) <i>Erigeron divergens</i> T. & G. P3131, P3132	Dry slopes, mesas, to open pine woods, 1,000-9,000 ft, sun	Forb, 6-30 in	Achene, Feb.-Oct.		
Wild daisy (fleabane) <i>Erigeron flagellaris</i> Gray P3131, P3132	Open coniferous forest, mountain meadows, 3,000-9,500 ft	Forb, 6-30 in	Achene, Apr.-Sept.		
Wild buckwheat <i>Eriogonum</i> spp. Michx. P3131, P3132	Dry soils, 2,000-10,000 ft	Annual or perennial herb or shrub, to 40 in	Achene	Seeds eaten by quail, grouse, turkey; browsed by rabbit and deer	
Slenderbush eriogonum <i>Eriogonum microthecum</i> Nutt. P3131, P3132	Dry plains, slopes, 4,500-8,000 ft	Perennial forb, to 2 ft	Achene	Seeds eaten by gamebirds and songbirds; plant eaten by rabbit and deer	
Cushion buckwheat <i>Eriogonum ovalifolium</i> Nutt. P3131, P3132	Dry soils, valleys, slopes, hills, 4,500-8,500 ft	Erect shrub, to 1.5 ft	Achene	Seeds eaten by grouse, quail, turkey; plant eaten by rabbit, deer, sheep	
Winter-fat <i>Eurotia lanata</i> Pursh P3131, P3132	Slopes, plains in sagebrush and creosote deserts, 2,500-7,000 ft	Shrub 8-32 in	Bracts, villous		
Apache plume <i>Fallugia paradoxa</i> Endl. P3131, P3132	Dry rocky slopes, 4,000-5,000 ft	Shrub, 1-5 ft	Achene, summer		
Fendlerella <i>Fendlerella utahensis</i> (Wats.) Heller P3131, P3132	Dry open pine woods, 5,000-8,000 ft, sun	Small, much-branched shrub, 1-3 ft	Capsule, June-Sept.		

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Fescue <u>Festuca</u> spp. L. P3131, P3132	Forest edges, mountain meadows above 6,000 ft	Densely tufted or loosely tufted, 16-40 in	Grain, summer-fall	Seeds eaten by turkey and songbirds; plant eaten by deer and elk	
Arizona fescue <u>Festuca arizonica</u> Vasey P3131, P3132	Forest, mountain meadows, 6,000-10,000 ft	Densely tufted perennial grass, 18-36 in	Grain, June-Sept.	Same as <u>Festuca</u> spp.	
Idaho fescue <u>Festuca idahoensis</u> Elmer P3131, P3132	Open woods, rocky slopes, 5,000-11,000 ft	Perennial bunchgrass, 12-40 in	Grain, July-Sept.	Same as <u>Festuca</u> spp.	
Red fescue <u>Festuca rubra</u> L. P3131, P3132	Meadows, hills, bogs, marshes, at higher elevations	Loosely tufted perennial grass, 16-40 in	Grain, July-Sept.	Seeds eaten by turkey; plant eaten by deer and elk	
Thurber fescue <u>Festuca thurberi</u> Vasey P3131, P3132	Dry slopes, rocky hills, 4,500-11,500 ft	Densely tufted erect perennial grass, 24-36 in	Grain, summer-fall	Same as <u>Festuca</u> spp.	Only in Colorado, New Mexico, Utah
Strawberry <u>Fragaria ovalis</u> (Lehm.) Rydb. P3131, P3132	Moist meadows, coniferous forest, 7,000-11,000 ft, sun or shade	Perennial shrub with connecting runners, 4-6 in	Achenes, embedded in fleshy aggregate fruit, May-Oct.	Fruit eaten by game-birds, songbirds, rabbit, squirrel, deer	
Skeletonleaf bur sage <u>Franseria discolor</u> Nutt. P3131, P3132	Dry plains, hills fields, wastelands, 5,000-8,000 ft	Perennial forb, to 16 in	Burlike achene, Apr.-Oct.		
Geranium <u>Geranium</u> spp. L. P3131, P3132	Rich soils, 3,000-11,000 ft	Annual or perennial forb, 12-30 in	Capsule, 5-lobed, Apr.-Oct.	Seeds eaten by dove and quail; plant eaten by deer	
Cranesbill geranium <u>Geranium richardsonii</u> Fisch. & Trautv. P3131, P3132	Coniferous forest, 6,500-11,500 ft, sun and shade	Perennial forb, 12-30 in	Capsule, 5-lobed, Apr.-Oct.	Seeds eaten by dove, quail, towhee; plant eaten by deer	
Spiny hop-sage <u>Grayia spinosa</u> Hook. P3131, P3132	Alkaline plains, slopes in creosote and sagebrush deserts, 2,500-7,000 ft	Shrub, 1-3 ft	Fruits, in flattened bracts		
Curlycup gumweed <u>Grindelia squarrosa</u> (Pursh) Dunal P3131, P3132	Prairies, plains, roadsides, fields, 4,500-5,000 ft	Perennial forb, to 3 ft	Achene		
Snakeweed <u>Gutierrezia</u> spp. Lag. P3131, P3132	Dry soils, 3,000-10,000 ft	Herbaceous perennial, to 28 in	Achene	Seeds eaten by quail; plant eaten rabbit, antelope, deer	
Snakeweed (broom snakeweed) <u>Gutierrezia sarothrae</u> (Pursh) Britt. & Rusby P3131, P3132	Plains, slopes, in upper desert grasslands, oak woodlands, 3,000-7,000 ft	Shrub, .5-1 ft	Small achene, July-Nov.	Same as <u>Gutierrezia</u> spp.	Invader of overgrazed ranges
Halogeton <u>Halogeton glomeratus</u> Bieb. P3131, P3132	Widespread on alkaline, dry disturbed soils	Annual herb, 4-20 in	Berrylike with bracts, summer		Introduced; highly poisonous oxalic acid content
Goldenweed <u>Haplopappus lanceolatus</u> Hook. P3131, P3132	Meadows, alkaline soils,	Shrub, .5-1.5 ft	Achene		Halophyte occurring with <u>Sarcobatus</u> spp.

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Sneezeweed <u>Helenium hoopesii</u> Gray P3131, P3132	Conifer forest, mountain meadows, 7,000-11,000 ft	Perennial herb, 1-3.5 ft	Turbinate achene, June-Sept.		
False sunflower <u>Helianthella quinquenervis</u> (Hook.) Gray P3131, P3132	Mountain meadows, woods, 5,000-10,000 ft	Perennial herb, 8-24 in	Achene, July-Oct.		
Prairie sunflower <u>Helianthus petiolaris</u> Nutt. P3131, P3132	Plains, hills, roadsides, 3,500-8,000 ft	Erect forb, to 3 ft	Achene	Seeds eaten by dove, quail, grouse; plant eaten by deer	
Hermidium <u>Hermidium alipes</u> Wats. P3131, P3132	Dry slopes and flats, 4,000-6,500 ft	Erect herb, 9-20 in	Anthocarp		
Galleta grass <u>Hilaria jamesii</u> Torr. P3131, P3132	Dry sandy plateaus, open valleys, 3,000-8,000 ft	Perennial grass, 25-50 in	Grain, May-Nov.		
Ocean spray (mountain spray, cream bush, foam bush) <u>Holodiscus dumosus</u> (Nutt.) Heller P3131, P3132	Pine or spruce forest, often on cliffs	Aromatic deciduous shrub, 3 ft	Follicle, 1-seeded June-Sept.		
Foxtail barley <u>Hordeum jubatum</u> L. P3131, P3132	Joist soils along streams and lakes, above 5,000 ft	Annual or perennial grass, 12-24 in	Long-awned grain, June-Oct.		Invades disturbed areas
Hutchinsia <u>Hutchinsia procumbens</u> R. Br. P3131, P3132	Moist alkaline soil, to 8,600 ft	Erect annual, 4-8 in	Wingless seed		Halophyte occurring with <u>Sarcobatus</u> spp.
Pingwing (pinque) <u>Hymenoxys richardsonii</u> Hook. P3131, P3132	Dry soils, 5,000-9,000 ft	Annual or perennial herb, to 16 ft	Solitary fruiting head		
Blueflag (Rocky mountain iris, flag) <u>Iris missouriensis</u> Nutt. P3131, P3132	Wet meadows, 6,000-9,500 ft	Perennial forb, 8-15 in	Capsule, late summer-fall		
Poverty weed <u>Iva axillaris</u> Pursh P3131, P3132	Alkaline plains, or saline marsh borders	Herb to low shrub, 2-12 in	Achene		Halophyte occurring with <u>Sarcobatus</u> spp.
Cliffbush <u>Jamesia americana</u> T. & G. P3131, P3132	Moist canyons, along streams in coniferous forests, 7,500-9,500 ft, sun and shade	Deciduous shrub, 1-6 ft	Dry, beaked capsule, June-July		
Rush <u>Juncus</u> spp. L. P3131, P3132	Moist soil along streams, ponds, lakes, 2,000-11,500 ft	Perennial grasslike herb, 2-4 ft	Capsule, spring	Forage	
Juniper <u>Juniperus</u> spp. L. P3131, P3132	Mountains, dry hills and mesas, 3,000-9,000 ft	Tall shrub to tree, 15-40 ft	Berrylike cone	Food and cover for numerous species	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Dwarf juniper (ground-cedar) <u>Juniperus communis</u> L. P3131, P3132	Mountain and forest above 8,000 ft	Dense aromatic evergreen, usually prostrate shrub, 1-3 ft	Small round berrylike cones, pollinates, spring	Fruit eaten by songbirds, deer, quail, turkey, bear, fox	
Alligator juniper <u>Juniperus deppeana</u> Steud. P3131, P3132	Moist soil along streams or scattered on hillside in oak woodland or ponderosa pine forest, 4,500-8,000 ft, sun	Tree, 20-65 ft, round crown	Berrylike fleshy cone, pollinates in spring	Fruit eaten by deer, quail, turkey, bear, fox	
One-seeded juniper <u>Juniperus monosperma</u> (Engelm.) Sarg. P3131, P3132	Dry hills, mesas, 3,000-7,000 ft, foothills, pinyon juniper woodland	Shrub to small evergreen tree, conical crown, 10-25 ft	Berrylike cone, 1-seeded, matures in 1 year	Important food and cover for numerous species	Most common juniper in New Mexico
Utah juniper (western juniper) <u>Juniperus osteosperma</u> (Torr.) Little P3131, P3132	Dry plains, plateaus, hills, often in pure stands or with pinyon, 3,000-7,500 ft, sun	Small evergreen tree, broad, round crown 15-40 ft	Berrylike brown cone, pollinates in spring	Same as <u>J. monosperma</u>	Most common juniper in Arizona
Rocky mountain juniper (western juniper) <u>Juniperus scopulorum</u> Sarg. P3131, P3132	Scattered in mountains and canyons of pinyon-juniper woodland and lower ponderosa pine 5,000-9,000 ft, sun	Small to medium evergreen tree, narrow pointed open crown, 20-50 ft	Berrylike cone, pollinates in spring	Same as <u>J. monosperma</u>	Fastest growing juniper
Summer cypress <u>Kochia americana</u> Wats. P3131, P3132	Dry open plains, often on saline soil, 5,000-6,000 ft	Shrub, 4-16 in	Achene, summer-fall		
Mountain junegrass (prairie junegrass) <u>Koeleria cristata</u> (L.) Pers. P3131, P3132	Prairie, open woods, sandy soil, rocky slopes below 9,000 ft	Tufted or bunched perennial grass, 4-28 in	Grain, May-Oct.	Plant eaten by deer and elk	Good native forage; rarely locally abundant
Peavine (aspen peavine) <u>Lathyrus leucanthus</u> Rydb. P3131, P3132	Open dry woodland, meadows, 6,500-11,500 ft	Perennial herb, 6-24 in	Legume, summer-fall		
Prairie pepperweed <u>Lepidium densiflorum</u> Schrud. P3131, P3132	Plains, fields, roadsides, 3,500-9,500 ft	Annual forb, to 1.5 ft	Flattened silicle	Seeds eaten by songbirds; plant eaten by deer	
Shrubby phlox (granite gilia) <u>Leptodactylon pungens</u> Torr. P3131, P3132	Dry sandy rocky soil, 4,000-12,000 ft	Low shrub, to 16 in	Many seeded locules		
Blazing-star (dotted gay-feather) <u>Liatris punctata</u> Hook. P3131, P3132	Dry plains, hills, 3,500-8,000 ft	Perennial forb, to 2.5 ft	Achene		
Biscuit root (Indian root) <u>Lomatium</u> spp. Raf. P3131, P3132	Dry rocky areas, 4,000-10,000 ft	Coulescent perennial, to 24 in	Seed flattened dorsally		
Black-fruited honey-suckle <u>Lonicera involucrata</u> (Richards) Banks P3131, P3132	Open coniferous forest, often along streams, 7,500-10,500 ft, sun and shade	Erect or twining deciduous shrub, 1-10 ft, tending to form thickets	Berrylike, June-July	Nectar is primary food for hummingbirds	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Deer vetch (deer clover) <i>Lotus</i> spp. L. P3131, P3132	Forest edges, mountain meadows, 3,000-5,000 ft	Perennial herb, 8-16 in	Legume, summer- fall	Good forage	Good for erosion control
Lupine <i>Lupinus</i> spp. L. P3131, P3132	Dry slopes, mesas, open forest, 100- 10,000 ft, sun	Annual or perennial form with terminal cluster flowers, 6-24 in	Flat pods, con- stricted between seeds, spring- fall	Seeds eaten by song- birds, quail, turkey, bear	Some species poison- ous to livestock
Tailcup lupine <i>Lupinus caudatus</i> Kellogg P3131, P3132	Dry slopes, mesas, 4,000-9,600 ft	Low perennial forb, to 24 in	Flat pod, con- stricted between seeds, spring- fall	Seeds eaten by quail and turkey; plant eaten by deer	
Box thorn (Cooper's lycium) <i>Lycium cooperi</i> Gray P3131, P3132	Dry mesas, slopes, below 5,000 ft	Thorny shrub, 3-6 ft	Ovoid, dry, many- seeded	Seeds eaten by dove and quail	
Wolftail (Texas-timothy) <i>Lycurus phleoides</i> HBK. P3131, P3132	Open rocky slopes, plains, below 8,000 ft	Tufted erect peren- nial, 8-25 in	Awmed grain, July- Nov.		Valuable range grass
Rush skeletonplant <i>Lygodesmia juncea</i> (Pursh) O. Don P3131, P3132	Dry soils, 4,000- 7,500 ft	Perennial forb, to 16 in	Achene		
Oniongrass <i>Melica bulbosa</i> Port. & Coult. P3131, P3132	Rocky woodlands, hills, 3,000- 8,000 ft	Perennial grass, 12-24 in	Grain, summer- fall		New Mexico and Colorado; absent in Arizona
Stickleaf (blazing- star) <i>Mentzelia</i> spp. L. P3131, P3132	Dry sandy slopes and mesas, 1,000- 8,500 ft	Low shrub, to 3 ft	Oblong to linear capsule	Seeds eaten by quail	
Horsemint (beebalm) <i>Monarda</i> spp. L. P3131, P3132	Open coniferous forest, mountain meadows, above 7,000 ft	Perennial herb, 12-30 in	Nutlets, summer- fall		
Muhly <i>Muhlenbergia</i> spp. Schreb. P3131, P3132	Dry open slopes, hills, mesas, 3,500-9,000 ft	Perennial grass, to 3 ft	Grain, summer- fall	Plant eaten by deer and rabbit	
Mountain muhly <i>Muhlenbergia montana</i> Hitcch. P3131, P3132	Rocky slopes, ledges, woodlands, forest openings, 4,500-9,500 ft	Tufted perennial grass, 6-26 in	Grain, Aug.-Oct.	Seeds eaten by turkey; plant eaten by deer and elk	
Deergrass <i>Muhlenbergia rigens</i> (Benth.) Hitcch. P3131, P3132	Gravelly or sandy canyon bottoms, washes, in moist soil, occasionally dry plateaus or meadows, 3,000- 7,000 ft	Perennial grass, 2-5 ft	Grain, June-Oct.	Same as <i>M. montana</i>	
Ring muhly (ring grass) <i>Muhlenbergia torreyi</i> Hitcch. P3131, P3132	Dry ridges, sandy plateaus, rocky slopes, below 6,500 ft	Perennial grass, 6-12 in	Grain, Aug.-Nov.		Poor range grass; good soil binder
Screwleaf muhly <i>Muhlenbergia virescens</i> Kunth P3131, P3132	Rocky slopes, ridges, pine forests, 5,000- 9,500 ft, shade	Densely tufted perennial grass, 6-24 in	Grain, May-July	Same as <i>M. montana</i>	In Arizona and New Mexico only
Spike muhly <i>Muhlenbergia wrightii</i> Vasey P3131, P3132	Woodland, forest openings, dry meadows, 5,500- 9,000 ft	Perennial grass, 1-2 ft	Grain, July-Nov.	Seeds eaten by wild turkey; plant eaten by deer, elk, bighorn sheep	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Pale evening-primrose <i>Oenothera pallida</i> Lindl. P3131, P3132	Valleys, mesas, 1,000-7,500 ft	Perennial forb, to 20 in	Membranous cap- sule, May-Sept.		
Prickly pear (cholla) <i>Opuntia</i> spp. Mill. P3131, P3132	Variable from dry slopes to mesas and can- yons	Generally low- growing, to 6 ft, with flattened or cylindrical joints	Juicy obovoid fruit	Fruit eaten by dove, quail, coyote, fox, rabbit, antelope	
Beavertail <i>Opuntia basilaris</i> Engelm. & Bigel. P3131, P3132	Sandy flat dunes, valleys in wood- lands, 4,000- 7,000 ft	Clumps, 6-12 in high	Dry, not spiny		
Little prickly pear <i>Opuntia fragilis</i> Nutt. P3131, P3132	Sandy to gravelly soils, 4,500- 8,000 ft	Mat-forming plant, 2-4 in	Obovoid dry fruit	Fruit eaten by numer- ous gamebirds and mam- mals, especially peccary	
Plains prickly pear <i>Opuntia polycantha</i> Haw. P3131, P3132	Sandy soils of plains, flats, washes, canyon sides, 4,000- 6,000 ft	Clump-forming cactus, 3-6 in high	Dry, obovoid, spring	Fruit eaten by dove, quail, coyote, peccary, deer	
Whipple cholla <i>Opuntia whipplei</i> Engelm. & Bigel. P3131, P3132	Deep soils of valleys, plains, slopes, 4,500- 7,000 ft	Generally low mat- forming cactus, occasionally reaching 6 ft	Obovoid, fleshy yellow, spine- less, June-July		
Indian rice-grass <i>Oryzopsis hymenoides</i> (R. & S.) Ricker P3131, P3132	Open sandy plains, hills, woodlands at medium eleva- tions	Densely tufted perennial grass, 12-24 in	Grain, May-Nov.	Seeds eaten by game- birds; plant eaten by deer	Excellent range grass in semi-arid areas
Crazyweed (white loco) <i>Oxytropis</i> spp. DC. P3131, P3132	Drier soils, 5,000-10,000 ft	Perennial forb, 6-20 in	Membranous pods with reniform seeds, summer		May be poisonous
Locoweed <i>Oxytropis lamberti</i> Pursh. P3131, P3132	Open sandy areas, 5,000-8,000 ft	Perennial herb, 4-12 in	Legume, summer- fall		Poisonous to live- stock and people
Myrtle boxleaf (Oregon boxwood, mountain- lover) <i>Pachystima myrsinites</i> (Pursh) Raf. P3131, P3132	Coniferous for- ests, 6,000- 9,000 ft	Low inconspicuous ground cover	Capsule, 2-celled, Plant relished by deer May		
Switchgrass <i>Panicum virgatum</i> L. P3131, P3132	Sandy or rocky soils along moist canyons, water- courses, open woods, prairies, below 7,000 ft	Perennial grass, 14-40 in	Grain, June-Oct	Plant eaten by rabbit, deer, antelope	
Prairie clover <i>Petalostemum</i> spp. Michx. P3131, P3132	Mesas and openings in pine forest, 3,000-7,000 ft	Forb, to 1.5 ft	Small pod with 1-2 seeds		
Mountain timothy (alpine timothy) <i>Phleum alpinum</i> L. P3131, P3132	High mountain meadows and moist seeps, coniferous forests to alpine, to 12,000 ft	Densely tufted per- ennial grass, 8-20 in	Awed grain, Aug.- Nov.		Can be established on depleted range
Phlox <i>Phlox</i> spp. L. P3131, P3132	Dry slopes to co- niferous forest, 1,500-10,000 ft	Low perennial shrub, to 12 in	Capsule, oblong, 3-celled	Plant eaten by deer and antelope	
Phlox <i>Phlox caespitosa</i> Nutt. P3131, P3132	Mountains, 10,500 ft and higher	Halfshrub, 1-4 in	Capsule, summer- fall	Browsed by deer and elk	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Hood's phlox <u>Phlox hoodii</u> Richards P3131, P3132	Dry rocky hills, plains, 4,500-8,000 ft	Low forb, to 3 in	3-celled ovoid	Plant eaten by deer and antelope	
Longleaf phlox <u>Phlox longifolia</u> Nutt. P3131, P3132	Dry plains, hills, 4,000-9,000 ft	Perennial forb, to 5 in	1-2-seeded, ovoid	Same as <u>P. hoodii</u>	
Engelmann spruce <u>Picea engelmannii</u> Parry P3131, P3132	Conifer forest, 8,000-12,000 ft, sun	Large evergreen tree, conical crown, drooping branches, 60-190 ft	Round cones, pollinates in spring	Seeds eaten by gamebirds, songbirds, squirrel; browsed by rabbit, deer, elk	
Colorado spruce (blue spruce, silver spruce) <u>Picea pungens</u> Engelm. P3131, P3132	Coniferous forest, 7,000-11,000 ft, sun	Tree, 40-80 ft, conical crown	Cones, pollinates in spring	Same as <u>P. engelmannii</u>	
Bristle-cone pine (foxtail pine) <u>Pinus aristata</u> Engelm. P3131, P3132	Open grassy stands, spruce--fir up to timberline, 9,700-11,500 ft, sun	Small gnarled evergreen tree, shrub-like at timberline, to 40 ft	Cones, spring		
Colorado pinyon (Rocky mountain pinyon) <u>Pinus edulis</u> Engelm. P3131, P3132	Pinyon--juniper woodland, 4,000-7,000 ft	Small evergreen bushy tree, compact spreading crown, 15-35 ft	Egg-shaped cone, pollinates in spring	Seeds eaten by pinyon jay, songbirds, fox, squirrel, gamebirds, deer, bear	
Limber pine (Rocky mountain white pine) <u>Pinus flexilis</u> James P3131, P3132	Widely distributed in coniferous forest above 7,000 ft, sun	Large evergreen tree, widely branched, drooping crown, 50-80 ft	Cone, 4-8 in	Seeds eaten by songbirds, bear, squirrel; browsed by deer and rabbit	
Singleleaf pinyon <u>Pinus monophylla</u> Torr. & Frem. P3131, P3132	Drier slopes, 4,000-6,500 ft	Evergreen tree, 15-30 ft	Cone, fall	Seeds eaten by songbirds, gamebirds, fox, squirrel, bear; browsed by deer	
Ponderosa pine <u>Pinus ponderosa</u> Laws P3131, P3132	Plateaus, mountain slopes, in pure or mixed stands, 5,500-8,500 ft, sun	Large evergreen tree, 80-125 ft, straight trunk with narrow, open crown	Cone	Food and nesting sites for tassel-eared squirrels	Most common forest tree southwest
Pinyon rice-grass <u>Piptochaetium fimbriatum</u> Hitchc. P3131, P3132	Open, rocky woodlands, pine forest, 5,000-7,000 ft	Perennial bunch grass, 16-30 in	Awed grain, summer-fall	Plant eaten by deer and elk	Good range grass
Bluegrass <u>Poa</u> spp. L. P3131, P3132	Open dry hills, mesas, forest edges, meadows above 3,500 ft	Perennial grass, 10-40 in	Grain, summer-fall	Plant eaten by rabbit, deer, elk, antelope	
Plains bluegrass <u>Poa arida</u> Vasey P3131, P3132	Prairies, plains, alkaline meadows, to 10,000 ft	Tufted perennial grass, 10-25 in	Grain, July-Nov.		
Muttongrass (Fendler bluegrass) <u>Poa fendleriana</u> Vasey P3131, P3132	Mesas, rocky hills, open dry woodlands below 11,500 ft, sun	Perennial grass, 12-20 in	Grain, May-Sept.	Plant eaten by rabbit, deer, elk	Important range grass
Nevada bluegrass <u>Poa nevadensis</u> Vasey P3131, P3132	Low meadows, hill-sides, dry or wet soil, 5,000-9,000 ft	Perennial grass, 20-40 in	Grain, summer-fall	Same as <u>P. fendleriana</u>	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Kentucky bluegrass <i>Poa pratensis</i> L. P3131, P3132	Open woods, meadows, disturbed soil, medium to high elevation	Perennial grass, 10-40 in	Grain, summer-fall	Plant eaten by rabbit and deer	Widespread; probably introduced
Sandberg bluegrass <i>Poa sandbergii</i> Vasey P3131, P3132	Plains, hills, dry woods, rocky slopes, 3,000-8,000 ft	Perennial grass, 8-16 in	Small achene, Spr.-June	Seeds eaten by gamebirds and songbirds; plant eaten by rabbit and deer	
Milkwort <i>Polygala</i> spp. L. P3131, P3132	Dry rocky soils, 1,500-7,500 ft	Low shrub, to 3 ft	Capsule, 2-celled, thin, flat	Browsed by deer	
Quaking aspen (trembling poplar, golden aspen) <i>Populus tremuloides</i> Michx. P3131, P3132	Widely distributed in coniferous forest above 5,000 ft	Tree, slender crown, 20-80 ft	Cottony capsules, early spring	Seeds eaten by gamebirds, songbirds, squirrel; browsed by rabbit, deer, elk	Great aesthetic value in fall; sprouts from cut roots
Cinquefoil <i>Potentilla</i> spp. L. P3131, P3132	Open coniferous forest, mountain meadows above 7,000 ft	Perennial herb or shrub, 6-30 in	Achene, summer-fall	Plant eaten by rabbit, songbirds, deer, sheep	
Shrubby cinquefoil, bush cinquefoil <i>Potentilla fruticosa</i> L. P3131, P3132	Along streams and wet meadows, 7,000-9,500 ft, sun and shade	Evergreen shrub, 1-4 ft	Achene, June-Aug.	Plant eaten by deer and sheep	Excellent to prevent soil erosion
Primrose <i>Primula</i> spp. L. P3131, P3132	Moist canyons, alpine meadows, 7,500-12,000 ft, sun and shade	Perennial forbs with leafless stems, 10-20 in	Many-seeded capsules, May-Sept.		
Wild cherry (bitter cherry) <i>Prunus emarginata</i> (Dougl.) D. Dietr. P3131, P3132	Pine forests, 5,200-9,000 ft, sun and shade	Shrub to small tree with slender upright branches, 8-15 ft	Juicy acidic drupe, Apr.-June	Fruit eaten by songbirds, gamebirds, fox, squirrel, bear; browsed by rabbit, deer, elk	
Western choke-cherry <i>Prunus virginiana</i> L. P3131, P3132	Open woods, rocky slopes, bluffs, breaks and seepage areas	Small tree, to 30 ft tall	Berry, June-Aug.		
Douglas-fir <i>Pseudotsuga menziesii</i> (Mirb.) Franco P3131, P3132	Mixed coniferous forest, cold canyons, 5,200-10,000 ft, sun	Large tree, 100-150 ft, with open broadly conical crown	Cones	Seeds eaten by squirrel; browsed by deer and rabbit	
Slender scurf pea (slimflower scurf pea) <i>Psoralea tenuiflora</i> Pursh P3131, P3132	Plains, hills, 4,000-7,000 ft	Erect perennial forb, to 24 in	Ovoid, 1-seeded pod, May-Sept.		
Indigobush (Nevada dalea) <i>Psoralea polydenius</i> Torr. P3131, P3132	Dry slopes, mesas, 2,500-6,000 ft	Small shrub, .5-6 ft	Ovoid pod		
Hop-tree <i>Ptelea trifoliata</i> L. P3131, P3132	In protected canyons	Shrub, to 18 ft tall	Samara, July-Sept.		
Bracken fern <i>Pteridium aquilinum</i> (L.) Kuhn P3131, P3132	Moist soil, along streams, pine woods, aspen groves, 5,000-8,000 ft, shade	Small ground cover fern, 1-3 ft		Plant eaten by porcupine	Poisonous when eaten in large quantities

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Antelope brush (bitterbrush) <i>Purshia tridentata</i> Pursh P3131, P3132	Open slopes, mesas, coniferous for- ests, 4,000-9,000 ft	Shrub, to 3 ft	Hairy achene, summer	Browsed by rabbit, antelope, deer, elk	Prevents soil ero- sion
Arizona white oak <i>Quercus arizonica</i> Sarg. P3131, P3132	Moist soil along streams, canyons, oak woodland foothills, moun- tains, 5,000- 7,000 ft, sun	Tree with irregu- lar spreading crown, 30-60 ft	Nut (acorn), spring	Food and cover for many birds and mam- mals	
Gambel oak <i>Quercus gambelii</i> Nutt. P3131, P3132	Widespread in mountains, pla- teaus, pine forests, 5,000- 8,000 ft, sun and shade	Shrub to tree, with rounded crown, 6- 70 ft	Nut (acorn), spring	Seeds eaten by song- birds, gamebirds, squirrel, bear; browsed by rabbit and deer	
Shinnery oak (Havard oak) <i>Quercus havardii</i> Rydb. P3131, P3132	Deep sand, south- west great plains, northeastern Arizona and south- eastern Utah	Spreading shrub to small tree, to 15 ft, usually much less	Nut (acorn), summer-fall	Seeds eaten by game- birds, songbirds, squirrel; browsed by rabbit and deer	Only young foliage may be browsed; tannin levels toxic in older leaves
Shrub live oak (scrub oak, California scrub oak, turbinella oak) <i>Quercus turbinella</i> Greene P3131, P3132	Dry slopes, hill- sides, canyons, 3,000-8,000 ft	Evergreen shrub, to 7 ft	Nut (acorn), late summer-fall	Seeds important food for numerous species	Often abundant
Buttercup (crowfoot) <i>Ranunculus</i> spp. L. P3131, P3132	Forest edge, open areas, mountain meadows above 7,000 ft	Perennial herb, 6-24 in	Achene, summer- fall	Seeds eaten by turkey; plant eaten by rabbit and deer	
Squawbush <i>Rhus trilobata</i> Nutt. P3131, P3132	Along streams, in canyons, on slopes in chaparral, 2,500-7,500 ft, sun	Aromatic deciduous shrub, 2-7 ft	Berrylike, Mar.- June	Browsed by deer	
Gooseberry (currant) <i>Ribes</i> spp. L. P3131, P3132	Moist woodland and forest, along streams, 4,000- 11,500 ft	Shrub, 3-6 ft	Berries, summer	Fruit eaten by grouse, fox, coyote; browsed by deer	
Wax currant <i>Ribes cereum</i> Douglt. P3131, P3132	Pine forests, sometimes on cliffs, 5,500- 9,000 ft, sun	Straggly deciduous shrub, 3-6 ft	Several-seeded juicy berry, May- July	Fruit eaten by game- birds and squirrel; browsed by deer	
Gooseberry (currant) <i>Ribes velutinum</i> Greene P3131, P3132	Dry slopes, 2,500- 8,500 ft	Shrub, 2-10 ft	Berries, summer	Fruit eaten by quail and squirrel; browsed by deer and elk	
New Mexican locust <i>Robinia neomexicana</i> Gray P3131, P3132	Canyons, mountains forming almost pure thickets on north-facing slopes, 4,000- 8,500 ft, sun	Spiny shrub or small tree, to 25 ft	Pod, May-Aug.	Seeds eaten by quail and squirrel; browsed by deer	Effective in re- ducing erosion
Wild rose <i>Rosa</i> spp. L. P3131, P3132	Usually moist, well-drained, open sites	Shrubs or vines, usually prickley, leaves alternate, pinnate and ser- rate	Hips	Fruit eaten by grouse, prairie chicken, many songbirds; browsed by deer; escape and nesting cover for song- birds	
Raspberry <i>Rubus strigosus</i> Michx. P3131, P3132	Rich soil in con- iferous forest, 7,000-11,500 ft, sun and shade	Upright deciduous shrub, 4-6 ft	Fleshy aggregate fruit of drupe- lets, June-July	Fruit eaten by quail, turkey, bear, fox, squirrel; browsed by rabbit	

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Mountain willow (scouler willow, fire willow, black willow) <i>Salix scouleriana</i> Barr. P3131, P3132	Along streams, in coniferous for- ests, 8,000- 10,000 ft, sun and shade	Large shrub, small tree, 5-25 ft	Seed capsules, early spring	Seeds eaten by grouse and squirrels; browsed by elk and deer	
Russian thistle <i>Salsola</i> spp. L. P3131, P3132	Dry plains, along roads and on over- grazed ranges below 5,000 ft	Annual forb, to 3 ft	Achene, black shiny seed, early spring	Seeds eaten by quail and songbirds; plant eaten by antelope and deer	
Russian thistle <i>Salsola kali</i> L. P3131, P3132	Mostly on disturb- ed and denuded soils	Annual herb, shrub- like, to 4 ft	Achene	Seeds eaten by quail; plant eaten by ante- lope, deer, elk	Introduced
Elderberry <i>Sambucus</i> spp. L. P3131, P3132	Moist soil along streams, canyons, in coniferous forests, 1,000- 10,000 ft, shade	Large shrub, small tree, 8-33 ft	Berry, June-Aug.	Fruit eaten by squir- rel and fox; plant eaten by deer	
Canadian elder <i>Sambucus cerulea</i> Raf. P3131, P3132	Moist soils in coniferous forest, 5,000-9,000 ft	Many-stemmed shrub, to 20 ft	Globose berry, June-Sept.	Fruit eaten by grouse; browsed by deer and elk	
Red elderberry <i>Sambucus racemosa</i> L. P3131, P3132	Moist soils in coniferous forest, 6,000-10,000 ft	Shrub, 2-12 ft	Berry, Aug.-Oct.	Same as <i>S. cerulea</i>	
Greasewood <i>Sarcobatus vermiculatus</i> Torr. P3131, P3132	Flat areas, saline soil, below 6,500 ft	Shrub, 1-9 ft	Winged achene, summer-fall	Seeds eaten by quail; browsed by rabbit and antelope	Common dominant on saline soil
Groundsel <i>Senecio</i> spp. L. P3131, P3132	Openings in pine woods, 1,000- 10,500 ft, sun	Forb or shrub, 1-3 ft	Achene, July-Oct.		
Groundsel (gutterweed). <i>Senecio serra</i> Hook. P3131, P3132	Meadows and moist soils along streams, 8,500- 10,500 ft	Perennial herb, 2-4 ft	Achene, summer- fall		
Buffaloberry <i>Shepherdia</i> spp. Nutt. P3131, P3132	Along streams, 3,500-6,500 ft	Erect shrub or small tree, 6-18 ft	Ellipsoid, berry- like	Fruit eaten by quail, songbirds, black bear	
Squirreltail <i>Sitanion hystrix</i> Nutt. P3131, P3132	Desert slopes to subalpine meadows	Tufted, erect perennial grass, 6-28 in	Stiffly awned grain, year round, depending on habitat		A preferred forage
Goldenrod <i>Solidago</i> spp. L. P3131, P3132	Forest openings, mountain meadows, above 7,000 ft	Perennial herb, 1-4 ft	Achene, late summer-fall	Plant eaten by rab- bit and deer	
Indian-grass <i>Sorghastrum nutans</i> Nash P3131, P3132	Prairies, open woods, dry canyon bottoms, pine forest in arid areas	Perennial grass, 2-6 ft	Grain, July-Nov.		
Globe mallow <i>Sphaeralcea</i> spp. St. Hil. P3131, P3132	Dry mesas to pine forests, 1,000- 8,000 ft	Erect perennial, 5-50 in	Capsule, fall		
Globe mallow (desert- hollyhock, desert mallow) <i>Sphaeralcea ambigua</i> Gray P3131, P3132	Dry rocky slopes, canyons below 4,000 ft	Perennial forb or erect shrub, 1.5-3 ft	Pubescent seeds		

continued

Table P3130-61.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Globe mallow <i>Sphaeralcea fendleri</i> Gray P3131, P3132	Coniferous forests and meadows, 3,000-8,000 ft	Perennial herb, 2-4.5 ft	Capsule, summer-fall	Plant eaten by deer	
Globe mallow <i>Sphaeralcea grossalariifolia</i> (H. & A.) Rydb. P3131, P3132	Dry plateaus in volcanic soils	Perennial forb or shrub, 2-3 ft	Indehiscent, 1-seeded		
Alkalai sacaton <i>Sporobolus airoides</i> Torr. P3131, P3132	Sandy plateaus and washes, heavy soiled bottomlands, often alkaline, to 6,500 ft	Tightly tufted perennial grass	Grain, June-Nov.		Good range grass on alkaline soil
Sand dropseed <i>Sporobolus cryptandrus</i> Torr. P3131, P3132	Exposed sites on sandy soil, below 7,000 ft	Perennial grass, 15-50 in	Grain, July-Nov.	Plant eaten by deer; seeds eaten by turkey	
Black dropseed <i>Sporobolus interruptus</i> Vasey P3131, P3132	Dry soils in forest openings, meadows, oak woodland, pine forests, 5,000-7,000 ft	Perennial grass, 16-48 in	Grain, July-Oct.	Seeds eaten by turkey; plant eaten by elk and deer	Only in Arizona
Needlegrass <i>Stipa</i> spp. L. P3131, P3132	Mountain meadows, woodland openings above 5,000 ft	Perennial grass, 10-30 in	Grain, summer-fall	Plant eaten by deer and elk	
Subalpine needlegrass (Columbian needlegrass) <i>Stipa columbiana</i> Macoun P3131, P3132	Meadows, dry plains, forest openings, 5,000-8,000 ft	Perennial grass, 12-30 in	Grain, summer-fall	Plant eaten by deer, elk, sheep	
Needle-and-thread <i>Stipa comata</i> Trin. P3131, P3132	Prairies and grassy dry slopes	Tufted perennial, culms erect, to 3.5 ft tall	Caryopsis, May-July	Seeds eaten by a few species of songbirds	
Letterman needlegrass <i>Stipa lettermanii</i> Vasey P3131, P3132	Open woodlands, forests above 5,500 ft	Tufted perennial grass, 12-24 in	Grain, Aug.-Nov.	Same as <i>Stipa</i> spp.	
Sea blite <i>Suaeda nigra</i> (Raf.) Macbr. P3131, P3132	Saline soil	Erect perennial, 8-30 in	Black seeds		Halophyte occurring with <i>Sarcobatus</i> spp.
Snowberry <i>Symphoricarpos</i> spp. Boehm. P3131, P3132	Damp places to dry, stony slopes, 3,200-10,500 ft	Low shrub, to 9 ft	Nutlets	Seeds eaten by grouse, songbirds, bear; browsed by deer	
Snowberry <i>Symphoricarpos oreophilus</i> Gray P3131, P3132	Slopes and along streams in mountains, coniferous forests, 5,500-9,000 ft	Erect or trailing shrub, 1-6 ft	Berries, Apr.-Aug.	Browsed by deer	
Dandelion <i>Taraxacum officinale</i> Weber P3131, P3132	Meadows and roadsides, up to 9,000 ft	Perennial herb, 5-8 in	Achene, spring-fall	Seeds eaten by quail and turkey; plant eaten by deer	
White felt-thorn <i>Tetradymia comosa</i> Gray P3131, P3132	Dry soils below 5,000 ft	Shrub, 2-4 ft	Achene, summer-fall		

continued

Table P3130-61.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Bald-leaved felt-thorn <i>Tetradymia glabrata</i> Gray P3131, P3132	Dry open areas, 2,000-7,000 ft	Shrub, 1-3 ft	Achene, summer		
Meadow-rue <i>Thalictrum fendleri</i> Engelm. P3131, P3132	Pine forests, mountain meadows, 5,000-9,500 ft	Perennial herb, 1-2 ft	Achene, spring- fall		
Thelypody <i>Thelypodium sagittatum</i> (Nutt.) Endl. P3131, P3132	Meadows, plans	Small shrub, 12- 32 in	Long pod		Halophyte occurring with <i>Sarcobatus</i> spp.
Mountain clover <i>Trifolium fendleri</i> Green P3131, P3132	Moist rich soils, conifer forests and meadows	Perennial herb, 4-20 in	Legume, summer- fall	Seeds eaten by turkey and quail; plant eaten by deer	
Spike trisetum <i>Trisetum spicatum</i> L. P3131, P3132	Alpine meadows, slopes, boulder fields, 10,000- 12,000 ft	Densely tufted erect perennial grass, 6-20 in	Grain, July-Oct.		
Whortleberry (blueberry) <i>Vaccinium oreophyllum</i> Rydb. P3131, P3132	Open woods, hill- sides, 8,000- 11,000 ft, sun	Low deciduous shrub with angled twig	Round juicy berry, June-July	Fruit eaten by fox and turkey; browsed by deer	
Great mullein <i>Verbascum thapsus</i> L. P3131, P3132	Forest edges, meadows, road- sides, open areas, 5,000- 9,000 ft	Biennial forb, to 6 ft	Capsule, summer- fall		Introduced
American vetch <i>Vicia americana</i> Muhl. P3131, P3132	Conifer woodlands, meadows, to 10,000 ft	Perennial forb, 4-18 in	Legume, summer- fall	Seeds eaten by dove, quail, turkey, grouse	
Violet <i>Viola</i> spp. L. P3131, P3132	Open conifer for- est, mountain meadows, above 7,000 ft	Perennial herb, 3-8 in	Capsule, spring- summer	Seeds eaten by quail; plant eaten by rab- bit	Some species intro- duced
Beckwith's violet <i>Viola beckwithii</i> T. & G. P3131, P3132	Dry gravelly soil, 3,000-6,000 ft	Low forb, to 3 in	Ovoid with shiny seed	Seeds eaten by dove and grouse	
Mulsears wyethia <i>Wyethia amplexicaulis</i> Nutt. P3131, P3132	Open foothills at moderate eleva- tions	Perennial forb, to 2 ft	Achene	Seeds eaten by grouse	
Spanish dagger (datil, fleshy-fruited yucca, yucca) <i>Yucca baccata</i> Torr. P3131, P3132	Dry, rocky slopes of desert grass, lands and conifer woodland, 3,000- 8,000 ft	Shrub to small tree, 1-20 ft	Large fruit, 6 in long	Nectar for humming- birds; cover for woodpeckers	
Small soapweed <i>Yucca glauca</i> Nutt. P3131, P3132	Dry plains, slopes, 4,000-8,500 ft	Shrubby plant to 6 ft	Dry capsule, 3-celled	Seeds eaten by small mammals; nesting cover for songbirds	
Sandcorn (foothill deathcamas) <i>Zigadenus paniculatus</i> (Nutt.) Wats. P3131, P3132	Dry areas, 4,000- 6,000 ft	Perennial forb, to 24 in	3-celled with many seeds		

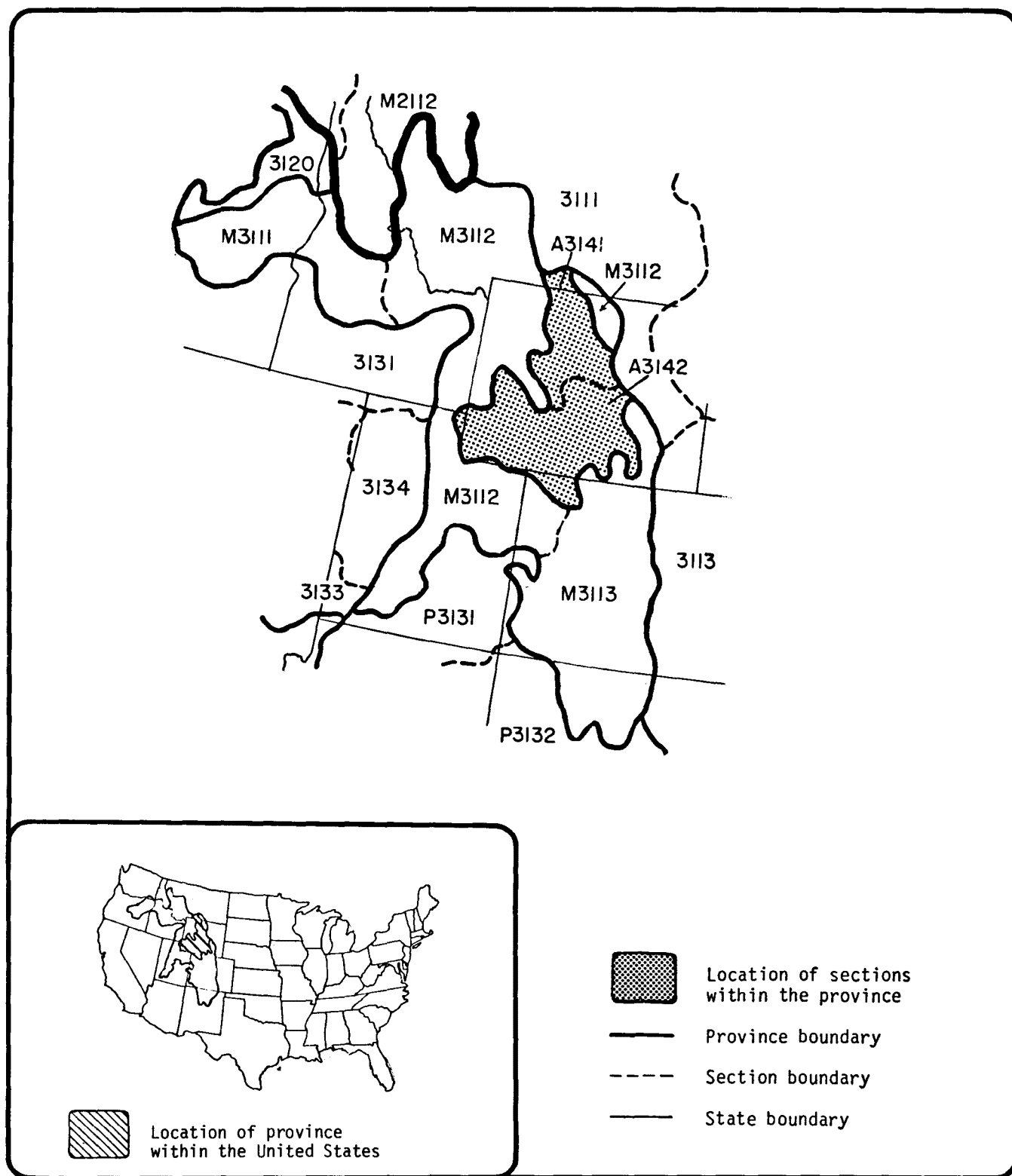


Figure 62.1 Province A3140, Wyoming Basin; Sections A3141, Wheatgrass—Needlegrass—Sagebrush, and A3142, Sagebrush—Wheatgrass.

62 PROVINCE A3140 Wyoming Basin

SECTION A3141

WHEATGRASS—NEEDLEGRASS—SAGEBRUSH

SECTION A3142

SAGEBRUSH—WHEATGRASS

Sections A3141 and A3142 are basically the same. They comprise a high (4000 to 6000 feet) expanse of flatland bounded by mountain ranges rising to 13,000 feet, occasionally interrupted by isolated ranges. Some of the major boundary ranges are the Laramie Range, the Beartooth Mountains, the Absavoka Range, the Wind River Range, and the Medicine Bow Range. The Bighorn Mountains are the largest isolated range. The North Platte and the Green River traverse the basin. River bluffs and an occasional hogback ridge of bedrock break

the monotony of the expanses of level topography.

The basin is relatively cold and dry. Shrubland dominates the floor of the basin. Streamside shrubs and forests of cottonwood and willow trees provide extensive habitats with food and shelter for wildlife. Pine trees grow on the hogbacks and lower slopes of the mountains. The higher slopes of the mountains support subalpine forest of Engelmann spruce and subalpine fir. Ridges and peaks exceeding approximately 10,000 feet elevation are in the Alpine Tundra Region (Veireck 1966) above tree limit. Greasewood and saltbush are common in the most arid lowlands where soils are high in salts.

The sagebrush vegetation is provided with some break in its otherwise monotonous appearance by clusters of shrubs which are taller than the surrounding individuals. Animals concentrate in, and may be the cause of, these islands of taller plants.

Table A3140-62.1 [A3141, A3142] Selected Plant Species Common to the Wheatgrass—Needlegrass—Sagebrush and Sagebrush—Wheatgrass Sections

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Juniperus scopulorum</u> <u>Pinus albicaulis</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u>	Rocky Mountain juniper Whitebark pine Limber pine Ponderosa pine	<u>Juniperus scopulorum</u> <u>Pinus albicaulis</u> <u>Pinus flexilis</u> <u>Pinus ponderosa</u>	Rocky Mountain juniper Whitebark pine Limber pine Ponderosa pine
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Amelanchier</u> spp. <u>Artemisia tridentata</u> <u>Atriplex canescens</u> <u>Chrysothamnus nauseosus</u> <u>Purshia tridentata</u> <u>Sarcobatus vermiculatus</u> <u>Symphoricarpos</u> spp.	Serviceberry Big sagebrush Four-wing saltbush Rabbit brush Bitterbrush Greasewood Snowberry	<u>Amelanchier</u> spp. <u>Artemisia tridentata</u> <u>Atriplex canescens</u> <u>Chrysothamnus nauseosus</u> <u>Purshia tridentata</u> <u>Sarcobatus vermiculatus</u> <u>Symphoricarpos</u> spp.	Serviceberry Big sagebrush Four-wing saltbush Rabbit brush Bitterbrush Greasewood Snowberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Agropyron smithii</u> <u>Agropyron trachycaulum</u> <u>Arenaria</u> spp. <u>Atriplex</u> spp. <u>Bouteloua</u> spp. <u>Bromus tectorum</u> <u>Carex filifolia</u> <u>Erigeron engelmannii</u> <u>Koeleria cristata</u> <u>Oryzopsis hymenoides</u> <u>Poa fendleriana</u> <u>Polygonum viviparum</u> <u>Stipa</u> spp. <u>Trifolium gymnocarpon</u>	Western wheatgrass Slender wheatgrass Sandwort Mat saltbrush Grama Cheat Sedge Daisy Prairie junegrass Indian rice-grass Fendler bluegrass Devil's shoestring Needlegrass Clover	<u>Agropyron smithii</u> <u>Agropyron trachycaulum</u> <u>Arenaria</u> spp. <u>Atriplex</u> spp. <u>Bouteloua</u> spp. <u>Bromus tectorum</u> <u>Carex filifolia</u> <u>Erigeron engelmannii</u> <u>Koeleria cristata</u> <u>Oryzopsis hymenoides</u> <u>Poa fendleriana</u> <u>Polygonum viviparum</u> <u>Stipa</u> spp. <u>Trifolium gymnocarpon</u>	Western wheatgrass Slender wheatgrass Sandwort Mat saltbrush Grama Cheat Sedge Daisy Prairie junegrass Indian rice-grass Fendler bluegrass Devil's shoestring Needlegrass Clover
Habitat conditions: Moist to wet/well-drained to impeded				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Populus</u> spp.	Cottonwood	<u>Populus</u> spp.	Cottonwood
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Acer negundo</u>	Box-elder	<u>Acer negundo</u>	Box-elder
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Salix</u> spp.	Willow	<u>Salix</u> spp.	Willow

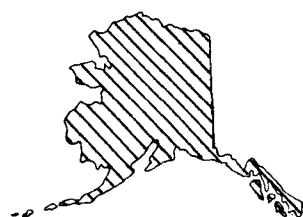
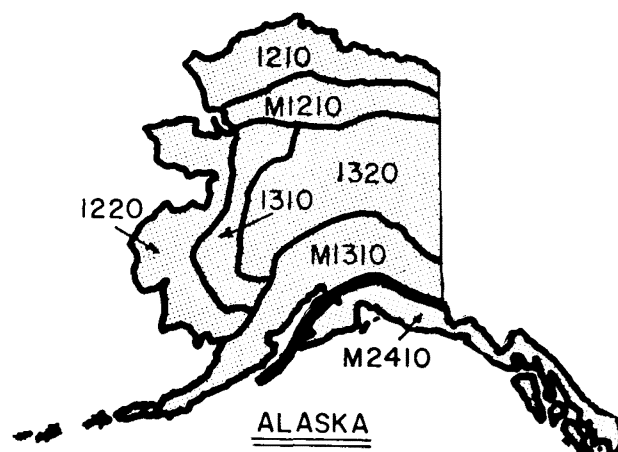
Table A3140-62.2 Ecological Characteristics of Selected Plant Species Common to the Wyoming Basin

Species	Habitat	Form	Fruit	General wildlife use	Notes
Box-elder <u>Acer negundo</u> L. A3141, A3142	Streambanks and wet to moist places	Small tree with green glabrous branches, leaves compound	Samara, Sept.-Oct.	Seeds eaten by birds, squirrels, mule deer	
Western wheatgrass <u>Agropyron smithii</u> Rydb. A3141, A3142	Heavy soils, alkali-tolerant	Erect, sod-forming perennial, to 2 ft tall			Very important range species
Slender wheatgrass <u>Agropyron trachycaulum</u> (Link) Malte A3141, A3142	Moist areas	Erect, tufted perennial, to 10 in tall		Major use to wildlife is as forage	
Serviceberry <u>Amelanchier</u> spp. Medic. A3141, A3142	Riverbanks, hillsides and into the mountains	Shrub or small tree, leaves alternate, simple, toothed or entire	Pome, berrylike	Fruit eaten by many species of birds; browsed by moose, black bear, deer, rabbit, beaver and many others	
Sandwort <u>Arenaria</u> spp. L. A3141, A3142	Moist to dry, shaded to open woods	Perennial, forming loosely matted patches, stems round to 4-angled, erect, to 6 in tall	Capsule		
Big sagebrush <u>Artemisia tridentata</u> Nutt. A3141, A3142	Dry plains and hills, in sun	Shrub, to 12 ft tall, much-branched, branches erect, leaves 3-toothed	Achene, Oct.	Seeds eaten by grouse; browsed by mule deer and bighorn sheep	
Mat saltbrush <u>Atriplex</u> spp. L. A3141, A3142	Dry mesas and alkaline valleys, in sun	Shrub or herb, usually low	Achene, Aug.-Sept.		High nutritional value for livestock
Four-wing saltbrush <u>Atriplex canescens</u> (Pursh) Nutt. A3141, A3142	Dry mesas and alkaline valleys, in sun	Shrubby, leaves to 2 in long, evergreen	Achene, Aug.-Sept.	Seeds eaten by squirrels; browsed by rabbits	High nutritional value for livestock
Grama <u>Bouteloua</u> spp. Lag. A3141, A3142	Rocky hills and plains	Perennial, densely tufted, erect to 2 ft tall	Caryopsis		
Cheat <u>Bromus tectorum</u> L. A3141, A3142	Waste places and sandy soil	Erect or spreading, slender to 2 ft tall, tufted, annual		Seeds eaten by kangaroo rat, large number of birds, small mammals	
Sedge <u>Carex filifolia</u> Nutt. A3141, A3142	Dry plains and hills	Forming dense tussocks to 1 ft tall, stem angled	Nutlet	Seeds eaten by a large number of birds and mammals	
Rabbit brush <u>Chrysothamnus nauseosus</u> (Pursh) Britt. A3141, A3142	Dry, sunny, hillsides		Achene	Winter browse for elk, moose, mule deer	
Daisy <u>Erigeron engelmannii</u> A. Nels. A3141, A3142	Stoney slopes	Stem decumbent at base, to 8 in long, basal leaves numerous			
Rocky Mountain juniper <u>Juniperus scopulorum</u> Sarg. A3141, A3142	Dry, well-drained in sun, 5,000-9,500 ft	Bushy shrub, occasionally to 40 ft tall, leaves scale-like, .13 in long	Berry, year round	Browsed by bighorn sheep	Very drought-resistant

continued

Table A3140-62.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Prairie junegrass <i>Koeleria cristata</i> (L.) Pers. A3141, A3142	Prairie, open woods, sandy soil, rocky slopes below 9,000 ft	Tufted or bunched perennial grass, 4-28 in	Grain, May-Oct.	Plant eaten by deer and elk	Good native forage; rarely locally abundant
Indian rice-grass <i>Oryzopsis hymenoides</i> (R. & S.) Ricker A3141, A3142	Open sandy plains, hills, woodlands at medium elevations	Densely tufted perennial grass, 12-24 in	Grain, May-Nov.	Seeds eaten by gamebirds; plant eaten by deer	Excellent range-grass in semi-arid areas
Whitebark pine <i>Pinus albicaulis</i> Engelm. A3141, A3142	Dry, well-drained site, in sun	Tree, to 40 ft tall, crown irregular, leaves in fascicles of 5, to 2.5 in long	Cone, matures Aug.-Sept. of 2nd year, seeds only released with rotting of cone	Seeds eaten by crow, porcupine, squirrel; browsed by bighorn sheep	More tolerant of shade in moist areas
Limber pine <i>Pinus flexilis</i> James A3141, A3142	Summits, ridges, rocky foothills, 4,000-10,000 ft elevation	Tree, to 50 ft tall, crown broad, open with plumelike branches, needles in fascicles of 5, to 3 in long	Cone, maturing in Sept.	Seeds eaten by grouse, porcupine, squirrel	Very intolerant of shade
Ponderosa pine <i>Pinus ponderosa</i> Laws. A3141, A3142	Dry, well-drained, in sun	Tree, to 180 ft tall, needles in fascicles of 3, 4-11 in long	Cone, ripe Aug.-Sept. of second season	Major browse for mule deer; seeds eaten by grouse, porcupine, squirrel, quail	Very drought-resistant
Fendler bluegrass <i>Poa fendleriana</i> (Steud.) Vasey A3141, A3142	Hills and tablelands	Stem, to 2 ft tall, leaf blades flat or convolute		Seeds eaten by coots, as well as a large number of other birds and mammals	
Devil's shoestring <i>Polygonum viviparum</i> L. A3141, A3142	Alpine swamps	Blades of basal leaves oblong, to 4 in long, 1 in wide	Achene, dull brown	Seeds eaten by birds and small mammals	
Cottonwood <i>Populus</i> spp. (Tourn.) L. A3141, A3142	Well-drained to moist, sunny sites	Small to large fast-growing, but short-lived tree	Capsule	Seeds eaten in all seasons by many species of wildlife	
Bitterbrush <i>Purshia tridentata</i> (Pursh) DC. A3141, A3142	Dry, well-drained, in sun	Shrub, to 10 ft tall, leaves 3-lobed at apex, bark chestnut-brown	Achene, Aug.	Browsed by mule and black-tailed deer, pica, chipmunk, antelope	
Willow <i>Salix</i> spp. L. A3141, A3142	Wet areas, streambanks, sand bars, low areas	Shrubs to trees, rapid-growing, linear leaves	Capsule	Seeds eaten by many species of birds; browsed by rabbit and moose	Easily damaged by wind
Greasewood <i>Sarcobatus vermiculatus</i> (Hook.) Torr. A3141, A3142	Alkaline flats, in sun	Erect shrub, to 10 ft tall, leaves fleshy, 1.5 in long	Achene	Browsed by porcupine, jackrabbit, chipmunk	Can withstand pH concentrations to 8.0
Needlegrass <i>Stipa</i> spp. L. A3141, A3142	Mountain meadows, woodland openings above 5,000 ft	Perennial grass, 10-30 in	Grain, summer-fall	Plant eaten by deer and elk	
Snowberry <i>Symphoricarpos</i> spp. Duham. A3141, A3142	Moist, well-drained sites	Low branching upright shrub, to 6 ft tall	Drupe, clustered	Fruit eaten by several species of birds; browsed by black and white-tailed deer and grouse	
Clover <i>Trifolium gymnocarpon</i> Nutt. A3141, A3142	Dry hills	Leaflets oval, .2 in long	Pod	Plant eaten, to limited extent, by a large number of species	



Location of province within the United States



Location of provinces within Alaska



Province boundary



Section boundary



State boundary

Figure 63.1 Provinces 1210, Arctic Tundra; 1220, Bering Tundra; 1310, Yukon Parkland; 1320, Yukon Forest; M1210, Brooks Range; M1310, Alaska Range; and M2410, Pacific Forest.

**63 PROVINCE 1210
Arctic Tundra
PROVINCE 1220
Bering Tundra
PROVINCE 1310
Yukon Parkland
PROVINCE 1320
Yukon Forest
PROVINCE M1210
Brooks Range
PROVINCE M1310
Alaska Range
PROVINCE M2410
Pacific Forest**

PROVINCE 1210, ARCTIC TUNDRA

Alaska is divided into east-west oriented regions by the Brooks Range in the north and the Alaska Range in the south. Between the mountains there is an immense interior lowland. South of the Alaska Range there is a narrow coastal region. North of the Brooks Range the "North Slope" descends steeply from the crest of the range down to the coastal plain and then drops at a gentle angle to the Arctic Ocean.

The Arctic Tundra occupies the Arctic Coastal Plain. The gently sloping land is cut by streams of a variety of sizes which generally meander enough to erode in some areas and to deposit in others. Willow shrubs and a few patches of small cottonwood trees grow on the river floodplains, but they are usually trimmed off if they rise above the winter snow cover which accumulates in the depressed stream channel. The uplands between streams are dominated by low, often creeping shrubs, small flowering herbs, and many species of sedges and grasses. The sedges and grasses in wet coastal areas often grow in tussocks a few inches wide and over a foot tall.

There are no evergreen trees north of the Brooks Range; the deciduous cottonwood trees form only a very minute part of the vegetation.

Polygonal-patterned ground is a conspicuous and fascinating feature of immense areas of the Arctic Tundra. The polygons are up to many feet in diameter and may have either raised or depressed centers of one to a few feet. The Arctic Slope soil parent material is relatively fine, textured, and uniform over large areas. River-cut bluffs and an occasional pingo (conical mound built by cryological processes and cored by a mass of ice) are the only breaks in the monotony of the landscape.

Permafrost (permanently frozen ground) underlies the entire Arctic Tundra Province. The surface layers of vegetation and soil thaw out to a depth of a few inches to a few feet each summer, with deepest patches along streams, lakes, and ponds. Beneath this thin "active layer," permafrost extends for hundreds of feet. This frozen layer absorbs much of the average 10 inches of precipitation falling each year.

Many plant species are nurtured by the diversity of local habitats. Arising from geomorphic processes, this habitat diversity includes cryopedology and biological

processes, such as burrowing of uplands by small mammals and grazing by large mammals.

PROVINCE 1220, BERING TUNDRA

Province 1220 is the equivalent of Viereck's (1966) Wet Tundra. Found on the Arctic coast and the shores of the Bering Sea, it includes the Seward Peninsula and the broad delta of the Yukon River. The landscape is generally flat and wet with many ponds and lakes. Polygonal ground and frost ridges are common features. The lowland vegetation is dominated by sedges and cottongrass, which generally do not form tussocks as they do in other types of tundra. Rocky uplands are dominated by mountain-avens.

The 10 to 40 inches of precipitation and the relatively mild temperature (10° to 30° F mean annual) create a wet and cool environment which lacks the seasonal extremes typical of other tundra regions. Consequently, this region is sometimes called oceanic tundra.

Additional variety in the landscape is produced by the genesis of various plant communities reacting to local effects of frost action, permafrost, local relief, parent-material differences, drainage patterns, irregular snow accumulation, and animal activity.

The forest of the Alaska interior extends up the south slope of the Brooks Range to approximately 2800 feet elevation. Altitudinal bands dominated by alder and willows are above the forest limit. Above the shrub areas, the landscape is occupied by Alpine Tundra (Viereck 1966) vegetation. The only trees north of the Continental Divide are small patches of dwarfed cottonwoods in protected pockets on the Arctic Slope.

The Brooks Range environments are highly variable. Some ecosystems are little more than bare rock, while others are relatively lush growths of herbs and low shrubs.

**PROVINCES 1310 AND 1320
YUKON PARKLAND AND YUKON FOREST
(THE INTERIOR FOREST)**

Since Bailey's (1976) procedure of creating two forest provinces in interior Alaska results in an apparent regional separation of forest types into relatively distinct ecoregions which follow no natural features of the landscape, this description follows Viereck's categorization (1966) and regroups Bailey's two province types into one region, the Interior Forest.

The Interior Forest occupies the expansive interior plateau of Alaska which lies between the two great mountain systems, the Brooks Range and the Alaska Range. This landscape consists of gently rolling uplands between giant, meandering rivers, such as the Yukon and the Tanana systems. The climatic climax forest of this boreal or tiaga forest is dominated by white spruce and paper birch. A variety of successional, topographic, and edaphic forest stands are also present.

The Interior Forest environment has mild winds, but extreme temperatures. Mean annual temperature ranges from 20° to 30° F with extremes of -40° to +90° F. Frozen ground occurs in scattered areas, not continuously as in the Arctic. Precipitation varies from 6 to 12 inches per year in different localities. Snowfall averages 55 inches

per year, with a snow cover from mid-October to late April. Evaporation is low, and impermeable permafrost holds soil water to shallow layers; bogs and wet areas are common. Extensive fires have always been an important ecological feature in the Interior Forest.

PROVINCE M1210, BROOKS RANGE

The Brooks Range is a spectacular complex of mountain ranges. The entire mass has an east-west orientation which results in an immense barrier to movement of air masses, plants, animals, and people. One product of the physiography is the separation of the Arctic region to the north from the great interior lowland of subarctic forest.

The Brooks Range's peaks rise to elevations of over 6000 feet; some of its passes, Anaktovic, made famous by travel of native peoples, and Atigan, of more recent interest as the route of an oil pipeline, are as high as 2500 feet. Although there are no active glaciers in the range today, the landscape bears many features of glacial erosion and deposition.

PROVINCE M1310, ALASKA RANGE

The presence of the North American continent's highest mountain, Mount McKinley (20,320 feet high), makes the Alaska Range a noteworthy group of mountains, many of which are over 12,000 feet high. Similar mountains of volcanic origin form the Aleutian Island chain, however, most Aleutian mountains rise from the sea while those of the Alaska Range rise from plateaus covered with evergreen forest. These landscapes have been affected by glaciation but currently active glaciers are restricted to the Alaska Range. The Alaska Range is largely Alpine Tundra and Moist Tundra, while the

Aleutian Islands have Alpine, Moist, and Wet Tundra in Veireck's (1966) classification.

In this relatively moist and windy province, vegetation changes slowly with increases in altitude. The general pattern is a birch zone near sea level, changing to a zone of sitka alder at about 400 feet, changing to Alpine Tundra at about 550 feet. The alder shrubs also occur on rocky sites in the birch zone.

PROVINCE M2410, PACIFIC FOREST

The Pacific Forest Province in Alaska is an extension of the continuous coastal, temperate rain forest that extends along the Pacific coast from northern California to Cook Inlet in Alaska. The province as discussed here extends from Cook Inlet southeast along the coast to Dixon Entrance and includes the islands of the Alexander Archipelago.

The climate is considered maritime—cool and moist. A narrow temperature range moderated by warm adjacent ocean currents creates cool summers and mild winters with ample precipitation spread throughout the year.

Vegetational types include dense stands of coastal spruce—hemlock forest dominated by Sitka spruce and western hemlock mixed with other conifers and black cottonwood. Associated conifer species change as species drop out with increasing latitude. At higher elevations, above 2500 to 3000 feet, a distinct alpine zone of vegetation develops. Dominant alpine plants include heaths, grasses, and other low plants. Trees occur here only as stunted or shrublike forms due to the adverse weather conditions. The Selected Plant Species Table for this province can be found in section 56.

Table 1210-63.1 Selected Plant Species Common to the Arctic Tundra

Growth form	Early successional plants		Late successional plants	
<u>Habitat conditions: Dry to moist/excessive to well-drained</u>				
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Betula glandulosa</u> <u>Salix lanata</u> <u>Salix ovalifolium</u> <u>Salix reticulata</u> <u>Salix planifolia</u>	Resin birch Willow Ovalleaf willow Netleaf willow Diamondleaf willow	<u>Betula glandulosa</u> <u>Salix</u> spp. <u>Vaccinium vitis-idaea</u>	Resin birch Willow Mountain cranberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Cladonia</u> spp. <u>Dryas integrifolia</u> <u>Dryas octapetala</u> <u>Papaver radiculatum</u> <u>Sphagnum</u> spp.	Reindeer lichen White mountain-avens Entire-leaf mountain-avens Arctic poppy* Peat moss	<u>Carex</u> spp. <u>Cladonia</u> spp. <u>Kobresia myosuroides</u> <u>Pedicularis</u> spp. <u>Poa</u> spp. <u>Polygonum bistorta</u> <u>Saxifraga</u> spp.	Sedge Reindeer lichen Kobresia* Lousewort* Bluegrass Mountain meadow bistort* Saxifrage*
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>				
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Betula glandulosa</u> <u>Salix</u> spp.	Resin birch Willow	<u>Andromeda polifolia</u> <u>Betula glandulosa</u> <u>Betula nana</u> <u>Carex</u> spp. <u>Eriophorum</u> spp. <u>Ledum decumbens</u> <u>Poa</u> spp. <u>Rhacomitrium lanuginosum</u> <u>Salix alexensis</u> <u>Salix arbusculoides</u> <u>Salix candida</u> <u>Vaccinium uliginosum</u>	Bog rosemary Resin birch Dwarf arctic birch Sedge Sedge* Narrowleaf Labrador-tea Bluegrass Woolly moss Feltleaf willow Littleleaf willow Willow* Bog blueberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Carex</u> spp. <u>Deschampsia</u> spp. <u>Epilobium angustifolium</u> <u>Epilobium latifolium</u> <u>Frisetum</u> spp. <u>Poa</u> spp.	Sedge Hairgrass Fireweed* Fireweed* Grass Bluegrass	<u>Eleocharis</u> spp.	Spike rush*

Table 1220-63.1 Selected Plant Species Common to the Bering Tundra

Growth form	Early successional plants	Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained			
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Betula glandulosa</u> <u>Betula nana</u> <u>Ledum decumbens</u> <u>Salix fuscescens</u> <u>Salix ovalifolium</u> <u>Salix planifolia</u> <u>Salix reticulata</u>	Resin birch Dwarf arctic birch Narrowleaf Labrador-tea Alaska bog birch Ovalleaf willow Diamondleaf willow Netleaf willow	Same as "Early successional plants"
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Alectoria pubescens</u> <u>Androsace ochotensis</u> <u>Arctostaphylos alpina</u> <u>Avenaria arctica</u> <u>Carex microshaeta</u> <u>Cassiope tetragona</u> <u>Cetraria hepatica</u> <u>Eriophorum angustifolium</u> <u>Vaccinium uliginosum</u> <u>Ledum decumbens</u> <u>Lupinus arcticus</u> <u>Luzula confusa</u> <u>Oxytropis nigrescens</u> <u>Peltigera scabrosa</u> <u>Polytrichum</u> spp.	Hair lichen* Androsace* Alpine bearberry Arctic sandwort* Sedge* Four-angle mountain heather Iceland lichen* Cottongrass* Bog blueberry Narrowleaf Labrador-tea Arctic lupine Northern wood-rush Blackish oxytrope* Lichen* Haircap moss*	

continued

Table 1220-63.1 (Concluded)

Growth form	Early successional plants		Late successional plants	
	<u>Dry/excessive (Continued)</u>			
Lesser vegetation -- (Continued)	<u>Salix arctica</u> <u>Silene acaulis</u> <u>Vaccinium vitis-idaea</u>	Arctic willow Campion moss Mountain cranberry		
	<u>Habitat conditions: Moist to wet/well-drained to impeded</u>			
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Salix</u> spp.	Willow	<u>Betula nana</u> <u>Ledum procumbens</u> <u>Salix</u> spp. <u>Sambucus callicarpa</u> <u>Viburnum edule</u>	Dwarf Arctic birch Labrador-tea Willow Pacific red elderberry Highbush-cranberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Aconitum delphinifolium</u> <u>Avenaria macrocarpa</u> <u>Betula nana</u> <u>Carex aquatilis</u> <u>Deschampsia caespitosa</u> <u>Eriophorum vaginatum</u> <u>Festuca brachyphylla</u> <u>Juncus biglumis</u> <u>Ledum decumbens</u> <u>Luzula nivalis</u> <u>Pedicularis pennellii</u> <u>Petasites frigidus</u> <u>Phyllodoce coerula</u> <u>Potentilla egedii</u> <u>Primula borealis</u> <u>Salix arbutifolius</u> <u>Salix pulchra</u> <u>Saxifraga</u> spp. <u>Vaccinium oxycoccos</u> <u>Vaccinium uliginosum</u> <u>Vaccinium vitis-idaea</u>	Aconite* Long-podded sandwort* Dwarf Arctic birch Aquatic sedge* Hairgrass* Cottongrass* Festuca* Two-flowered rush* Narrowleaf Labrador-tea Snow woodrush* Lousewort* Arctic sweet coltsfoot* Blue mountain heath Pacific silverweed* Northern primrose* Willow* Willow* Saxifrage* Bog cranberry Bog blueberry Mountain cranberry		

Table 1310, 1320-63.1 Selected Plant Species Common to the Yukon Parkland and Yukon Forest

Growth form	Early successional plants		Late successional plants	
<u>Habitat conditions: Dry to moist/excessive to well-drained</u>				
Tall-growing trees, over 40 ft (Must be controlled)			<u>Picea glauca</u>	White spruce
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be ac- ceptable at ROW edge)			<u>Salix alexensis</u>	Feltleaf willow
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Betula glandulosa</u>	Resin birch	<u>Rosa acicularis</u> <u>Salix bebbiana</u> <u>Salix scouleriana</u> <u>Shepherdia canadensis</u> <u>Vaccinium vitis-idaea</u>	Prickly rose Bebb willow Scouler willow Buffaloberry Mountain cranberry
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Polygonum bistortoides</u> <u>Vicia</u> spp.	Bistort* Vetch*	<u>Artemisia alaskana</u> <u>Empetrum nigrum</u> <u>Equisetum</u> spp.	Alaskan sagebrush Crowberry Horsetail
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Betula papyrifera</u> <u>Populus balsamifera</u> <u>Populus tremuloides</u> <u>Populus trichocarpa</u>	Paper birch Balsam poplar Quaking aspen Black poplar	<u>Larix laricina</u> <u>Picea mariana</u>	Tamarack Black spruce

continued

Table 1310, 1320-63.1 (Concluded)

Growth form	Early successional plants	Late successional plants
Moist/well-drained (Continued)		
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Alnus crispa</u> <u>Arctostaphylos rubra</u> <u>Empetrum nigrum</u> <u>Ledum groenlandicum</u> <u>Rosa acicularis</u> <u>Salix arbusculoides</u> <u>Salix bebbiana</u>	Green alder Red-fruited bearberry Crowberry Labrador-tea Prickly rose Littleleaf willow Bebb willow
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Ribes triste</u> <u>Vaccinium uliginosum</u> <u>Vaccinium vitis-idaea</u> <u>Viburnum edule</u>	American red currant Bog blueberry Mountain cranberry Highbush-cranberry

Table M1210-63.1 Selected Plant Species Common to the Brooks Range

Growth form	Early successional plants		Late successional plants	
<u>Habitat conditions: Dry to moist/excessive to well-drained</u>				
Low-growing trees, over 40 ft (Must be controlled)	<u>Betula papyrifera</u> <u>Populus tremuloides</u>	Paper birch Quaking aspen	<u>Picea glauca</u> <u>Picea mariana</u> <u>Salix alexensis</u>	White spruce Black spruce Feltleaf willow
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Arctostaphylos uva-ursi</u> <u>Betula glandulosa</u> <u>Betula nana</u> <u>Ledum decumbens</u> <u>Shepherdia canadensis</u>	Bearberry Resin birch Dwarf Arctic birch Narrowleaf Labrador-tea Buffaloberry	<u>Juniperus communis</u> <u>Rhododendron lapponicum</u> <u>Salix reticulata</u>	Common juniper Lapland rosebay Netleaf willow
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Epilobium</u> spp. <u>Festuca brachyphylla</u>	Fireweed Fescue	<u>Cassiope tetragona</u> <u>Juniperus communis</u> <u>Loiseleuria procumbens</u> <u>Salix brachycarpa</u> <u>Salix chamissana</u> <u>Salix fuscescens</u>	Four-angle mountain heather Common juniper Alpine azalea Willow Willow* Alaskan bog birch
<u>Habitat conditions: Moist to wet/well-drained to impeded</u>				
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Betula papyrifera</u> <u>Populus tremuloides</u>	Paper birch Quaking aspen	<u>Picea mariana</u>	Black spruce
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Ledum decumbens</u>	Narrowleaf Labrador-tea	<u>Ledum decumbens</u>	Narrowleaf Labrador-tea
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Vaccinium uliginosum</u>	Bog blueberry	<u>Arctostaphylos alpina</u> <u>Rosa acicularis</u> <u>Vaccinium uliginosum</u> <u>Vaccinium vitis-idaea</u>	Alpine bearberry Prickly rose Bog blueberry Mountain cranberry

Table M1310-63.1 Selected Plant Species Common to the Alaska Range

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Dry to moist/excessive to well-drained				
Low to medium shrubs, 2-20 ft (Normally not controlled)			<u>Juniperus communis</u> <u>Rhododendron lapponicum</u> <u>Sorbus scopulina</u>	Common juniper Lapland rosebay Green mountain-ash
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Epilobium</u> spp. <u>Erigeron</u> spp. <u>Solidago</u> spp.	Fireweed Daisy Goldenrod	<u>Artemisia alaschensis</u> <u>Calamagrostis langsdorffii</u> <u>Cassiope lycopodioides</u> <u>Dryas drummondii</u> <u>Elymus mollis</u> <u>Empetrum nigrum</u> <u>Epilobium angustifolium</u> <u>Geranium erianthum</u> <u>Geum rotundifolium</u> <u>Heracleum lanatum</u> <u>Hierochloa alpina</u> <u>Hockenya peplodes</u> <u>Lathyrus maritima</u> <u>Ledum decumbens</u> <u>Luzula arcuata</u> <u>Polygonum viviparum</u> <u>Polypodium vulgare</u> <u>Potentilla villosa</u> <u>Salix barclayi</u> <u>Salix brachycarpa</u> <u>Salix commutata</u> <u>Senecio pseudoarnica</u> <u>Thalictrum kense</u>	Wormwood* Bluejoint reedgrass Club-moss mountain heather Drummond mountain-avens Beach ryegrass Crowberry Fireweed* Northern geranium* Avens* Cow parsnip* Alpine hollygrass Sea-beach sandwort* Beach pea* Narrowleaf Labrador-tea* Alpine woodrush* Alpine bistort* Licorice-fern* Villous cinquefoil* Barclay willow Barren-ground willow Undergreen willow Senecio* Meadow-rue*
Habitat conditions: Moist to wet/well-drained to impeded				
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Betula papyrifera</u> <u>Populus balsamifera</u> <u>Populus tremuloides</u>	Paper birch Balsam-poplar Quaking aspen	<u>Picea glauca</u> <u>Picea mariana</u> <u>Salix alexensis</u> <u>Salix arbusculoides</u> <u>Salix candida</u>	White spruce Black spruce Feltleaf willow Littleleaf willow Willow
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Alnus crispa</u> <u>Betula glandulosa</u> <u>Betula nana</u> <u>Ledum decumbens</u> <u>Shepherdia canadensis</u>	Green alder Resin birch Dwarf Arctic birch Narrowleaf Labrador-tea Buffaloberry	Same as "Early successional plants"	
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Anemone narcissiflora</u> <u>Arctostaphylos alpina</u> <u>Arctostaphylos rubra</u> <u>Arctostaphylos uva-ursi</u> <u>Cassiope tetragona</u> <u>Chamaedaphne calyculata</u> <u>Cystopteris fragilis</u> <u>Dryas integrifolia</u> <u>Dryas octopetala</u> <u>Juniperus communis</u> <u>Loiseleuria procumbens</u> <u>Rubus chamaemorus</u> <u>Vaccinium oxycoccus</u> <u>Vaccinium uliginosum</u> <u>Vaccinium vitis-idaea</u>	Narcissus-flowered* anemone Alpine bearberry Red-fruited bearberry Bearberry Four-angle mountain heather Leather-leaf Fragile fern* White mountain avens Entire-leaf mountain-avens Common juniper Alpine azalea Cloud berry Bog cranberry Bog blueberry Mountain cranberry		

* No entry in Ecological Characteristics Table.

Table 1210, 1220, 1310, 1320, M1210, M1310, M2410-63.2 Ecological Characteristics of Selected Plant Species Common to Alaska

Species	Habitat	Form	Fruit	General wildlife use	Notes
Green alder <i>Alnus crispa</i> 1310, 1320, M1310	Gravelly slopes and flood plains	Shrub, 3-13 ft tall	Conelike	Food for ptarmigan and songbirds	
Bog rosemary <i>Andromeda polifolia</i> 1210	Bogs and wet sedge tundra	Small, spreading evergreen shrub, 3 ft tall	Capsule		Plants contain a strong poison, andromedotoxin, which causes vomiting, dizziness, low blood pressure, breathing difficulty, diarrhea, and cramps
Alpine bearberry <i>Arctostaphylos alpina</i> 1220, M1210, M1310	Dry sites of arctic and alpine tundra	Trailing shrub, 2.5-4 in tall	Berry	Fruit eaten by bears and ptarmigan	Edible but poor taste
Red-fruited bearberry <i>Arctostaphylos rubra</i> 1310, 1320, M1310	Lower elevations in spruce forests and bogs	Trailing shrub, 6 in high	Berry	Same as <i>A. alpina</i>	
Bearberry <i>Arctostaphylos uva-ursi</i> 1220, M1210, M1310	Dry sites	Prostrate evergreen shrub forming mats	Mealy berry	Fruit eaten by bears	Berries palatable when cooked; leaves can be used as substitute for tobacco
Alaskan sagebrush <i>Artemisia alaskana</i> 1310, 1320	Dry steep south-facing slopes	Shrub, 1.5-2 ft	Naked seeds	Cover	
Resin birch <i>Betula glandulosa</i> 1210, 1220, 1310, 1320, M1210, M1310	Moist soil, muskegs or boggy areas, hummocks on tundra, and borders of lakes and streams	Shrubby, mostly low and spreading to erect, 5 ft	Strobles	Provide food and cover for wildlife	May seed promptly on cutover or burned lands
Dwarf Arctic birch <i>Betula nana</i> 1210, 1220, M1210, M1310	Moist soil, muskegs or boggy areas, hummocks on tundra, and borders of lakes and streams	Shrubby, mostly low and spreading to erect, 5 ft	Strobles	Same as <i>B. glandulosa</i>	Same as <i>B. glandulosa</i>
Paper birch <i>Betula papyrifera</i> 1310, 1320, M1210, M1310	Moist areas	Small deciduous tree	Conelike	Used for cover	
Sedges <i>Carex</i> spp. 1210, M1310	Throughout the region	Grasslike		Forage for herbivores	<i>C. aquatilis</i> is edible
Club-moss mountain heather <i>Cassiope lycopodioides</i> M1310	Exposed ridges in mountains	Creeping moss-like evergreen shrub, 1-6 in tall	Capsule		
Four-angled mountain heather <i>Cassiope tetragona</i> 1220, M1210, M1310	Where snow remains in summer	Low, creeping evergreen, moss-like, mat-forming shrub	Capsule		Used as fuel even when green and wet
Leather-leaf <i>Chamaedaphne calyculata</i> M1310	Bogs and open black spruce stands	Evergreen shrub	Capsule		
Reindeer lichen <i>Cladonia</i> spp. 1210	Tundra, in great abundance in the foothills of the Brooks Range	Carpet-like masses		Important food of reindeer and caribou	
Haigrass <i>Deschampsia</i> spp. 1210	Throughout the region	Grasses		Forage for herbivores	Used for watershed protection
Drummond mountain-avens <i>Dryas drummondii</i> M1310	Alpine to lowland pioneer on gravel bars	Evergreen herbaceous dwarf shrub forming large mats		Roots are eaten by rodents	

continued

Table 1210, 1220, 1310, 1320, M1210, M1310, M2410-63.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
White mountain-avens <i>Dryas integrifolia</i> 1210, M1310	In the highland	Evergreen herbaceous dwarf shrubs		Roots are food for rodents	Stabilize soil
Entire-leaf mountain-avens <i>Dryas octapetala</i> 1210, M1310	Widespread in lowlands and alpine tundra	Grass with rhizomes			Same as <i>D. integrifolia</i>
Beach ryegrass <i>Elymus mollis</i> M1310	Dunes along the coast	Grass with rhizomes			Could be used for stabilization
Crowberry <i>Empetrum nigrum</i> 1310, 1320, M1310	Moist rocky slopes, muskegs, and spruce forests	Creeping evergreen heather-like shrub forming dense mats 6 in high	Berry	Fruit eaten by bear, ptarmigan, grouse	Edible, usually in pies
Horsetails <i>Equisetum</i> spp. 1310, 1320	Moist areas	Rushlike with perennial rhizomes	Spores		One species, Scouring-Rush, so called because deposits of silica in the stems make them effective as scouring pads
Grass <i>Festuca</i> spp. 1210	Throughout the region	Grasses		Forage for herbivores	Used for watershed protection
Alpine hollygrass <i>Hierochloa alpina</i> M1310	Alpine meadows	Grass with rhizomes			
Common juniper <i>Juniperus communis</i> M1210, M1310	Rocky tundra, sunny slopes, sandy areas, and forest openings	Prostrate spreading evergreen shrub, 2 ft high	Berrylike cones	Food for birds	Most widely distributed conifer in the world, fruits used to flavor gin
Tamarack <i>Larix laricina</i> 1310, 1320	Muskegs and moist soils	Small to medium-sized tree, 30-60 ft high	Cones		Only Alaskan conifer to shed its leaves in winter
Narrowleaf Labrador-tea <i>Ledum decumbens</i> 1210, 1220, M1210, M1310	Sedge tussocks and wet depressions	Evergreen shrub, 1-2 in tall	Capsule		A palatable tea can be made by boiling the aromatic leaves
Labrador-tea <i>Ledum groenlandicum</i> 1310, 1320	Forests and bogs	Evergreen shrub, 4 ft tall	Capsule		Tea can be made by boiling the leaves
Alpine azalea <i>Loiseleuria procumbens</i> M1210, M1310	Well-drained rocky sited on tundra	Trailing evergreen shrub, 1-2 in tall	Capsule		
Blue mountain heath <i>Phyllodoce coerula</i> 1220	Where snow remains late in spring	Matted evergreen shrub, 2-6 in high	Capsule		
White spruce <i>Picea glauca</i> 1310, 1320, M1210, M1310	In open forests and well-drained soils	Medium sized evergreen, 40-70 ft high	Cones	Used as cover	Has been used for oil drilling platforms
Black spruce <i>Picea mariana</i> 1310, 1320, M1210, M1310	Cold wet flats and gentle damp slopes to tree line	Resinous evergreen tree, 10-30 ft high	Cones	Same as <i>P. glauca</i>	Lower branches take root and form ring of small trees around parent tree
Bluegrass <i>Poa</i> spp. 1210, M1310	Throughout the region	Grasses		Forage for herbivores	Used for watershed protection
Balsam-poplar <i>Populus balsamifera</i> 1310, 1320, M1310	South slopes, well-drained benches and creek bottoms	Medium sized deciduous tree	Capsule	Used for cover and browse	Fast-growing following a forest fire

continued

Table 1210, 1220, 1310, 1320, M1210, M1310, M2410-63.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Quaking aspen <i>Populus tremuloides</i> 1310, 1320, M1210, M1310	South slopes, well-drained benches and creek bottoms	Medium sized deciduous tree	Capsule	Used for cover and browse	Fast-growing following a forest fire
Black poplar <i>Populus trichocarpa</i> 1310, 1320	Lower elevations on river bottoms	Large deciduous tree, 80-100 ft tall	Capsule	Cover	Largest broadleaf tree in Alaska
Lapland rosebay <i>Rhododendron lapponicum</i> M1210, M1310	Tundra and open forest at treeline	Matted to erect much branched evergreen shrub	Capsule		
American red currant <i>Ribes triste</i> 1310, 1320	Within the boreal forests or in protected ravines north and west of treeline	Low spreading shrub 2.5-4 ft high	Berry	Valuable as cover and browse	Used in jellies
Prickly rose <i>Rosa acicularis</i> 1310, 1320, M1210	Throughout arctic, common on old burns	Spiny much branched shrub, up to 7 ft high	Berrylike rounded hip	Eaten by grouse and other birds	Rich in vitamin C; makes jellies or syrups
Cloud berry <i>Rubus chamaemorus</i> M1310	Bogs	Erect herb	Drupe	Food for birds	Rich in vitamin C; used by Eskimos
Pacific red elderberry <i>Sambucus callicarpa</i> 1220	Moist soils	Deciduous shrub, 7-15 ft high	Drupe	Same as <i>R. chamaemorus</i>	Seeds are poisonous
Willow <i>Salix</i> spp. 1210, 1220	(See below)				
Feltleaf willow <i>Salix alexensis</i> 1210, 1310, 1320, M1210, M1310	Valleys throughout Alaska	Shrub to small tree, 20-30 ft high	Capsule	Browsed by moose, inner bark has served as food for humans	In many areas important as only available wood for fuel
Littleleaf willow <i>Salix arbusculoides</i> 1210, 1310, 1320, M1310	Along streams and rivers	Erect shrub, 10-15 ft tall	Capsule	Cover	
Arctic willow <i>Salix arctica</i> 1220	Dry and wet sites, arctic and alpine tundra	Trailing shrub	Capsule		
Barclay willow <i>Salix barclayi</i> M1310	Wet alluvial sites	Shrub to treelike, 4-20 ft tall	Capsule	Cover for wildlife	
Bebb willow <i>Salix bebbiana</i> 1310, 1320	Uplands	Shrub, 10 ft tall	Capsule	Browsed by moose and snowshoe hare	Common species to follow fire on upland sites; has been used for furniture, baseball bats, charcoal, and gunpowder
Barren-ground willow <i>Salix brachycarpa</i> M1310	Talus slopes, moist meadows, and stream margins	Low shrub, 10-35 ft tall	Capsule	Cover for wildlife	
Undergreen willow <i>Salix commutata</i> M1310	Stream margins in mountains	Dense shrub 4-7 ft tall	Capsule	Cover for wildlife	
Alaska bog birch <i>Salix fuscescens</i> 1220, M1210	Wet tundra and bogs, boreal forest to above treeline	Trailing shrub	Capsule		
Willow <i>Salix lanata</i> 1210	Wet and dry areas of the tundra from saline beach meadows to above timberline	Shrubby, from a few in to 7 ft	Capsule, containing many minute, hairy seeds	Nearly all species produce browse and cover for wildlife	Useful for stabilizing streambanks and improving fish habitat

continued

Table 1210, 1220, 1310, 1320, M1210, M1310, M2410-63.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Ovalleaf willow <i>Salix ovalifolia</i> 1210, 1220	Wet and dry areas of the tundra from saline beach meadows to above timberline	Shrubby, from a few in to 7 ft tall	Capsule, containing many minute, hairy seeds	Same as <i>S. lanata</i>	Same as <i>S. lanata</i>
Diamondleaf willow <i>Salix planifolia</i> 1210, 1220	Wet and dry areas of the tundra from saline beach meadows to above timberline	Shrubby, from a few in to 7 ft tall	Capsule, containing many minute, hairy seeds	Same as <i>S. lanata</i>	Same as <i>S. lanata</i>
Netleaf willow <i>Salix reticulata</i> 1210, 1220, M1210	Wet and dry sites of tundra and forest	Creeping shrub	Capsule	Same as <i>S. lanata</i>	Same as <i>S. lanata</i>
Scouler willow <i>Salix scouleriana</i> 1310, 1320	Near streams	Shrub or tree, 15 ft tall	Capsule	Browsed by moose	Rapid occupation of burned or logged areas
Buffaloberry <i>Shepherdia canadensis</i> 1310, 1320, M1210, M1310	Dry upland sites and old burns also gravel bars near tree line	Deciduous shrub, up to 7 ft high	Fleshy drupelike	Berries eaten by grouse	Berries edible but bitter
Campion moss <i>Silene acaulis</i> 1220	Common on tundra	Mosslike densely matted			
Green mountain-ash <i>Sorbus scopulina</i> M1310	Openings in the forest	Deciduous shrub, 4-15 ft tall	Pome	Cover for wildlife	
Peat moss <i>Sphagnum</i> spp. 1210	Wet areas, hollows, bogs, and small lakes	As a dense moss in the water			Holds two hundred times its weight of water; when dry peat is used as a fuel; most enduring plant known
Early blueberry <i>Vaccinium ovalifolium</i> 1220, 1310, 1320, M1210, M1310	Common in coastal forests	Spreading shrub	Berry	Winter browse for deer, mountain goats, elk	Used in jellies
Bog cranberry <i>Vaccinium oxycoccos</i> 1210, 1220, 1310, 1320, M1210, M1310	Bogs and peat hummocks of coastal and boreal forests	Creeping evergreen shrub	Berry		Can be used in jellies, but never abundant enough
Bog blueberry <i>Vaccinium uliginosum</i> 1220, 1310, 1320, M1210, M1310	Bogs of tundra except extreme northern coastal plain	Much branched low shrub, erect or prostrate, 8 in-1.5 ft high	Fleshy berry	Eaten by bear, ptarming, grouse	Source of vitamin C
Mountain cranberry <i>Vaccinium vitis-idaea</i> 1210, 1220, 1310, 1320, M1210, M1310	Throughout arctic	Loose mat in moist areas and a dense mat in dry rocky areas	Fleshy berry	Fruit eaten by bear, ptarming, grouse	
Highbush-cranberry <i>Viburnum edule</i> 1220, 1310, 1320	Forest openings and along streams	Deciduous shrub, 1-12 ft high	Drupe	Browse for wildlife; fruit eaten by birds	Used in jellies

64 PROVINCE M4210 Hawaiian Islands

Sharing a volcanic heritage, each island in the Hawaiian chain has interacted with elevational and climatic variables of the mid-Pacific to produce three prevailing communities: rainforest, mesic forest, and dry forest. Specific location, necessary climatic conditions, and plant species for each vegetative community are described below.

RAINFOREST

The Hawaiian rainforest occupies the windward slopes and mid-elevation mountain peaks on all the larger islands where the steady northeast tradewinds produce orographic rainfall in great quantities. Annual precipitation, which ranges from a minimum of 75 inches to an excess of 400 inches, produces a complex and delicately balanced ecotype. Ohia is by far the most common dominant tree species over the majority of the area. Great numbers of diverse ferns, mosses, and club-mosses occupy the middlestory and understory levels.

The successional sequence progresses from the establishment of ohia on barren lava sites to the increasing diversity of fern and other understory species. On climax sites that have been disturbed or cleared, however, succession takes a somewhat different course. Exotic (i.e., not indigenous or endemic) plant species are more aggressive and tend to pioneer these disturbed areas and form a significant portion of the later succession and resulting climax.

Many of the plants in the rainforest are fragile endemics that have developed very limited associations. They are not able to reproduce and compete in association with aggressive exotics and soon succumb when subjected to disturbance. These plant communities have become the subject of intense conservation efforts and concern. Preservation of representative examples of each type is desirable and is being pursued.

MESIC FOREST

The Hawaiian mesic forest occupies the lowland slopes on the north and east sides of the larger islands and the middle slopes on the south and west sides. These communities range in annual precipitation from a seasonally dry 25 inches to a moist 75 inches. The native olopua form native forests in association with several other native species found in the drier leeward slopes

with grasslands. The waiowi—Christmas berry—pepper tree scrub occupies the higher elevations (4000 to 8000 feet) on the mountains of Maui and Hawaii. Many areas within this section have been converted to agriculture and pasture. The successional sequence generally progresses from native to exotic species. Where heavy grazing by domestic or feral herbivores occurs, the Olopua forests and the pukiawe—mamani scrub types tend to disappear and convert to grasslands. Conversely, the exotic waiowi—Christmas berry—pepper tree brushlands tend to displace grasslands and produce a climax type.

There are many native plants in olopua and the pukiawe—mamani types that are rare and endangered. Lack of competitive capability and inability to withstand grazing have forced these native species out wherever the pressure has been too great. Efforts are being made to preserve representative examples of these types, and extra care should be exercised when dealing with them.

DRY FOREST

The Hawaiian dry forest type occupies the lowlands on the leeward south and west slopes of the islands and the highest elevations on Maui and Hawaii (9000 to 13,800 feet). The leeward lowlands are in the dry rainshadows of the mountain peaks. The high elevation lands are above the Hawaiian thermal inversion layer and thus experience low humidity and rainfall; annual averages are below 25 inches, and as low as 8 inches on extreme leeward sites. Vegetation is generally sparse with seasonal drying during the summers. The wiliwili—ohemakai forests are primarily native in composition with a number of small xeric species in the lowlands. The lantana—panini type extends up into some leeward middle elevation types and is composed of mostly exotic species. The high elevation barren ground type is alpine semi-desert composed of a handful of native species widely scattered and finally giving way to barren cinder and lava near the summits.

The successional sequence progresses from grasslands to scrub or open forests. Species composition is nearly all exotic, as most native species have long since been displaced. Disturbed sites revegetate entirely with exotics.

A number of native plant species within this section are rare and endangered. Many have already become extinct. Where these plants occur, much effort should be expended to insure their safety when a ROW project is being considered.

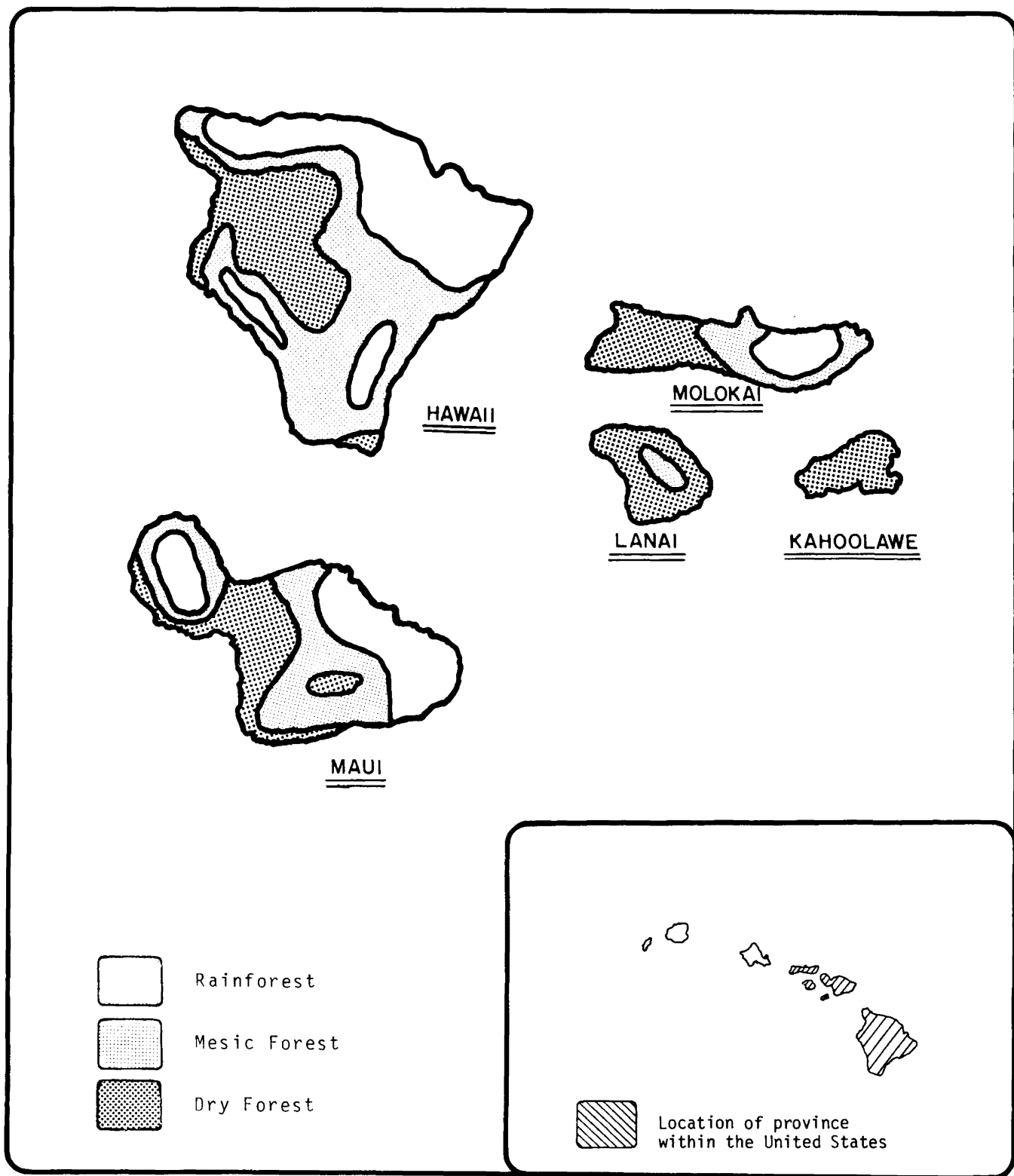


Figure 64.1a Province M4210, Hawaiian Islands (Hawaii, Molokai, Maui, Lanai, and Kahoolawe)

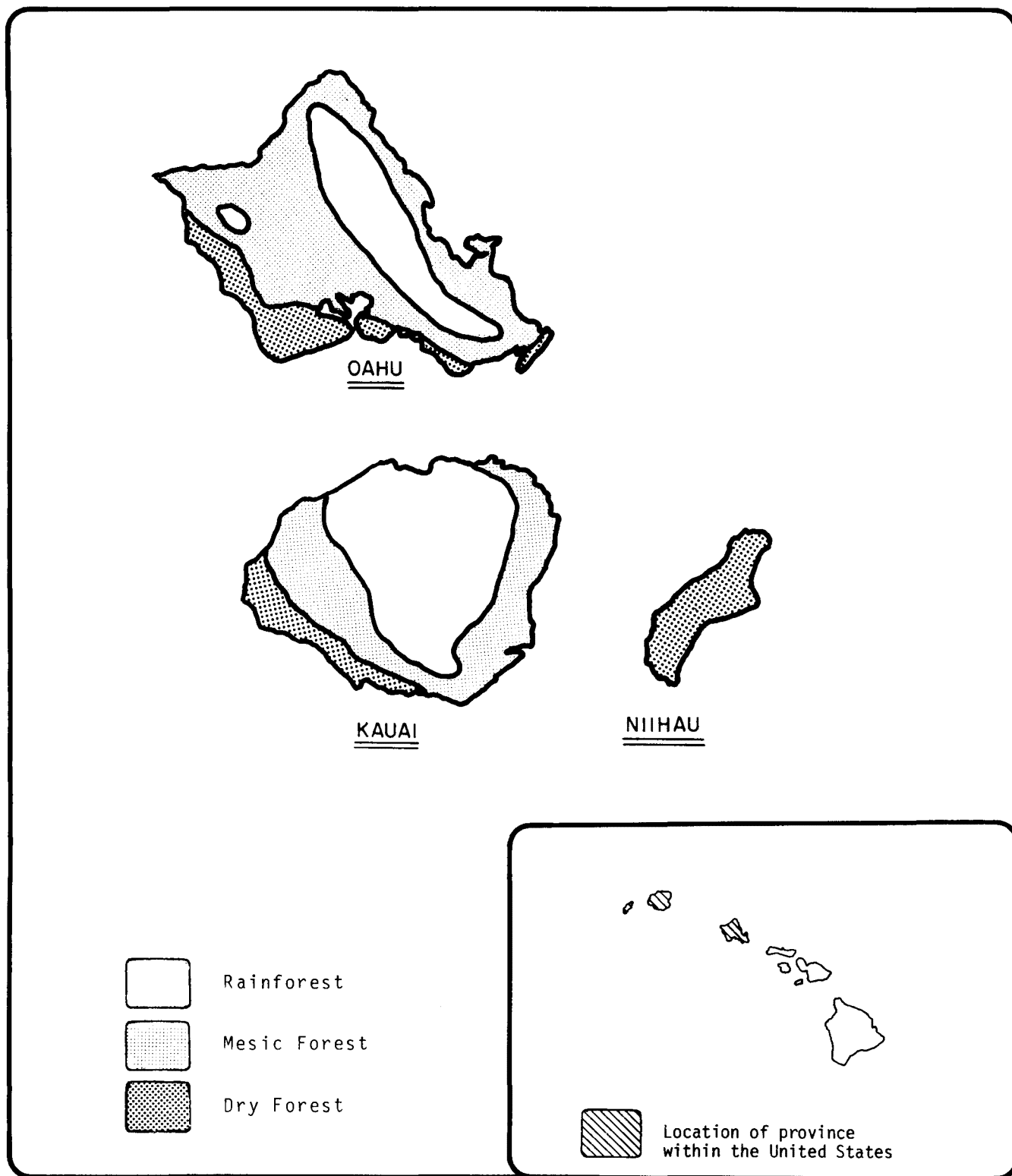


Figure 64.1b Province M4210, Hawaiian Islands (Oahu, Kauai, and Niihau)

Table M4210-64.1 Selected Plant Species Common to the Hawaiian Islands

Growth form	Early successional plants		Late successional plants	
Habitat conditions: Wet sites/moderate to poor drainage/rainfall greater than 75 in/yr.				
(Rainforest)				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Acacia koa</u> <u>Albizia falcata</u> <u>Aleurites moluccana</u> <u>Eucalyptus deglupta</u> <u>Eucalyptus robusta</u> <u>Eucalyptus saligna</u> <u>Melaleuca leucadendra</u> <u>Melochia indica</u> <u>Metrosideros collina</u> <u>Spathodea campanulata</u>	Koa Molucca albizia Kukui Bagras Swamp mahogany Sydney bluegum Paperbark Melochia Ohia African tulip	<u>Artocarpus altalis</u> <u>Flindersia brayleyana</u> <u>Fraxinus uhdei</u> <u>Tetraplasandra</u> spp. <u>Toona ciliata</u>	Breadfruit Queensland maple Tropical ash Oheohe Australian toon
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Bambusa vulgaris</u> <u>Cheirodendron</u> spp. <u>Myrica faya</u> <u>Pandanus</u> spp. <u>Psidium guajava</u> <u>Rhus sandwicensis</u>	Common bamboo Olapa Fire tree Hala Guava Neneleau	<u>Antidesma platyphyllum</u> <u>Bobea elatior</u> <u>Eugenia jambos</u> <u>Eugenia malaccensis</u> <u>Eugenia sandwicensis</u> <u>Hibiscus tiliaceus</u>	Mehame Ahakea Rose apple Mountain apple Ohia ha Hau
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Ardisia humilis</u> <u>Cibotium</u> spp. <u>Clidemia hirta</u> <u>Coprosma</u> spp. <u>Dicranopteris</u> spp. <u>Hedychium coronarium</u> <u>Hedychium flavescens</u> <u>Melastoma malabathricum</u> <u>Musa</u> spp. <u>Rhodomyrtus tomentosa</u> <u>Rubus penetrans</u> <u>Sadleria</u> spp. <u>Scaevola</u> spp.	Shoebutton ardisia Hapuu Koster's curse Pilo Uluhe White ginger Yellow ginger Malabar melastome Banana Downy myrtle Blackberry Amau Naupaka	<u>Alyxia olivaeformis</u> <u>Broussaissia arguta</u> <u>Clermontia</u> spp. <u>Cyanea</u> spp. <u>Cyrtandra</u> spp. <u>Dioscorea bulbifera</u> <u>Dioscorea pentaphylla</u> <u>Dubautia</u> spp. <u>Freycinetia arborea</u> <u>Gouldia terminalis</u> <u>Hicriopteris pinnata</u> <u>Labordia</u> spp. <u>Marattia douglasii</u>	Maile Kanawao Haha Hahanui Mapele Hoi Piia Naenae Ieie Manono Giant uluhe Kamakahala Pala
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Cladium leptostachyum</u> <u>Cyperus alternifolius</u> <u>Cyperus cyperoides</u> <u>Erechtites heiraefolia</u> <u>Eupatorium odoratum</u> <u>Eupatorium riparium</u> <u>Hydrocotyle subthorpioides</u> <u>Nephrolepis</u> spp. <u>Panicum purpurascens</u> <u>Panicum repens</u> <u>Prunella vulgaris</u>	Uki Umbrella plant Sedge Fireweed Maui pamakani Hamakua pamakani Marsh pennywort Sword fern Paragrass Quackgrass Selfheal	<u>Astelia</u> spp. <u>Eragrostis grandis</u> <u>Lycopodium</u> spp. <u>Nertera granadensis</u> <u>Peperomia</u> spp. <u>Phyllostegia</u> spp. <u>Selaginella</u> spp. <u>Stenogyne</u> spp.	Painiu Large Hawaiian lovegrass Club-moss Makole Alaalawainui Phyllostegia Selaginella Stenogyne
Habitat conditions: Moist sites/drainage good/rainfall 25 to 75 in/yr.				
(Mesic forest)				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Cupressus macrophylla</u> <u>Eucalyptus camaudulensis</u> <u>Eucalyptus citriodora</u> <u>Eucalyptus globulus</u> <u>Grevillea robusta</u> <u>Jacaranda mimosifolia</u> <u>Melia azedarach</u> <u>Pinus</u> spp.	Monterey cypress Red River gum Lemon gum Bluegum Silk-oak Jacaranda Pride of India Pine	<u>Araucaria columnaris</u> <u>Araucaria heterophylla</u> <u>Cocos nucifera</u> <u>Cryptomeria japonica</u> <u>Drypetes phyllanthoides</u> <u>Mangifera indica</u> <u>Pithecellobium saman</u> <u>Sapindus saponaria</u> <u>Sequoia sempervirens</u>	Cook-pine Norfolk Island pine Coconut palm Sugi Mehamehame Mango Monkeypod Manele Coast redwood
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be acceptable at ROW edge)	<u>Acacia decurrens</u> <u>Eugenia cumini</u> <u>Myoporum sandwicense</u> <u>Osmanthus sandwicensis</u> <u>Pleomele aurea</u>	Black wattle Java plum Naio Olopuu Halapepe	<u>Bobea mannii</u> <u>Myrsine lessertiana</u> <u>Planchonella</u> spp. <u>Psychotria</u> spp. <u>Santalum</u> spp.	Ahakea Kolea Alaa Kopiko Iliahi
Low Wet Understory Ferns				
<u>Asplenium</u> spp. <u>Athyrium</u> spp. <u>Blechnum occidentale</u> <u>Dryopteris</u> spp. <u>Elaphoglossum</u> spp. <u>Microlepia setosa</u> <u>Ophioglossum</u> spp. <u>Polypodium</u> spp. <u>Trichomanes</u> spp.				
Asplenium Athyrium Blechnum Dryopteris Ekaha Palapalai Ophioglossum Polypodium Filmy fern				

continued

Table M4210-64.1 (Concluded)

Growth form	Early successional plants		Late successional plants	
<u>Mesic forest (Continued)</u>				
Trees and shrubs -- (Continued)	<u>Schinus molle</u> <u>Schinus terebinthifolius</u> <u>Sophora chrysophylla</u>	Pepper tree Christmas berry Mamani	<u>Xylosma hawaiiense</u> <u>Zanthoxylum</u> spp.	Maua Ae
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Canthium odoratum</u> <u>Coprosma</u> spp. <u>Dodonaea sandwicensis</u> <u>Osteomeles anthyllidifolia</u> <u>Pennisetum purpurea</u> <u>Ricinus communis</u> <u>Rubus hawaiiensis</u> <u>Styphelia tameiameia</u>	Alahee Pilo Aalii Uulei Napier grass Castorbean Akala Pukiaue	<u>Charpentiera</u> spp. <u>Claoxylon sandwicense</u> <u>Euphorbia</u> spp.	Papala Poola Akoko
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Bidens</u> spp. <u>Dactylis glomerata</u> <u>Digitalis decumbens</u> <u>Holcus lanatus</u> <u>Hypochaeris radicata</u> <u>Melinis minutiflora</u> <u>Paspalum</u> spp. <u>Pellaea ternifolia</u> <u>Pennisetum clandestinum</u> <u>Pityrogramma chrysophylla</u> <u>Polypodium pellucidum</u> <u>Pteridium aquilinum</u> <u>Rhynchelytrum repens</u> <u>Sporobolus capensis</u>	Kookoolau Orchardgrass Pangolagrass Velvet grass Gosmore Molasses grass Paspalum Kalamoho Kikuyu grass Golden fern Ae Kilau Redtop African dropseed	<u>Deschampsia australis</u> <u>Dianella sandwicensis</u> <u>Gahnia beechyi</u> <u>Machaerina gahniformis</u> <u>Ptilotum nudum</u> <u>Sphenomeris chusana</u> <u>Vaccinium</u> spp.	Deschampsia Ukiuki Uki Uki Moa Palaa Ohelo
<u>Habitat conditions: Moist sites/drainage good/rainfall 25 to 75 in/yr.</u>				
(Dry forest)				
Tall-growing trees, over 40 ft (Must be controlled)	<u>Pithecellobium dulce</u> <u>Prosopis pallida</u>	Opiuma Kiawe	<u>Casuarina equisetifolia</u>	Ironwood
Low-growing trees and tall shrubs, 20-40 ft (Control only when necessary; may be ac- ceptable at ROW edge)	<u>Diospyros ferrea</u> <u>Erythrina sandwicensis</u>	Lama Wiliwili	<u>Bobea sandwicensis</u> <u>Nesoluma chrysophylla</u> <u>Nothocestrum latifolium</u> <u>Planchonella spathulata</u> <u>Rauvolfia</u> spp. <u>Reynoldsia</u> spp.	Ahakea Keahi Aiea Alaa Hao Ohe makai
Low to medium shrubs, 2-20 ft (Normally not controlled)	<u>Abutilon grandifolium</u> <u>Cassia floribunda</u> <u>Dodonaea eriocarpa</u> <u>Lantana camara</u> <u>Leucaena leucocephala</u> <u>Pluchea indica</u> <u>Wikstroemia</u> spp.	Hoary abutilon Kolomona Aalii Lantana Koa haole Indian pluchea Akia	<u>Chenopodium oahuense</u> <u>Euphorbia celastroides</u> <u>Nototrichum sandwicense</u> <u>Santalum ellipticum</u>	Aheahea Akoko Kului Iliahi
Lesser vegetation - grasses, herbs, ferns, mosses (Should not be disturbed)	<u>Andropogon</u> spp. <u>Cenchrus ciliaris</u> <u>Chloris radiata</u> <u>Chloris virgata</u> <u>Crotalaria incana</u> <u>Opuntia</u> spp. <u>Panicum maximum</u> <u>Setaria verticillata</u> <u>Sida</u> spp.	Andropogon Buffel grass Plush grass Feather fingergrass Rattlebox Panini Guinea grass Bristly foxtail Ilima	<u>Abutilon incanum</u> <u>Argemone glauca</u> <u>Capparis sandwichiana</u> <u>Dryopteris</u> spp. <u>Gossypium sandwicense</u> <u>Heteropogon contortus</u> <u>Lipochaeta</u> spp.	Mao Puakala Mala pilo Dryopteris Mao Pili grass Nehe

Table M4210-64.2 Ecological Characteristics of Selected Plant Species Common to the Hawaiian Islands

Species	Habitat	Form	Fruit	General wildlife use	Notes
<u>Rainforest</u>					
Koa <u>Acacia koa</u>	Open fringes of rainforests, dominates sites	King of Hawaiian trees, huge spreading crowns, massive trunks, to over 100 ft tall	4-6 in pod with several .38 in seeds	Seeds eaten by certain birds when green (especially koa finch)	High grade lumber; sprouts quickly after fires or clearing, but is later susceptible to insect and disease
Molucca albizia <u>Albizia falcata</u>	Forests at low elevations in gulches	Large tree with a spreading layered crown, to over 100 ft tall	3-5 in pods with .25 in seeds		Trees sprout quickly in clearings and grow rapidly
Kukui <u>Aleurites moluccana</u>	Wet ravines at low elevations	Large tree, 40-80 ft tall	3 in long green fruit with 2 in ovoid oily nuts		Nuts used for jewelry and condiment; sprouts readily after clearing
Maile <u>Alyxia olivaeformis</u>	Understory in dense forests	Twining vines, climbing over other understory plants	Black drupe, .5 in long		Popular for garlands because of their fragrance
Mehame <u>Antidesma platyphyllum</u>	Understory in dense forests	Small tree, 15-30 ft tall	Clusters of dark red drupes, .5 in long, flattened	Flesh of fruit eaten by forest birds	Slow to reproduce and grow
Shoebuttan ardisia <u>Ardisia humilis</u>	Understory in dense forests	Large straight stemmed shrub, 8-15 ft tall	Shiny black juicy .25 in berries	Eaten by birds	A very aggressive shade-tolerant understory competitor
Breadfruit <u>Artocarpus altilis</u>	Lowlands in forest openings	Large trees, up to 80 ft tall	Round starchy fruit, 6-8 in in diameter	Eaten by pigs	Popular Polynesian staple; grows from root sprouts
Asplenium <u>Asplenium</u> spp.	Ground cover on epiphytes in dense forests	Low ferns in clumps or rosettes	Spores	Some rooted by pigs	Profuse, but delicate ferns
Painiu <u>Astelja</u> spp.	Epiphytes on tree trunks in moss in dense forests	Rosettes, 1-4 ft tall	Panicles of bright orange berries	Berries eaten by forest birds	Very delicate rainforest plants
Athyrium <u>Athyrium</u> spp.	Ground cover in dense forests	Lacy ferns, 2-5 ft tall	Spores	Rooted by pigs	Very delicate, but recovers well
Common bamboo <u>Bambusa vulgaris</u>	Along rivers and lower slopes in forests at low elevations	Tall erect or nodding, 20-80 ft tall	Very infrequent seeders		Young shoots collected and cooked; vegetative reproduction from stolons; aggressive; sprouts quickly from rootstock
Blechnum <u>Blechnum occidentale</u>	Ground cover on damp shady banks in forests	Low fern forming solid mats, 1 ft tall	Spores		Grows only in protected sites, but spreads rapidly
Ahakea <u>Bobea elatior</u>	Middle story in middle elevation forests	Medium sized trees, 20-40 ft tall	Red juicy .5 in berry	Berries eaten by forest birds	Does not reproduce rapidly
Kanawao <u>Brousaissia arguta</u>	Low understory in dense forests	Small shrubs, 4-8 ft tall	Dense clusters of dark red berries, .38 in in diameter	Fruit eaten by forest birds	Profuse in understory, but not aggressive
Olapa <u>Cheirodendron</u> spp.	Middle story in dense forests	Medium sized trees with open crowns, 15-40 ft tall	Loose clusters of black fruits, .13 in	Fruit eaten by forest birds	Shade-tolerant and reproduces well
Hapuu <u>Cibotium</u> spp.	Ground cover and middle story in dense forests	Rosette of fronds arising from erect stem, 4-15 ft tall	Spores	Fronds and hearts of stems eaten by pigs	Reproduces well in shade; needs only growing tip

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Rainforest (Continued)					
Uki <u>Cladium leptostachyum</u>	Open ridges in wind-swept scrub	Low rosettes, 2-4 ft tall	Panicles of achenes		Hardy plants, but slow to reproduce
Haha <u>Clermontia</u> spp.	Scattered understory in dense forest ravines	Fleshy shrubs, 5-10 ft tall	Fleshy berries, .5-1.75 in	Berries eaten by forest birds	Slow to reproduce; delicate
Koster's curse <u>Clidemia hirta</u>	Ground cover in dense forests	A small shrub, 3-8 ft tall	.38 in black berries	Same as <u>Clermontia</u> spp.	Aggressive shade-tolerant plant; quick to establish and spread
Pilo <u>Coprosma</u> spp.	Understory in dense forests	Shrubs of loose form, 6-12 ft tall	Small orange, .25 in fruits	Fruit eaten by forest birds	Reproduces well in understory; comes back after clearing
Umbrella plant <u>Cyperus alternifolius</u>	Wet pastures and forest openings	A robust sedge, 1.5-3 ft tall	Tiny dry seeds		Fairly aggressive in well-travelled areas
Sedge <u>Cyperus cyperoides</u>	Wet pastures and forest openings	A small sedge, .5-1.5 ft tall	Tiny dry seeds		Common in pastures
Mapele <u>Cyrtandra</u> spp.	Understory in dense forests, especially in ravines	Loosely formed shrubs, 3-8 ft tall, very delicate	White fleshy berries	Berries eaten by forest birds	Very susceptible to damage
Uluhe <u>Dicranopteris</u> spp.	Openings in forests	Dense mats of fern, 3-12 ft deep	Spores		Dominates open sites
Hoi <u>Dioscorea bulbifera</u>	Understory in dense forests	Extensively climbing vine with cordate leaves	Round starchy aerial tubers, .5-3 in in diameter		A robust, but delicate vine; slow to come back in clearings
Piia <u>Dioscorea pentaphylla</u>	Understory of dense forests	Extensively climbing vine with palmate leaves	Round starchy aerial tubers, .25-.5 in in diameter		A delicate vine, slow to reproduce
Dryopteris <u>Dryopteris</u> spp.	Open sites at low elevations	Small clump ferns that grow from under rocks and logs, .5-1 ft high	Spores		Scattered about in waste places
Naenae <u>Dubautia</u> spp.	Understory in dense forests	Bushy shrubs or twining over other growth	Small dry feathery seeds, airborne		Grow only in undisturbed forests
Ekaha <u>Elaphoglossum</u> spp.	Ground cover or epiphytes in dense forests	Rosette growth with long oblong leaves	Spores		Grow extensively in dense shade forming large clumps
Large Hawaiian lovegrass <u>Eragrostis grandis</u>	Along open streams in dense forests	A large grass, 3-7 ft tall	Tiny dry seeds		Does not form pure stands
Fireweed <u>Erechtites heiracifolia</u>	Openings in forest	Herbaceous weed, 3-6 ft tall	Feathery airborne seeds		A delicate, but aggressive pioneer in open soil disturbances
Bagras <u>Eucalyptus deglupta</u>	Overstory in wet ravines	A large forest tree with a straight trunk, 60-150 ft tall	.5 in woody capsules with tiny seeds		Mostly in planted stands; slow to reproduce in forests
Swamp mahogany <u>Eucalyptus robusta</u>	Overstory species; lower to middle elevations	A large forest tree with an erect thick-furrowed barked trunk, 60-120 ft tall	.5 in woody capsules with tiny seeds	Birds feed on the flower nectar	Mostly in planted stands; but reproduces well in forests and in clearings; sprouts from stumps

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Rainforest (Continued)					
Sydney bluegum <u>Eucalyptus saligna</u>	Overstory species; middle to higher elevations	A large forest tree with a straight smooth trunk, 80-180 ft tall	.75-1 in woody capsules with tiny seeds	Birds and bees feed on the flower nectar	An aggressive tree; seeds in pastures and clearings; sprouts from stumps; an excellent honey tree
Rose apple <u>Eugenia jambos</u>	Grows along forest streams	A medium sized bushy tree, 20-40 ft tall	1-2 in fleshy fruit with a large round loose seed	Fruit eaten by pigs and birds	Very shade-tolerant; seeds well in dense shade and forms pure stands
Mountain apple <u>Eugenia malaccensis</u>	Middlestory in dense forests or in partial openings	Erect medium sized tree, to 40 ft tall	2-3 in fleshy succulent fruit with a large round seed	Same as <u>E. jambos</u>	A popular fruit; reproduces well from seed in forest shade
Ohia ha <u>Eugenia sandwicensis</u>	Middlestory tree in dense to open forests	A bushy tree, 20-40 ft tall	.25 in red juicy berries	Fruit eaten by birds	Scattered growth on ridges and slopes; reproduces slowly
Maui pamakani <u>Eupatorium odoratum</u>	Ground cover in forest openings	An erect herbaceous shrub, 2-5 ft tall	Feathery airborne seeds		An aggressive pioneer in disturbed sites and forest clearings
Hamakua pamakani <u>Eupatorium riparium</u>	Ground cover along forest streams	A bushy herbaceous shrub, 1-3 ft tall	Feathery airborne seeds		An aggressive plant along streams where light is sufficient
Queensland maple <u>Flindersia brayleyana</u>	Lowland forests on slopes or in bottomlands	Erect smooth trunked tree, 40 ft tall	3 in woody fruit with winged seeds		Mostly in planted stands; slow to reproduce
Tropical ash <u>Fraxinus uhdei</u>	Forests at middle to higher elevations	Erect tree, 30-60 ft tall	2 in winged dry samaras		Mostly in planted stands; reproduces well in shade
Ieie <u>Freycinetia arborea</u>	Dense, low to middle elevation forests	Tough twining vine, climbs high into trees	4-6 in orange multiple-sectioned fruit	Fruit eaten by rats and birds	Mostly in undisturbed forest sites
Manono <u>Gouldia terminalis</u>	Understory in dense forests	Large bushy shrubs, 6-15 ft tall	Dark blue .25 in berries in panicles	Fruit eaten by birds	Common, but not aggressive
White ginger <u>Hedychium coronarium</u>	Understory in forest ravines	Erect herbaceous stems, 4-6 ft tall	Few to nonexistent, reproduces vegetatively by creeping stolons		A favorite fragrant flower; plants form dense patches in wet bottomlands
Yellow ginger <u>Hedychium flavescens</u>	Understory in forest ravines	Erect herbaceous stems, 5-8 ft tall	Few to nonexistent, reproduces vegetatively by creeping stolons		A popular fragrant flower; plants form dense patches in wet bottomlands
Hau <u>Hibiscus tiliaceus</u>	Slopes and gulch bottoms	Forms impenetrable thickets of twining stems, 20-40 ft tall	Seeds not viable, reproduces vegetatively by layering	Escape for small rodents and pigs	Covers large areas with its twining, spreading stems
Giant uluhe <u>Hicriopteris pinnata</u>	Open forest slopes	Twining fern with large forked leaves, 4-7 ft tall	Spores		Forms dense mats on large areas of gulch sides
Marsh pennywort <u>Hydrocotyle subthorpioides</u>	Ground cover in wet open sites	Small creeping herb, 4-10 in high	Reproduces vegetatively by runners		Small, but common in wet openings
Kawau <u>Ilex anomala</u>	Middle elevation forests	Bushy trees, 15-35 ft tall	.25 in black berries in clusters	Fruit may be eaten by birds	Scattered in undisturbed forests
Kamakahala <u>Labordia</u> spp.	Middlestory trees or shrubs	Bushy growth, 3-20 ft tall	2 or 3 parted capsules, .5-1.5 in		Scattered growth or in small clusters

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<u>Rainforest (Continued)</u>					
Club-moss <u>Lycopodium</u> spp.	Ground cover in dense or open forests	Creeping or erect plants, 1-4 ft tall	Spore-bearing strobili		Scattered growth or in small clusters
Pala <u>Marattia douglasii</u>	Dense forest understory	A large fern, to 6 ft tall	Spores	Eaten by pigs	Becoming uncommon where pigs abound
Paperbark <u>Melaleuca leucadendra</u>	Ridgetops in wet forests	Erect bushy trees, 20-60 ft tall	.25 in capsules along twigs	Birds feed on flower nectar	Mostly planted stands; grow well and reproduces in swampy sites
Malabar melastome <u>Melastoma malabathricum</u>	Forest openings and clearings	Bushy shrubs, 6-10 ft tall	Hairy .5 in berries	Berries eaten by birds	Pioneers in forest openings and clearings; reproduces by seed and layering
Melochia <u>Melochia indica</u>	Low elevation forests	Large open crowned trees, 30-60 ft tall	Small capsules with winged seeds		A fast-growing tree that quickly takes over clearings
Ohia <u>Metrosideros collina</u>	Ubiquitous in rainforest sites at low and medium elevations	Erect, but crooked branched trees, shrubs, to 80 ft tall trees	Small capsules with tiny seeds	Forest birds and bees feed extensively on the flower nectar	Most common native tree; reproduces best in moss surface
Palapalai <u>Microlepia setosa</u>	Ground cover in dense forests	Medium sized ferns, 3-5 ft tall	Spores	Pigs root in rootstock	Honey tree; lacy fronds are popular for decoration; prefers shade
Bananas <u>Musa</u> spp.	Openings along forest streams	Erect fleshy plants, 6-20 ft tall	Bunches of bananas on stalks; seeds not viable	Fruit eaten by birds and pigs	Many forms in cultivation; reproduces by suckers
Fire tree <u>Myrica faya</u>	Open sites or forest clearings	Erect bushy trees, 15-50 ft tall	.25 in composite red berries	Fruit eaten by birds	Pioneers open sites; aggressive seeder; takes over pasture lands
Kolea laulii <u>Myrsine sandwicensis</u>	Understory in dense forests at middle elevations	Erect shrub, 6-10 ft tall	.13 in black berries		Grow only in undisturbed forests
Sword fern <u>Nephrolepis</u> spp.	Ground cover in forests	Erect clusters of fronds, 2-5 ft tall	Spores		Collected and used for decoration; forms dense mats
Makole <u>Nertera granadensis</u>	Ground cover in dense forests at middle elevations	Very low crawling plants spreading over forest floor, 6 ft tall	.13 in orange berries	Berries may be eaten by forest birds	Grows only in undisturbed forests
Ophioglossum <u>Ophioglossum</u> spp.	Epiphytes on tree trunks in moss	Often pendant from trunks, .5-1 ft tall	Spores		Common in wetter forests
Hala <u>Pandanus</u> spp.	Lower forests in more open sites, often in windy areas	Open spreading crowns, many aerial support roots	Large semi-dry sectioned fruit, 6-10 in in diameter	Fruit and seeds eaten by rats	Form either scattered or dense forests near the sea
Paragrass <u>Panicum purpurascens</u>	Grows along open streams and low areas at low elevations	Robust grass forming dense mats, up to 5 ft deep	Seeds infrequently, propagates by runners	Forage for many herbivorous	An aggressive quick-spreading grass that takes over clearings
Quackgrass <u>Panicum repens</u>	Low elevations in very wet sites	Forms dense mats, 3-5 ft deep	Small seeds on panicles; propagates more by runners	Poor forage grass	A troublesome weed where present
Alaalawainui <u>Peperomia</u> spp.	Ground cover in ravines in dense forests	Delicate herbaceous plants, 6-4 ft tall	Seeds borne on tiny fleshy spikes		Very susceptible to damage

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Rainforest (Continued)					
Olomea <u>Perrottetia sandwicensis</u>	Open wet forest sites	Large open-crowned shrub, 6-12 ft tall	Clusters of tiny red berries	Fruit may be eaten by forest birds	Found only in undisturbed forests
Phyllostegia <u>Phyllostegia</u> spp.	Ground cover in forests	Small shrubs or twining over other ground cover, 2-8 ft tall	Panicles of semi-dry nutlets		Usually scattered growth; reproduces slowly in disturbed areas
Mamaki <u>Pipturus</u> spp.	Understory in low and middle elevation forests	Bushy shrubs, 4-10 ft tall	Semi-dry clusters of tiny fruits	Seeds may be eaten by birds	Sprouts well when damaged, but slow to reproduce
Papala kepa <u>Pisonia umbellifera</u>	Overstory in low and middle elevation forests	Erect trees with rounded crowns, 20-40 ft tall	3 in long stick-like fruits with sticky covering		Sticky seeds used as a glue; reproduce well in shade
Polypodium <u>Polypodium</u> spp.	Ground cover in forests	Low ferns, 6-3 ft tall	Spores		Some ornamental forms; often grow in patches
Loulu <u>Pritchardia</u> spp.	Trees of the middle elevation forests	Straight-trunked fan palms, 10-60 ft tall	Ovoid dry fruits, .75-4 in long	Seeds eaten by pigs and rats	Grow usually in isolated clumps in undisturbed forests
Selfheal <u>Prunella vulgaris</u>	Ground cover in forest openings	Herbaceous weed, .5-1 ft tall	Tiny dry nutlets		Common in open disturbed areas
Waiowī <u>Psidium cattleianum</u>	Trees of the lower forests	Medium-sized erect trees, 25-50 ft tall	Fleshy .75-1.5 in fruits, with many seeds	Fruit eaten by birds and pigs	Form dense stands, often becoming climax; spread readily in clearings
Guava <u>Psidium guajava</u>	Low elevations in open areas or partial forest	Large shrub to medium-sized trees, 6-35 ft tall	Fleshy fruits, 1.5-3 in, with many seeds	Fruit eaten by birds, pigs, cattle, horses	Aggressive in pastures; sprouts well if cut or dozed
Kopiko <u>Psychotria</u> spp.	Middlestory trees in dense forests	Large shrubs to small trees, 10-25 ft tall	Ovoid orange berries with two seeds, .25-.5 in	Fruit may be eaten by birds	Common, but slow to come back in cleared areas
Kupaoa <u>Raillardia</u> spp.	Low cover in forests	Bushy shrubs, 4-8 ft tall	Feathery airborne seeds		Grow in undisturbed forests
Downy myrtle <u>Rhodomyrtus tomentosa</u>	Low elevation openings in forests	Bushy shrubs, 6-12 ft tall	Purple juicy berries with many small seeds	Fruit eaten by birds and rats	Very aggressive plants that take over and dominate sites
Neneleau <u>Rhus sandwicensis</u>	Low elevation forests or ridges and slopes	Loose-crowned trees, 15-30 ft tall	Panicles of tiny dry seeds		Uncommon, but gregarious where found
Blackberry <u>Rubus penetrans</u>	Understory in open forests or in open sites	Leaning, twining canes with thorns, 4-15 ft tall	Juicy black multiple fruits, .5-.75 in in diameter	Fruit eaten by birds, pigs, rats	Spreads through forests in openings; pioneer in clearings
Thimbleberry <u>Rubus rosaefolius</u>	Understory in low and middle elevation forests	Low thorny shrubs, 2-5 ft tall	Juicy red multiple fruits, .5 in in diameter	Fruit eaten by pigs and rats	Spreads in disturbed areas
Glenwood grass <u>Sacciolepis indica</u>	Open sites	A low grass, forming dense mats, 1 ft tall	Small dry seeds	Grass eaten by cattle, goats, horses	Only in disturbed areas
Amāu <u>Sadleria</u> spp.	Understory in all forests	Short-stalked tree-fern with large fronds, 4-10 ft tall	Spores	Leaves shoots, and the pith from the stalks eaten by pigs	A common understory fern; comes back well in disturbed areas
Naupaka <u>Scaevola</u> spp.	Open forests	Very bushy shrub, 3-7 ft tall	Black ovoid drupes, .25-.5 in long	Fruit may be eaten by forest birds	Common, but not aggressive

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<u>Rainforest (Continued)</u>					
Selaginella <u>Selaginella</u> spp.	Ground cover in wet and dark ravines	Low fern allies, .5-1 ft tall	Spores		Very pretty
African tulip <u>Spathodea campanulata</u>	Low elevation trees in forest openings	Erect oval-crowned trees, 20-50 ft tall	10 in long dry pod with many winged seeds		Very ornamental trees; scattered growth
West Indian dropseed <u>Sporobolus indicus</u>	Open sites and pastures	Tough grass, forming dense stands, 2-3 ft tall	Tiny dry seeds	Low quality forage in pastures	Persistent grass
Stenogyne <u>Stenogyne</u> spp.	Understory in forests at middle elevations	Low shrubs or crawling vines on forest floor	Small dry nutlets	Goats feed on this when in their range	Fairly common, but not aggressive
Oheohe <u>Tetraplasandra</u> spp.	Trees in open forests	Medium sized trees with erect trunks, 15-40 ft tall	.25-.75 in berries	Fruit may be eaten by forest birds	Scattered trees in undisturbed forests
Australian toon <u>Toona ciliata</u>	Overstory in bottomlands at middle elevations	Medium to large erect trees, 30-60 ft tall	Star-shaped dry capsules with winged seeds		Mostly planted stands
Filmy fern <u>Trichomanes</u> spp.	Ground cover or epiphytes in dense forests	Delicate lacy ferns that crawl along the ground or on tree trunks	Spores		Found in undisturbed forests
Opuhe <u>Urera</u> spp.	Middlestory in gully bottoms at middle elevations	Large shrubs with open crowns, 8-15 ft tall	Tiny orange berries	Fruit eaten by forest birds	Sometimes in patches along small streams
<u>Mesic forest</u>					
Black wattle <u>Acacia decurrens</u>	Forest openings, pastures	Bushy tree, 20-40 ft	Dehiscent pod	Nesting cover for small birds	Invades recent clearings; aggressive; cut for firewood
Cook-pine <u>Araucaria columnaris</u>	Forest openings	Narrow columnar, 50-100 ft	Deciduous cones	Nesting cover for doves	Ornamental plantings; good lumber
Norfolk Island pine <u>Araucaria heterophylla</u>	Forest openings	Columnar, 50-120 ft	Deciduous cones	Nesting cover for doves	Ornamental plantings; good lumber
Kookoolau <u>Bidens</u> spp.	Open grassy country	Small shrubs, 1-6 ft	Barbed achenes	Food for herbivores	Used for herb teas
Ahakea <u>Bobea mannii</u>	Moist forests	Bushy tree, 20-40 ft	.5 in red berry		
Alahee <u>Canthium odoratum</u>	Open sites, low elevations	Small erect bush or tree, to 15 ft	.25 in black berry		Very hard wood used for tools and implements
Papala <u>Charpentiera</u> spp.	Open forest sites	Small tree, to 12 ft	Panicles of .06 in naked seeds		Very soft wood
Poola <u>Claoxylon sandwichense</u>	Shaded forest understory	Large shrub, to 10 ft tall	Small capsules with tiny bluish seeds		
Coconut palm <u>Cocos nucifera</u>	Coastal sites in sandy soils	Large tree, to 80 ft tall	Nuts, 1 ft long, covered with a thick husk, woody shell surrounds meat and milk		Ornamental trees; edible nuts
Pilo <u>Coprosma</u> spp.	Shady forest understory	Shrubs to small trees, to 10 ft tall	.25 in orange berry	Food for some forest birds	Sometimes forming dense understory
Sugi <u>Cryptomeria japonica</u>	Shady forest, cool mountain sites	Columnar trees, to 80 ft tall	Small cones		Do not reproduce well in Hawaii
Monterey cypress <u>Cupressus macrophylla</u>	Open sites; prefers cool mountain sites	Large bushy trees, to 50 ft tall	1 in diameter woody cones		Used for windbreaks; slow to reproduce

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<u>Mesic forest (Continued)</u>					
Orchardgrass <u>Dactylis glomerata</u>	Forest openings in cool moist forests	Robust grass, 3-4 ft tall	Small dry seeds	Food for herbivores	Good high elevation pasture grass
Deschampsia <u>Deschampsia australis</u>	High elevation open sites	Dense bunch grass, to 3 ft tall	Tiny dry seeds	Food for goats and sheep at high elevations	Forms dense stands on high mountains
Ukiuki <u>Dianella sandwicensis</u>	Scrub forest open sites	Low lily-type plant, to 3 ft tall	.25-.5 in blue berries		Forms scattered clumps; berries may be used for a blue dye
Pangolagrass <u>Digitaria decumbens</u>	Open forest and pasture	Creeping grass forming dense cover, to 3 ft tall	Tiny dry seeds	Food for domestic stock and wild herbivores	An aggressive pasture grass covers weaker species
Aalii <u>Dodonaea sandwicensis</u>	Understory in open forests	Erect shrub to small tree, to 15 ft tall	Dry winged capsule with .06 black seeds		Sprouts and seeds after fires
Mehamehame <u>Drypetes phyllanthoides</u>	Dense forest sites with large trees	Large trees with massive trunks, to 80 ft tall	.25 in berry; fruit uncommon		Scattered large specimens; reproduces poorly
Red river gum <u>Eucalyptus camauldulensis</u>	Open forests	Large open bushy tree, to 60 ft tall	.38 in hard capsules with numerous seeds		Forms scattered open forests
Lemon gum <u>Eucalyptus citriodora</u>	Open forests	Tall erect open-crowned trees, to 100 ft	.5 in capsule with numerous seeds		Leaves have a strong citrus oil smell
Bluegum <u>Eucalyptus globulus</u>	Dense forests at higher elevations	Tall erect trees, 150 ft tall	.75-1 ft wide woody capsules	Heavy bee use during flowering	Good lumber, honey tree; aggressive seeder; stumps sprout
Java plum <u>Eugenia cumini</u>	Open forests and thickets at low elevations	Bushy trees, to 40 ft tall	.75 in purple juicy berry, astringent	Berry eaten by many birds	A fairly aggressive tree; sprouts well; seeds well
Akoko <u>Euphorbia</u> spp.	Understory in open forests	Low shrubs, to 8 ft tall	Tiny three-sided capsules		Scattered about; slow to reproduce
Uki <u>Gahnia beechyi</u>	Openings in forests and in scrub types	Robust sedge, to 4 ft tall	Panicles of shiny .06 in achenes		Forms scattered clumps
Silk-oak <u>Grevillea robusta</u>	Open forests and pastures	Large tree, to 70 ft tall	.5 in pods with papery seeds	Nesting cover for doves	Aggressively seeds in pastures and openings
Velvet grass <u>Holcus lanatus</u>	Forest openings in moist cool sites	Velvety grass, to 3 ft tall	Tiny dry seeds	Forage for cattle and wild herbivores	Forms dense stands in mountain sites
Gosmore <u>Hypochaeris radicata</u>	Cool mountain pastures and scrub forests	Low leaf rosette with ascending flower stalks	Feathery seeds, airborne	Flowers eaten by cattle and goats	Flowers profusely attract bees
Jacaranda <u>Jacaranda mimosifolia</u>	Pastures and open forests	Large bushy tree with open crown, to 50 ft tall	Woody pod bearing numerous papery seeds	Nesting cover for birds	Ornamental trees bearing showy purple flowers
Uki <u>Machaerina gahniiformis</u>	Scrub forest sites	Low sedge, to 2 ft tall	Panicles of shiny achenes		Forming scattered clumps
Mango <u>Mangifera indica</u>	Low elevation forests and open sites	Large round-crowned trees, to 70 ft tall	4-6 in ovoid fleshy fruit with one large seed	Fruit eaten by pigs, cattle, birds, insects	Very popular fruit; spreads slowly
Pride of India <u>Melia azedarach</u>	Open forests and pastures	Very open-crowned bushy trees, to 60 ft tall	Dry .75 in tan drupe		Hardy, but not aggressive
Molasses grass <u>Melinis minutiflora</u>	Forest openings, scrub forest, open range	Dense mats, to 6 ft deep	Tiny dry seeds	Forage for cattle and goats	Sticky grass, difficult to pass through fire hazard

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<u>Mesic forest (Continued)</u>					
Naio <u>Myoporum sandwicense</u>	Open forests, scrub forests	Medium-sized trees, to 30 ft tall	Dry drupes, .25 in	Eaten by goats and sheep when young; seeds eaten by native Palila birds	Found at middle and high elevations
Kolea <u>Myrsine lessertiana</u>	Middle elevation open forests	Bushy tree, to 30 ft tall	Black berry, .25 in diameter		Shade-tolerant; seeds well
Olopuia <u>Osmanthus sandwicensis</u>	Low to middle elevation open forests	Small bushy trees, to 25 ft tall	Black drupe, .5 in long; bitter	Seeds eaten by rodents	A common native tree, but not aggressive; sprouts after fires
Ulei <u>Osteomeles anthyllidifolia</u>	Scrub forests	Sprawling twining shrub, to 5 ft tall	Purplish-white berry	Fruit eaten by birds	Forms dense mats; fruits profusely
Paspalum <u>Paspalum</u> spp.	Low to middle elevation pastures and open forests	Dense sod forming, 1-5 ft tall	Small dry seeds	Forage for cattle and wild herbivores	Aggressive grasses
Kalamoho <u>Pellaea ternifolia</u>	High elevation open sites and scrubs	Tiny bunch fern, to 1 ft tall	Spores		Grows in very harsh sites at high elevations
Kikuyu grass <u>Pennisetum clandestinum</u>	Cool forest openings and pastures	Dense mat-forming grass, 2 ft tall	None; spreads vegetatively	Forage for cattle, goats, and pigs	Very aggressive; covers weaker plants
Napier grass <u>Pennisetum purpurea</u>	Middle elevation pastures and forest openings	Robust canelike grass forming dense stands, to 10 ft tall	Small dry seeds	Forage for horses and cattle	Aggressively spreads by root extension
Pine <u>Pinus</u> spp.	Middle and higher elevation cool forests	Tall trees, 40-120 ft tall	Woody cones with winged seeds		Mostly planted stands; seeds slowly
Monkeypod <u>Pithecellobium saman</u>	Low elevation open forests	Wide large spreading tree, to 50 ft tall	6 in pods with sticky pulp and brown seeds		Ornamental trees; germinate readily; rapid growing
Golden fern <u>Pityrogramma chrysophylla</u>	Scrub forests and open sites	Dense clump fern, up to 2 ft tall	Spores		Ornamental fern
Alaa <u>Planchonella</u> spp.	Open forests	Medium-sized tree, to 30 ft tall	Pulpy berries, .75-1.25 in, yellow or purple		Scattered growth; sticky sap formerly used for glue
Halapepe <u>Pleomele aurea</u>	Open and scrub forests, middle elevations	Small tree with open ascendant crown	Red berries borne in panicles	Seeds eaten by rodents	Ornamental trees; common, but not aggressive
Ae <u>Polypodium pellucidum</u>	High elevation open sites and scrub forest	Tough fern, to 1.5 ft tall	Spores		Grows only in scattered clumps
Moa <u>Psilotum nudum</u>	Open forests and barren sites	Tough fern ally, dense clumps	Spores		Scattered growth; attractive
Kopiko <u>Psychotria</u> spp.	Open and dense forests, middle elevations	Small to medium sized tree, to 25 ft tall	.25-.5 in berries; usually orange		Common, but never dense
Kilau <u>Pteridium aquilinum</u>	Open sites at middle to high elevations	Common rhizome-spreading fern, to 2 ft tall	Spores		Most common fern
Redtop <u>Rhynchelytrum repens</u>	Open range	Delicate bunch grass, to 2.5 ft tall	Small fuzzy seeds	Forage for cattle, goats, deer	Pretty grass when blooming; forms solid stands

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<u>Mesic forest (Continued)</u>					
Castorbean <u>Ricinus communis</u>	Low to middle elevations in openings	Large shrub, to 15 ft tall	Three-parted spiked capsule with three seeds		Seeds poisonous; aggressive seeder in openings
Akala <u>Rubus hawaiiensis</u>	High elevation forests and scrub	Erect slightly thorny stems, to 8 ft tall	Large composite berry, 1.5 in; black when ripe	Fruit eaten by birds and pigs	Edible berry; forms dense stands; sprouts after fires
Iliahi <u>Santalum</u> spp.	Middle to high elevation forests	Small to medium sized trees	Purple fleshy drupe, .5-.75 in	Seeds eaten by rodents	Fragrant wood; only scattered growth; sprout after fires
Manele <u>Sapindus saponaria</u>	Middle elevation forests	Tall erect trees, to 60 ft tall	.75 in brown drupe, one seed		Fruit pulp contains saponin
Pepper tree <u>Schinus molle</u>	Open sites	Bushy tree with pendant foliage, to 40 ft tall	Panicle of .13 in shiny red dry fruits		Ornamental trees; spreads slowly
Christmas berry <u>Schinus terebinthifolius</u>	Open sites scrub forest	Small tree, to 20 ft tall, bushy	Clusters of shiny red dry fruits		Aggressively takes over open areas; a pest in pastures; sprouts from stumps
Coast redwood <u>Sequoia sempervirens</u>	Cool, foggy mountain sites	Large erect tree, to 150 ft tall	Woody cones do not form in Hawaii		Beautiful trees; planted stands; does not spread
Mamani <u>Sophora chrysophylla</u>	High elevation scrub forest	Small- to medium-sized trees, 10-25 ft tall	3-6 in pod with hard yellow seeds	Seeds eaten by native Palila bird	Forms extensive stands, but is not aggressive
Palaa <u>Sphenomeris chusana</u>	Openings in forest at middle elevations	Clump fern, to 3 ft tall	Spores		Beautiful lacy leaves; popular for decoration
African dropseed <u>Sporobolus capensis</u>	Middle and high elevation pastures	Tough bunch grass, to 2 ft tall	Small reddish seeds	Poor forage	Persistent grass
Pukiawe <u>Styphelia tameiameia</u>	High elevation scrub forest	Dense shrubs, 3-6 ft tall	.5 in red to white dry drupes	Seeds eaten by pheasants	Slow-growing, but forms extensive stands
Ohelo <u>Vaccinium</u> spp.	Open forest understory	Small shrubs, to 5 ft tall	Bright red edible berries, .25-.5 in	Berries eaten by birds and pigs	Popular for jams and pies where abundant
Maua <u>Xylosma hawaiiense</u>	Forests at middle elevations	Medium-sized trees, bushy crowns, to 40 ft	.38 in dark purple berries	Birds may feed on berries	Scattered growth; slow to spread
Ae <u>Zanthoxylum</u> spp.	Forests at middle elevations	Medium-sized trees, 15-40 ft tall	.5 in green fruits born in small groups		Scattered growth
<u>Dry forest</u>					
Hoary abutilon <u>Abutilon grandifolium</u>	Open sites at low elevations	Erect shrub, 4-6 ft tall	Dry capsules with many seeds	Plants grazed by cattle, deer, goats	Fairly common, but not in pure stands
Mao <u>Abutilon incanum</u>	In partial shade at low elevations	Low sprawling shrub, 2 ft tall	Small .25 in capsules	Grazed by cattle	Found mostly within a few hundred yards of the ocean in very hot sites
Andropogon <u>Andropogon</u> spp.	Open sites and pastures at low and middle elevations	Medium-sized grasses, 1.5-4 ft tall	Small dry seeds with awns	Pasture forage	Spread readily
Puakala <u>Argemone glauca</u>	Very hot open sites at low elevations	Erect prickly poppy, 3-6 ft tall	2 in dry prickly capsule with numerous seeds		Scattered only; spreads slowly

continued

Table M4210-64.2 (Continued)

Species	Habitat	Form	Fruit	General wildlife use	Notes
<i>Dry forest (Continued)</i>					
Ahakea <u>Bobea sandwicensis</u>	Low elevation forests	Low spreading tree, 10-20 ft tall	.25 in purple berry with two seeds	Fruit eaten by birds	Scattered sparingly in forests; reproduces slowly
Mala pilo <u>Capparis sandwichiana</u>	Low elevation exposed sites	Sprawling vines drape over rocks, 2-4 ft tall	2 in long banana-shaped fruit with many seeds		Scattered in areas near the seashore; but not a beach plant
Kolomona <u>Cassia floribunda</u>	Open sites and pastures at low elevations	Shrubs to small trees, 6-12 ft tall	Dry pods with brown flattened seeds	Cattle may graze this when forage is scarce	Spreads rapidly in pastures
Ironwood <u>Casuarina equisetifolia</u>	Low elevations often near the sea	Medium to large trees with pendant needles, 30-60 ft tall	.75 in canelike capsules with winged seeds	Nesting cover for doves and other birds	Grows in windy sites; spreads slowly
Buffel grass <u>Cenchrus ciliaris</u>	Low elevations, open sites	Erect grass, 2-4 ft tall	Small barbed seeds	Forage in the spring and summer	Forms extensive stands over large acreages; aggressive
Aheahea <u>Chenopodium oahuense</u>	Low to high elevations, open sites	Small shrubs, 2-5 ft tall	Small dry seeds		Scattered and only locally common
Plush grass <u>Chloris radiata</u>	Low elevations, open sites and fields	Small- to medium-sized grass, 1.5-3 ft tall	Small hairy seeds	Forage in spring and summer	Commonly found in cane fields and wastelands
Feather fingergrass <u>Chloris virgata</u>	Low elevations, open sites and fields	Small grass, 1-2 ft tall	Small hairy seeds	Same as <u>C. radiata</u>	Same as <u>C. radiata</u>
Rattlebox <u>Crotolaria incana</u>	Low elevations, open sites	Small shrubs, 1.5-3 ft	Seeds loose inside 1 in fuzzy pods		A weed in fields and pastures
Lama <u>Diospyros ferrea</u>	Low and middle elevation forests	Small spreading trees, 10-20 ft tall	Seeds inside a fleshy 1 in covering	Fruit eaten by birds; seeds eaten by rats	Scattered trees; slow to reproduce
Aalii <u>Dodonaea eriocarpa</u>	Low and middle elevations, open sites and scrub	Small shrubs, woody, 2-6 ft tall	Seeds inside an inflated dry shell, .5 in across		Sometimes forming good cover; not aggressive
Dryopteris <u>Dryopteris</u> spp.	Open sites at low elevations	Small clump ferns that grow from under rocks and logs, .5-1 ft high	Spores		Scattered about in waste places
Williwili <u>Erythrina sandwicensis</u>	Low elevations in open sites in arroyos	A small spreading tree, 10-30 ft tall; loses leaves during the summer	Red-orange beans borne in 3-4 in pods	Cattle, goats, deer will eat the young trees	Very light soft wood; scattered growth
Akoko <u>Euphorbia celastroides</u>	Open sites at low and middle elevations	Low spreading shrubs, 1-4 ft tall	Small three-sided capsules, .13 in wide		Scattered growth; slow to reproduce
Mao <u>Gossypium sandwicense</u>	Open sites at low elevations	Low sprawling shrubs, 3 ft tall by 4-6 ft wide	Small cotton balls with seeds imbedded	Grazed by cattle, deer, goats	Grows in extremely hot sites near the ocean; scattered
Pili grass <u>Heteropogon contortus</u>	Dry open sites at low elevations	Erect grass with nodding heads, 2-3 ft tall	Awned and barbed seeds	Grazed by cattle, deer, goats	Persistent, but not aggressive
Lantana <u>Lantana camara</u>	Open sites at low and middle elevations	Bushy thorny shrub, 3-6 ft tall	Small clusters of bluish .13 in nutlets		A pasture pest; grows well in wastelands

continued

Table M4210-64.2 (Concluded)

Species	Habitat	Form	Fruit	General wildlife use	Notes
Dry forest (Continued)					
Koa haole <u>Leucaena leucocephala</u>	Low elevations in open sites	Erect shrub to small tree, 4-20 ft tall	.5 in brown pods with .13 in flat-tened seeds	Good forage	Spreads rapidly in dry pastures
Nehe <u>Lipochaeta</u> spp.	Open sites at low elevations	Low sprawling tough shrubs, 1-4 ft tall	Small dry achenes	Grazed by cattle, deer, goats	Scattered growth, not common
Keahi <u>Nesoluma chrysophylla</u>	Open sites and low elevation forests	Small bushy trees, 15-25 ft tall	Shiny black .5 in drupes		Scattered and uncommon
Aiea <u>Nothocestrum latifolium</u>	Low elevation forests	Small bushy trees, 15-35 ft tall	.38 in orange berries	Berries eaten by birds	Scattered in dry pastures
Kului <u>Nototrichium sandwicense</u>	Low elevations in open sites	Bushy shrubs, 4-7 ft tall	Dry compact spikes		Same as <u>N. latifolium</u>
Panini <u>Opuntia</u> spp.	Low elevations in exposed sites	Fleshy spiny plants, 4-12 ft tall	Fleshy fruit, 3 in long, with seeds imbedded	Cattle will eat this only if starving and thirsty	A pest in pastures; sprouts readily when cleared
Guinea grass <u>Panicum maximum</u>	Low elevations in open sites	A robust grass, 4-7 ft tall	Panicles of small dry seeds	Good forage	Aggressive grass, forming dense stands
Opiuma <u>Pithecellobium dulce</u>	Low elevations on coastal plains and gullies	A large bushy tree, 30-60 ft tall	Curling 5 in pods with small brown seeds	Young growth eaten by cattle	Scattered along coastal dry areas
Alaa <u>Planchonella spathulata</u>	Low to middle elevations in open sites	Small- to medium-sized trees, 20-40 ft tall	1-2 in semi-fleshy berries with milky sap		Sticky sap was used as a glue; few scattered trees
Indian pluchea <u>Pluchea indica</u>	Low elevations near the sea; open sites	Very bushy shrub, 4-7 ft tall	Feathery airborne seeds		Grows thickly in salt marshes near the ocean
Kiawe <u>Prosopis pallida</u>	Open sites at low elevations	Open-crowned thorny tree, very sturdy, 20-50 ft tall	A pale yellow sweet bean pod with 6-10 seeds	Cattle and horses relish the pods; bees are attracted to the flowers	Wood good for posts and firewood; trees grow to larger size on coastal plains; smaller on mountain slopes
Hao <u>Rauvolfia</u> spp.	Low elevations in forests in open sites	Small trees with spreading crowns	Shiny black twinned .5 in drupes		Trees contain the medicinal compound, Reserpine; trees reproduce slowly
Ohe makai <u>Reynoldsia</u> spp.	Low elevations in open sites	Erect, but widely branching trees that lose their leaves during the summer	Clusters of juicy .38 in berries	Berries eaten by birds	Very distinctive dry land trees; scattered growth, but locally common
Iliahi <u>Santalum ellipticum</u>	Low elevations in open sites	Low shrubs to small trees, 4-12 ft tall	.5 in purplish drupes		Very scattered growth; slow-growing
Bristly foxtail <u>Setaria verticillata</u>	Beneath trees near the coast	Low grass that dries up in the summer	Bristly heads that stick to clothes	Forage during spring months	A short-lived seasonal grass
Ilima <u>Sida</u> spp.	Lowland and coastal open sites	Low crawling or erect shrubs, .5-5 ft tall	Small dry capsules with 2 pointed seeds		Quick to sprout in clearings, but not aggressive
Akia <u>Wikstroemia</u> spp.	Open sites at low elevations	Crawling or bushy shrubs, 1-5 ft tall	.5 in long orange berries		Poisonous plants; slow-growing

REFERENCES

- Abrams, L. 1940. Illustrated flora of the Pacific States. Vol. 1. Ophioglossaceae to Aristolochiaceae. Stanford University Press, Stanford, Ca. 538 pp.
- . 1944. Illustrated flora of the Pacific States. Vol. 2. Polygonaceae to Krameriaceae. Stanford University Press, Stanford, Ca. 635 pp.
- . 1951. Illustrated flora of the Pacific States. Vol. 3. Geraniaceae to Scrophulariaceae. Stanford University Press, Stanford, Ca. 866 pp.
- , and R.S. Ferris. 1960. Illustrated flora of the Pacific States. Vol. 4. Bignoniaceae to Compositae. Stanford University Press, Stanford, Ca. 732 pp.
- Ahlgren, C.F. 1966. Small mammals and reforestation after prescribed burning. *J. For.* 64(9):614-618.
- Ames, C.R. 1977. Wildlife conflicts in riparian management: grazing. Pages 49-51 in R.R. Johnson, and D.A. Jones, tech. coords. Importance, preservation, and management of riparian habitat: a symposium. U.S. For. Serv. Gen. Tech. Rep. RM-43.
- Bailey, R.G. 1976. Ecoregions of the United States. U.S. For. Serv., Intermtn. Reg., Ogden, Utah. 1 map.
- Bailey, R.G. 1978. Description of the ecoregions of the United States. U.S. For. Serv. Intermtn. Reg., Ogden, Utah. 77 pp.
- Blair, W.F. 1940. A contribution to the ecology and faunal relationships of the mammals of the Davis Mountain region, southwestern Texas. *Mus. Zool. Univ. Mich. Misc. Publ.* 46:1-39.
- . 1952. Mammals of the Tamaulipan biotic province in Texas, Tex. *J. Sci.* 4:230-250.
- Bovey, R.W. 1977. Response of selected woody plants of the United States to herbicides. U.S. Government Printing Office, Washington, D.C. 101 pp.
- Bowser, C.W. 1957. Introduction and spread of the undesirable tamarisks in the Pacific Southwestern section of the United States and comments concerning the plants, influence upon the indigenous vegetation. *Trans. Am. Geophys. Union* 38(3):1-7.
- Bradley, W.G., and J.E. Deacon. 1965. The biotic communities of southern Nevada. Univ. Nev., Desert Res. Inst. Preprint 9. 74 pp.
- Brandt, H. 1951. Arizona and its birdlife. *Bird Res. Found.*, Cleveland, Ohio. 723 pp.
- Brown, D.E., and C.H. Lowe. 1974. A proposed classification for natural and potential vegetation in the Southwest with particular reference to Arizona. *J. Ariz. Acad. Sci.* 9(suppl. 2):1-11.
- Brown, D.E., and J.F. Hausler. 1977. Southwestern riparian communities: their biotic importance and management in Arizona. Pages 201-211 in R.R. Johnson and D.A. Jones, tech. coords. Importance, preservation, and management of riparian habitat: a symposium. U.S. For. Serv. Gen. Tech. Rep. RM-45.
- Buechner, H.D. 1950. Life history, ecology, and range use of the pronghorn antelope in Trans-Pecos Texas. *Am. Midl. Nat.* 43(2):257-354.
- Cable, D.R., and S.C. Martin. 1975. Vegetation responses to grazing, rainfall, site condition, and mesquite control on semidesert range. U.S. For. Serv. Res. Pap. RM-149. 24 pp.
- Carothers, S.W., and R.R. Johnson. 1970. A summary of the Verde Valley breeding bird survey, 1970. *Mus. North. Ariz.* 13 pp.
- , and S.W. Aitchinson. 1974. Population structure and social organization of southwestern riparian birds. *Am. Zool.* 14:97-108.
- Cary, W.P. 1971. Effects of Utah juniper removal on herbage yields from Springerville soils. *J. Range Manage.* 24:373-378.
- , M.B. Baker, Jr., P.F. O'Connell, T.N. Johnsen, Jr., and R.E. Campbell. 1974. Effects of pinyon-juniper removal on natural resource products and uses in Arizona. U.S. For. Serv. Res. Pap. RM-128.
- Castetter, E.F. 1956. The vegetation of New Mexico. *N. Mex. Q.* 26:257-288.
- Christenson, E.M., and H.B. Johnson. 1964. Presettlement vegetation and vegetational change in three valleys in central Utah. *Brigham Young Univ. Sci. Bull., Biol. Ser.* 4:1-16.
- Clover, E.U. 1937. Vegetational survey of the Lower Rio Grande Valley, Texas. *Madrone* 4:41-66, 77-100.
- Collins, H.H., Jr. 1959. Complete field guide to American wildlife. Harper & Row, N.Y. 683 pp.
- Correll, D.S., and H.B. Correll. 1972. Aquatic and wetland plants of Southwestern United States. U.S. Government Printing Office, Washington, D.C. 1777 pp.
- Cronquist, A., A.H. Holmgren, N.H. Holmgren, and J.L. Reveal. 1972. Intermountain flora vascular plants of the Intermountain West, USA, Vol. 1. Hafner Publishing Co., N.Y. 270 pp.
- Crowston, A., H. Getz, and L. Martin. 1973. Natural grassland resources in the Little Missouri Grassland study area. Part 1. Little Missouri Grasslands Study - final report. Dep. Planning, North Dakota State University. Fargo, N.D. 244 pp.
- Daubenmire, R. 1952. Forest vegetation of northern Idaho and adjacent Washington, and its bearing on concepts of vegetation classification. *Ecol. Monogr.* 22(4):301-330.
- . 1968. Plant communities: a textbook of plant synecology. Harper & Row, New York, N.Y. 300 pp.
- Davis, G.A. 1977. Management alternatives for the riparian habitat in the Southwest. Pages 59-67 in R.R. Johnson, and D.A. Jones, tech. coords. Importance, preservation, and management of riparian habitat: a symposium. U.S. For. Serv. Gen. Tech. Rep. RM-45.

References

- For. Serv. Gen. Tech. Rep. RM-43. 217 pp.
- Davis, G.P. 1973. Man and wildlife in Arizona: the presettlement era, 1823-1964. M.S. Thesis. University of Arizona.
- Dayton, W.A. 1931. Important western browse plants. U.S. Dep. Agric. Misc. Publ. 101. 213 pp.
- Deitschman, G.H. 1973. Mapping of habitat types throughout a national forest. U.S. For. Serv. Gen. Tech. Rep. INT-11. 14 pp.
- Del Maral, R., and J.N. Long. (In press). Classification of montane forest community types in the Cedar River drainage of western Washington, USA. Can. J. For. Res. n.p.
- Dice, L.R. 1943. The biotic provinces of North America. University of Michigan Press, Ann Arbor, Mich. 77 pp. + map.
- Dyrness, C.T., J.F. Franklin, and W.H. Moir. 1974. A preliminary classification of forest communities in the central portion of the western Cascades in Oregon. US/IBP Bull. 4. Coniferous For. Biome. Univ. Wash., Seattle, Wash. 121 pp.
- Fenneman, N.M. 1931. Physiography of Western United States. McGraw-Hill Book Co., Inc., New York, N.Y. 534 pp.
- Fitzgerald, B.J. 1966. The microenvironment in a Pacific Northwest bog and its implications for establishment of conifer seedlings. M.S. Thesis. University of Washington. 164 pp.
- Franklin, J.F., and C.T. Dyrness. 1973. Natural vegetation of Oregon and Washington. U.S. For. Serv. Gen. Tech. Rep. PNW-8. 109 pp.
- Graham, F.H. 1941. Legumes for erosion control and wildlife. U.S. Dep. Agric. Misc. Publ. 412. 153 pp.
- Hall, F.C. 1967. Vegetation-soil relations as a basis for resource management on the Ochoco National Forest of central Oregon. Ph.D. Thesis. Oregon State University. 207 pp.
- Hanes, T.L. 1970. Succession after fire in the chaparral of southern California. Ecol. Monogr. 41(1):27-49.
- Hibbert, A.R., E.A. Davis, and D.G. Scholl. 1974. Chaparral conversion potential in Arizona. Part I: water yield response and effects on other resources. U.S. For. Serv. Res. Pap. RM-126. 36 pp.
- Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1955. Vascular plants of the Pacific Northwest. Part 5: Compositae. University of Washington Press, Seattle, Wash. 343 pp.
- _____. 1959. Vascular plants of the Pacific Northwest. Part 4: Ericaceae through Campanulaceae. University of Washington Press, Seattle, Wash. 614 pp.
- _____. 1964. Vascular plants of the Pacific Northwest. Part 2: Salicaceae to Saxifragaceae. University of Washington Press, Seattle, Wash. 597 pp.
- _____. 1969. Vascular plants of the Pacific Northwest. Part I: Vascular cryptogams, gymnosperms, and monocotyledons. University of Washington Press, Seattle, Washington. 914 pp.
- Horton, J.S., F.C. Mounts, and J.M. Kraft. 1960. Seed germination and seedling establishment of phreatophyte species. U.S. For. Serv. Res. Pap. RM-48. 26 pp.
- Johnson, R.R., L.T. Haight, and J.M. Simpson. 1977. Endangered species vs. endangered habitats: a concept. Pages 68-79 in R.R. Johnson, and D.A. Jones, tech. coords. Importance, preservation and management of riparian habitat: a symposium. U.S. For. Serv. Gen. Tech. Rep. RM-43.
- Jones, J.R. 1973. Southwestern mixed conifers. Pages 47-49 in Silvicultural systems of the major forest types of the United States. U.S. Dep. Agric. Agric. Handb. 445.
- Kearney, T.H., and R.H. Peebles. 1951. Arizona flora. University of California Press, Berkeley, Ca. 1032 pp.
- Kincer, J.B. 1922. Precipitation and humidity. In Atlas of American Agriculture. U.S. Government Printing Office, Washington, D.C.
- Krajina, V.J. 1959. Bioclimatic zones in British Columbia. Univ. B.C. Bot. Ser. I. Vancouver, B.C. 47 pp.
- Lang, F.A. 1961. A study of vegetation change in the gravelly prairies of Pierce and Thurston Counties, Western Washington. Thesis. University of Washington. 109 pp.
- Long, J.N. 1976. Forest vegetation dynamics within the *Abies amabilis* zone of western Cascades watershed. Ph.D. Thesis. University of Washington. 175 pp.
- Lowe, C.H. 1959. Contemporary biota of the Sonoran Desert: problems. Pages 54-74 in University of Arizona, Arid Lands Colloquia 1958-59.
- _____. 1964. Arizona's natural environment. The University of Arizona Press, Tucson, Ariz. 136 pp.
- Lull, H.W., and L. Ellison. 1950. Precipitation in relation to altitude in central Utah. Ecology 31:479-484.
- Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. American wildlife and plants - a guide to wildlife food habits. Dover Publications, New York, N.Y. 500 pp.
- Mayfield, R. 1960. The Kirtland's warbler. Cranbrook Institute of Sciences, Bloomfield Hills, Mich. 242 pp.
- Michigan Department of Natural Resources. 1976. Michigan's endangered and threatened species program. Lansing, Mich. 30 pp.
- Muller, C.H. 1947. Vegetation and climate of Coahuila, Mexico. Madrono 9:33-57.
- Munz, P.A. 1974. A flora of southern California. University of California Press, Berkeley, Ca.
- _____. and D.D. Keck. 1970. A California flora. Uni-

- versity of California Press, Berkeley, Ca. 984 pp.
- Ohmart, R.D. 1973. Observations on the wintering birds and mammals in the proposed Buttes Dam site, Central Ariz. Bur. Reclam. Proj., Boulder City, Nev. 16 pp.
- Oosting, H.J. 1957. The study of plant communities. W.H. Freeman & Co., San Francisco, Ca. 389 pp.
- _____, and J.F. Reed. 1952. Virgin spruce—fir of the Medicine Bow Mountains, Wyoming. Ecol. Monogr. 22:69-90.
- Pase, C.P., and W.W. Lindenmuth, Jr. 1971. Effects of prescribed fire on vegetation and sediment in oak—mountain mahogany chaparral. J. For. 69:800-805.
- Patton, D.R., and H.D. Avant. 1970. Fire stimulated aspen sprouting in a spruce—fir forest in New Mexico. U.S. For. Serv., Note TRM-159. 3 pp.
- Pfister, R.D. 1977. Forest habitat types of Montana. U.S. For. Serv. Gen. Tech. Rep. INT-34. 174 pp.
- _____, B.L. Kovalchik, S.F. Arno, and R.C. Presby. 1974. Forest habitat types of Montana. U.S. For. Serv. Gen. Tech. Rep. INT-34. 213 pp.
- Phillips, A., J. Marshall, and F. Monson. 1964. The birds of Arizona. University of Arizona Press, Tucson, Ariz. 212 pp.
- Plummer, A.P., D.R. Christensen, and S.B. Monson. 1968. Restoring big-game range in Utah. Utah Div. Fish Game Publ. 68-3. 183 pp.
- Pond, F.W. 1971. Chaparral: 47 years later. U.S. For. Serv. Res. Pap. RM-69. 11 pp.
- Robinson, T.W. 1965. Introduction, spread and areal extent of salt cedar (*Tamarix*) in the Western States. Studies of evapo-transpiration. Geol. Surv. Prof. Pap. 491-A.
- Rusz, P.J., and A. Bourgeois. 1976. Natural resources inventory and management plan for the Denmark Property, Roscommon County, Michigan. 40 pp. [Unpubl.]
- Rutske, L.H. 1969. A Minnesota guide to forest game habitat improvement. Minn. Dep. Conserv. Tech. Bull. 10. 69 pp.
- Schmidt, W.C., R.C. Shearer, and A.L. Roe. 1976. Ecology and silviculture of western larch forests. U.S. For. Serv. Tech. Bull. 1520. 96 pp.
- Scott, D.R.M., and J.N. Long. 1972. Forest plant communities of the lower Cedar River watershed. US/IBP Coniferous Forest Biome Int. Rep. 102. Univ. Wash., Seattle, Wash. 16 pp.
- Shreve, F. 1915. The vegetation of a desert mountain range as conditioned by climatic factors. Carnegie Inst. Wash. Publ. 217-1-112.
- _____. 1925. Ecological aspects of the deserts of California. Ecology 6:93-103.
- _____. 1942a. Grassland and related vegetation in northern Mexico. Madrono 6:190-198.
- _____. 1942b. The vegetation of Arizona. Pages 10-23 in T.H. Kearny and R.H. Peebles, Flowering plants and ferns in Arizona. U.S. Dep. Agric. Misc. Publ. 423.
- _____. 1942c. The desert vegetation of North America. Bot. Rev. 8:195-246.
- Turner, R.M. 1974. Quantitative and historical evidence of vegetation changes along the upper Gila River, Arizona. U.S. Geol. Serv. Prof. Pap. 655-H. 20 pp.
- U.S. Forest Service. 1948. Woody plant seed manual. U.S. Dep. Agric. Misc. Publ. 654. 416 pp.
- VanDersal, W.R. 1958. Native woody plants of the United States, their erosion-control and wildlife values. U.S. Dep. Agric. Misc. Publ. 303. 362 pp.
- Viereck, L.A. 1966. Succession and soil development on gravel outwash of the Muldrow Glacier, Alaska. Ecol. Monogr. 35:181-199.
- Warner, J.R., and C.D. Chase. 1956. The timber resource of North Dakota. U.S. For. Serv., Lake States For. Exp. Stn. Pap. 36. 39 pp.
- Warren, D.K., and R.M. Turner. 1975. Salt cedar (*Tamarix chinensis*) seed production, seedling establishment, and response to inundation. J. Ariz. Acad. Sci. 10(3):117-119.
- Whittaker, R.H. 1960. Vegetation of the Siskiyou Mountains, Oregon and California. Ecol. Monogr. 30:279-338.
- Wigal, D.D. 1973. A survey of the nesting habitats of the white-winged dove in Arizona. Ariz. Game Fish Dep. Spec. Rep. 37 pp.
- Yocum, C., and W.P. Dasmann. 1969. Pacific coastal wildlife region. Revised ed. Naturegraph Co., Healdsburg, Ca. 120 pp.
- Zimmerman, R.C. 1969. Plant ecology of an arid basin Tres Alamos—Redington areas. U.S. Geol. Surv. Prof. Pap. 485-D. 51 pp.

3

Selected Fish and Wildlife Species

Vegetation maintenance techniques for the biological communities present in the Western United States (Bailey 1978) have been discussed in detail. Equally vital to the management of transmission line ROWs, however, are the many forms of wildlife dependent on this vegetation for food and cover. The fish and wildlife species selected for inclusion in this discussion include: 1) endangered or threatened species, 2) local/statewide unique or uncommon species, 3) game species, 4) nongame species of public interest or concern, and 5) undesirable or pest species. This selection was based on information obtained from Federal and State agencies, private organizations, U.S. and State endangered species lists, and consultants to the authors.

65 MAMMALS, BIRDS, AND AMPHIBIANS AND REPTILES OF THE WESTERN UNITED STATES

A tabular listing of the mammals, birds, and amphibians and reptiles of the Western United States of concern in ROW management (tables 65.1, 65.2, 65.3, 65.4) is followed by a province-by-province description of the western fauna taken primarily from Bailey (1978). A series of Ecological Characteristics tables (tables 65.5, 65.6, 65.7), describing the selected mammal, bird, and amphibian and reptile species follows and provides essential information concerning the status of the species and their basic requirements. Because many biologists' responses about selected wildlife species included general mention of "songbirds" or "waterfowl," most species that commonly breed within the United States are included in a separate table (table 65.8), categorized according to nesting habits. U.S. endangered/threatened fish are listed by their respective ranges (table 65.9). State endangered/threatened fish and wildlife are listed by State (table 65.10).

Scientific names for mammals are those in use by the American Society of Mammalogists (Jones et al. 1975). For birds, the American Ornithologists' Union (1957) was the source for scientific names. Conant (1965) was the reference used for names of amphibians and reptiles.

LISTING OF MAMMALS, BIRDS, AND AMPHIBIANS AND REPTILES

Selected mammals, birds, and amphibians and reptiles of the Western United States are listed in alphabetical order by common name in the tables that follow. The tables (tables 65.1, 65.2, 65.3, 65.4) are designed as matrixes. Province numbers are listed across the top of the matrix, species names along the left side. An "X" appears after the name of each species in the column under every province in which that species is considered important. "Importance" was determined by biologists belonging to the previously mentioned agencies and organizations. These matrixes are organized to enable the reader to find a species and corresponding ecological characteristics for any province quickly, while at the same time locating other provinces in which the species is considered important.

Table 65.1 Matrix of Selected Mammals of the Western United States by Province

Species	Province																						
	1210	1220	1310	1320	2410	2610	3110	3120	3130	3140	3210	3220	M1210	M1310	M2110	M2410	M2610	M2620	M3110	M3120	P3130	A3140	M4210
Badger (<i>Taxidea taxus</i>)						X	X		X	X	X	X				X	X	X	X	X	X	X	
Bat, Hawaiian hoary (<i>Lasiurus cinereus semotus</i>)																							X
Bear, black (<i>Ursus americanus</i>)		X	X	X			X				X		X	X		X	X		X	X	X	X	
Bear, grizzly (<i>Ursus arctos</i>)	X	X	X	X									X	X	X	X			X				
Beaver (<i>Castor canadensis</i>)		X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
Bison (<i>Bison bison</i>)														X					X				X
Bobcat (<i>Lynx rufus</i>)						X	X		X	X	X	X			X	X	X	X	X	X	X	X	
Burro, feral (<i>Equus asinus</i>)									X	X	X	X								X	X		
Caribou (<i>Rangifer tarandus</i>)	X	X	X	X									X	X	X								
Coati (Coatimundi) (<i>Nasua nasua</i>)										X	X									X			
Coyote (<i>Canis latrans</i>)	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	
Deer, axis (<i>Axis axis</i>)																							X
Deer, mule (Black-tailed deer) (<i>Odocoileus hemionus</i>)						X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X
Deer, white-tailed (<i>Odocoileus virginianus</i>)							X			X	X	X			X	X			X	X		X	
Elk (Wapiti) (<i>Cervus canadensis</i>) (<i>Cervus elaphus</i>)							X		X		X				X	X	X		X	X		X	
Ferret, black-footed (<i>Mustela nigripes</i>)							X				X								X	X	X	X	
Fox, Arctic (<i>Alopex lagopus</i>)	X	X											X	X		X							
Fox, gray (<i>Urocyon cinereoargenteus</i>)						X	X		X	X	X	X				X	X	X		X	X	X	
Fox, kit (<i>Vulpes macrotis</i>)						X			X	X		X						X		X			
Fox, red (<i>Vulpes vulpes</i>)	X	X	X	X		X	X		X				X	X		X			X			X	
Fox, swift (<i>Vulpes velox</i>)						X													X				
Goat, feral (<i>Capra hircus</i>)																	X		X				X
Goat, mountain (<i>Oreamnos americanus</i>)							X								X	X	X		X				
Gopher, pocket (<i>Thomomys</i> spp.)						X	X	X	X	X	X	X				X	X	X	X	X	X	X	X
Hare, snowshoe (Varying hare) (<i>Lepus americanus</i>)	X	X	X				X						X	X	X	X	X		X				X

continued

Table 65.1 (Concluded)

Species	Province																						
	1210	1220	1310	1320	2410	2610	3110	3120	3130	3140	3210	3220	M1210	M1310	M2110	M2410	M2610	M2620	M3110	M3120	P3130	A3140	M4210
Horse, feral (<u>Equus caballus</u>)									X														X
Jackrabbit, black-tailed (<u>Lepus californicus</u>)						X	X	X	X	X	X	X				X	X	X	X	X	X		
Jackrabbit, white-tailed (<u>Lepus townsendi</u>)							X	X	X						X		X		X		X	X	
Jaguar (<u>Felis onca</u>)										X	X												
Lion, mountain (Cougar, panther, puma) (<u>Felis concolor</u>)							X		X	X	X	X			X	X	X	X	X	X	X	X	
Lynx (<u>Lynx lynx</u>)	X	X	X	X										X	X	X	X		X				X
Marmots (Western) (<u>Marmota</u> spp.)				X	X	X			X	X				X	X	X	X	X		X		X	X
Mink (<u>Mustela vison</u>)	X	X	X	X	X	X	X	X		X				X	X	X	X	X		X			X
Moose (<u>Alces alces</u>)	X	X	X	X										X	X	X	X		X				X
Mouflon (<u>Ovis musimon</u>)																							X
Mouse, salt marsh harvest (<u>Reithrodontomys raviventris</u>)																		X					
Musk ox (<u>Ovibos moschatus</u>)	X	X																					
Muskrat (<u>Ondatra zibethicus</u>)			X	X	X	X	X	X		X		X		X	X	X	X	X	X	X	X	X	X
Nutria (<u>Myocastor coypus</u>)							X		X							X			X				
Ocelot (<u>Felis pardalis</u>)										X	X												
Opossum (<u>Didelphis virginiana</u>)						X	X										X	X		X			
Otter, river (<u>Lutra canadensis</u>)	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X
Peccary (Javelina) (<u>Tayassu tajacu</u>)										X	X	X									X		
Prairie dogs (<u>Cynomys</u> spp.)							X				X								X		X	X	
Pronghorn (<u>Antilocapra americana</u>)							X	X	X	X	X	X							X	X	X	X	X
Rabbit, brush (<u>Sylvilagus bachmani</u>)						X										X	X	X					
Rabbit, desert cottontail (Audubon cottontail) (<u>Sylvilagus audubonii</u>)						X	X		X	X	X	X						X	X	X	X	X	
Rabbit, eastern cottontail (<u>Sylvilagus floridanus</u>)						X				X		X							X	X	X	X	
Rabbit, Nuttall's cottontail (Mountain cottontail) (<u>Sylvilagus nuttallii</u>)							X		X						X		X		X				X
Rabbit, pygmy (<u>Sylvilagus idahoensis</u>)									X									X					
Raccoon (<u>Procyon lotor</u>)						X	X		X	X						X	X	X	X	X	X		
Rat, Morro Bay kangaroo (<u>Dipodomys heermanni morroensis</u>)																		X					
Rat, Ord's kangaroo (<u>Dipodomys ordii</u>)							X		X	X	X								X	X	X	X	
Ringtail (Ringtail cat, civet) (<u>Bassaricus astutus</u>)						X			X	X	X					X	X	X	X	X	X		
Sheep, bighorn (<u>Ovis canadensis</u>)							X		X		X				X	X		X	X	X			
Sheep, dall (white sheep) (<u>Ovis dalli</u>)													X	X		X							
Sheep, feral (<u>Ovis aries</u>)																							X
Skunks (all species)					X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X
Squirrel, Apache fox (<u>Sciurus apache</u>)										X													
Squirrel, eastern fox (<u>Sciurus niger</u>)							X																
Weasels (3 species) (<u>Mustela</u> spp.)	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Wolf, gray (<u>Canis lupus</u>)	X	X	X	X							X?		X	X	X	X		X					

Table 65.2 Matrix of Additional Select Mammals of the Western United States by Province (Probably not Compatible with ROWs)

Species	Province																							Status ^a
	1210	1220	1310	1320	2410	2610	3110	3120	3130	3140	3210	3220	M1210	M1310	M2110	M2410	M2610	M2620	M3110	M3120	P3130	A3140	M4210	
Bear, polar	X	X																						4
Beaver, mountain																X	X							3
Fisher															X	X	X		X					2
Marten			X	X									X	X	X	X	X		X					2
Phenacomys, tree																X								1
Pig, feral																						X		3
Porcupine			X	X		X	X		X				X	X	X	X	X		X	X	X	X		2
Squirrel, Abert's																			X	X	X			1
Squirrel, Douglas					X											X	X							1
Squirrel, northern flying															X	X	X		X					1
Squirrel, southern flying							X																	1
Squirrel, eastern gray							X																	1
Squirrel, western gray																X	X	X						1
Squirrel, red															X				X	X	X	X		1
Wolverine	X	X	X	X									X	X	X	X	X		X					3

^aNumbers in this column indicate the following:

- 1 - Lives and feeds in forests--mainly arboreal.
- 2 - Lives and feeds in forests--terrestrial and arboreal.
- 3 - Lives and feeds in forests--mainly terrestrial.
- 4 - Lives and feeds on ice flows--ROWs do not apply.

Table 65.3 Matrix of Selected Birds of the Western United States by Province

Species	Province																							
	1210	1220	1310	1320	2410	2610	3110	3120	3130	3140	3210	3220	M1210	M1310	M2110	M2410	M2610	M2620	M3110	M3120	P3130	A3140	M4210	
Akepa (Akakane, akepeuie) (<u>Loxops coccinea</u>) (2 subspecies)																							X	
Akialoa, Kauai (<u>Hemignathus procerus</u>)																							X	
Akiapolaau (<u>Hemignathus wilsoni</u>)																							X	
Albatross, short-tailed (<u>Diomedea albatrus</u>)		X		X											X		X							
Condor, California (<u>Gymnogyps californianus</u>)																	X							
Coot, Hawaiian (Alae keo keo) (<u>Fulica americana alai</u>)																							X	
Crane, whooping (<u>Grus americana</u>)							X																	
Creepers (<u>Loxops maculata</u>) (3 subspecies)																							X	
Crow, Hawaiian (<u>Corvus tropicus</u>)																							X	
Curlew, Eskimo (<u>Numenius borealis</u>) (U.S. Coasts)															X		X							
Dove, mourning (Turtle dove) (<u>Zenaidura macroura</u>)				X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	
Dove, white-winged (<u>Zenaida asiatica</u>)										X	X	X								X				
Duck, Hawaiian (Koloa, koloa maoli) (<u>Anas wyvilliana</u>)																							X	
Duck, Mexican (<u>Anas platyrhynchos diazi</u>)										X	X													
Eagle, northern bald (<u>Haliaeetus leucocephalus alascanus</u>) (Above 40° latitude)					X		X	X							X	X			X					
Eagle, southern bald (<u>Haliaeetus leucocephalus leucocephalus</u>) (Below 40° latitude)																		X						
Eagle, golden (<u>Aquila chrysaetos</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Falcon, peregrine (<u>Falco peregrinus</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Falcon, prairie (<u>Falco mexicanus</u>)					X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	
Finch, Laysan (<u>Psittirostra cantans cantans</u>)																							X	
Finch, Nihoa (<u>Psittirostra cantans ultima</u>)																							X	
Gallinule, Hawaiian (Alae, alae ula, koki) (<u>Gallinula chloropus sandvicensis</u>)																							X	
Goose, Aleutian Canada (<u>Branta canadensis leucopareia</u>)														X		X								
Goose, Canada (<u>Branta canadensis</u>)					X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	
Goose, Hawaiian (Nene) (<u>Branta sandvicensis</u>)																							X	
Goshawk (<u>Accipiter gentilis</u>)										X					X			X						
Grouse, blue (<u>Dendragapus obscurus</u>)					X		X		X						X	X	X		X	X				
Grouse, ruffed (<u>Bonasa umbellus</u>)					X		X	X							X	X			X					
Grouse, sage (<u>Centrocercus urophasianus</u>)							X		X										X				X	
Grouse, sharp-tailed (<u>Pedioecetes phasianellus</u>)							X		X						X				X				X	
Grouse, spruce (<u>Canachites canadensis</u>)															X	X			X					
Hawk, broad-winged (<u>Buteo platypterus</u>)							X																	
Hawk, Cooper's (<u>Accipiter cooperii</u>)					X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	
Hawk, ferruginous (<u>Buteo regalis</u>)							X		X						X				X				X	
Hawk, Hawaiian (Io) (<u>Buteo solitarius</u>)																							X	
Hawk, red-shouldered (<u>Buteo lineatus</u>)															X		X							
Hawk, red-tailed (<u>Buteo jamaicensis</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Hawk, rough-legged (<u>Buteo lagopus</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Hawk, sharp-shinned (<u>Accipiter striatus</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Hawk, Swainson's (<u>Buteo swainsoni</u>)					X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	
Honeycreeper, crested (<u>Palmeria dolei</u>)																							X	
Kestrel, American (Sparrow hawk) (<u>Falco sparverius</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Kite, white-tailed (<u>Elanus leucurus</u>)															X		X							
Merlin (Pigeon hawk) (<u>Falco columbarius</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Millerbird, Nihoa (<u>Acrocephalus familiaris kingi</u>)																							X	

continued

Table 65.3 (Concluded)

Species	Province																						
	1210	1220	1310	1320	2410	2610	3110	3120	3130	3140	3210	3220	M1210	M1310	M2110	M2410	M2610	M2620	M3110	M3120	P3130	A3140	M4210
Nukupuu, Kauai (<u>Hemignathus lucidus hanapepe</u>)																							X
Nukupuu, Maui (<u>Hemignathus lucidus affinis</u>)																							X
Oo, Kuauai (<u>Moho braccatus</u>)																							X
Osprey (<u>Pandion haliaetus</u>)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ou (<u>Psittirostra psittacea</u>)																							X
Owl, burrowing (<u>Athene cunicularia</u>)					X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X
Owl, great horned (<u>Bubo virginianus</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Palila (<u>Psittirostra bailleui</u>)																							X
Parrot, thick-billed (<u>Rhynchopsitta pachyrhyncha</u>)										X													
Parrotbill, Maui (<u>Pseudonestor xanthophrys</u>)																							X
Partridge, chukar (<u>Alectoris chukar</u>)							X	X				X			X		X	X	X				X
Partridge, gray (Hungarian partridge) (<u>Perdix perdix</u>)					X		X	X	X											X			
Pelican, brown (<u>Pelecanus occidentalis</u>)																		X					
Petrel, Hawaiian dark-rumped (Uau, UUau, Uwau) (<u>Pterodroma phaeopygia sandwichensis</u>)																							X
Pheasant, ring-necked (<u>Phasianus colchicus</u>)					X	X	X		X			X				X	X	X	X			X	X
Pigeon, band-tailed (<u>Columba fasciata</u>)					X											X	X	X	X				
Poo-uli (<u>Melamprosops phaeosoma</u>)																							X
Prairie chicken, greater (<u>Tympanuchus cupido pinnatus</u>)							X																
Prairie chicken, lesser (<u>Tympanuchus pallidicinctus</u>)							X																
Ptarmigan, white-tailed (<u>Lagopus leucurus</u>)															X	X				X			
Quail, bobwhite (<u>Colinus virginianus</u>)					X		X		X						X	X							
Quail, masked bobwhite (<u>Colinus virginianus ridgwayi</u>)																							
Quail, California (<u>Lophortyx californicus</u>)					X	X		X	X							X	X	X					
Quail, Gambel's (<u>Lophortyx gambelii</u>)									X	X	X									X	X		
Quail, montezuma (<u>Cyrtonyx montezumae</u>)									X	X											X	X	
Quail, mountain (<u>Oreortyx pictus</u>)									X							X	X	X	X				
Quail, scaled (<u>Callipepla squamata</u>)							X			X	X											X	
Rail, California clapper (<u>Rallus longirostris obsoletus</u>)																X		X					
Rail, light-footed clapper (<u>Rallus longirostris levipes</u>)																			X				
Rail, Yuma clapper (<u>Rallus longirostris yumanensis</u>)												X											
Shearwater, Newall's (Ao) (<u>Puffinus puffinus newelli</u>)																							X
Snipe, common (Wilson's snipe) (<u>Capella gallinago</u>)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sparrow, Santa Barbara song (<u>Melospiza melodia graminea</u>)																			X				
Stilt, Hawaiian (Aeo, kukuuaeo) (<u>Himantopus himantopus knudseni</u>)																							X
Teal, Laysan (Laysan duck) (<u>Anas laysanensis</u>)																							X
Tern, California least (<u>Sterna albifrons browni</u>)																			X				
Thrush, large Kauai (Amaui, kamao, kamau, olomau) (<u>Phaeornis obscurus myadestina</u>)																							X
Thrush, small Kauai (Puaiohi) (<u>Phaeornis palmeri</u>)																							X
Thrush, Molokai (Amaui, olomau) (<u>Phaeornis obscurus rutha</u>)																							X
Turkey, wild (<u>Meleagris gallopavo</u>)					X		X	X	X							X		X	X	X			X
Vulture, turkey (<u>Cathartes aura</u>)					X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X
Woodpecker, pileated (<u>Dryocopus pileatus</u>)															X	X							

Table 65.4 Matrix of Selected Amphibians and Reptiles of the Western United States by Province

Species	Province															
	1210	1220	1310	1320	2410	2610	3110	3120	3130	3140	3210	3220	M1210	M1310	M2110	M2410
Lizard, blunt-nosed leopard (<i>Crotaphytus silus</i>)																X
Salamander, Santa Cruz long-toed (<i>Ambystoma macrodactylum croceum</i>)																X
Salamander, desert slender (<i>Batrachoseps aridus</i>)											X					
Snake, San Francisco garter (<i>Thamnophis sirtalis tetrataenia</i>)																X

PROVINCE-BY-PROVINCE DESCRIPTIONS OF FAUNA

Most of the following province-by-province descriptions of the western fauna are taken from Bailey (1978). Besides citing wildlife prominent or unique in a particular area, important ecological interactions, such as seasonal changes, the necessity of a specific plant species to wildlife, or the consequences of flooding or fire, are considered.

Province 2410, Willamette—Puget Forest — The fauna are closely related to those of the surrounding Pacific Forest province. Mule deer are the most common large mammal. Chief mammalian predators are the mountain lion and bobcat. The western gray squirrel frequents oak trees; the bushy-tailed wood rat (*Neotoma cinerea*) builds nests in shrubcovered stream margins and at forest edges. Isolated thickets are inhabited by brush rabbit, gray fox, and ruffed grouse. The dusky Canada goose winters exclusively in the Willamette Valley in Oregon.

Province 2610, California Grassland — Intensive agricultural development has changed the fauna of the annual grasslands. Larger species, such as the grizzly bear, wolf, and pronghorn antelope, have been eliminated or have shifted to higher elevations. The San Joaquin kit fox is classified as an endangered species. Mule deer live in brush areas. Common mammals include the California ground squirrel, cottontail, black-tailed jackrabbit, mice, and kangaroo rats. Other species, for example, coyote and bobcat, live in or enter from the adjacent woodlands.

Common birds are the mourning dove, horned lark, western meadowlark, western kingbird, mockingbird, loggerhead shrike, house finch, lesser goldfinch, common (red-shafted) flicker, and scrub jay. The roadrunner feeds on reptiles and insects. The California quail is numerous in areas where brush or rock outcrops provide cover. Avian predators include the golden eagle, red-tailed hawk, and Cooper's hawk. Several species of snakes and lizards are present; rattlesnakes are important predators on rodents.

Province 3110, Great Plains Short-grass Prairie —

Large herds of buffalo once migrated with the seasons across the steppe plains. Now the pronghorn antelope is probably the most abundant large mammal, but mule deer and white-tailed deer are often abundant where brush cover is available along stream courses. The white-tailed jackrabbit occupies the northern part of the province and the black-tailed jackrabbit occupies the area south of Nebraska. The desert cottontail is widespread. The lagomorphs, the prairie dogs, and several other small rodents are preyed upon by the coyotes and several other mammalian and avian predators; one of these, the black-footed ferret, is classified as an endangered species. Upland game birds present in the area include sage grouse, greater prairie chickens, and sharp-tailed grouse. Among the most common smaller birds are the horned lark, lark bunting, and western meadowlark. The golden-cheeked warbler primarily inhabits the Edwards Plateau of Texas where the Ashe juniper (*Juniperus ashei*) is present. Construction of stock ponds has added important duck habitat in the northern Great Plains.

Province 3120, Palouse Grassland — Pronghorn are the largest permanent residents. Deer come down from the mountains and enter the region locally in the winter. The Washington ground squirrel inhabits large areas at low to medium elevations; the Columbian ground squirrel inhabits areas at higher elevations. The bobcat and coyote are present; the badger is seen occasionally.

The sharp-tailed grouse and sage grouse were formerly important game birds. The most common birds, Brewer's sparrow, lazuli bunting, MacGillivray's warbler, song sparrow, and willow flycatcher, all inhabit sagebrush cover. The short-eared owl and marsh hawk are the most common carnivorous birds.

Province 3130, Intermountain Sagebrush — Few large mammals live in this province; mule deer, mountain lion, bobcat, and badger occasionally penetrate it. The most common species are such small mammals as ground squirrels, jackrabbits, kangaroo mice, wood rats, and kit fox. Some ground squirrels that inhabit the lower life belts, especially the Belding's and Townsend's ground squirrel, become dormant during the hot, dry summer.

Province 3140, Mexican Highlands Shrub Steppe — The biotic communities of this province support many forms of wildlife, but are especially important to birds. The mixed broadleaf riparian forest provides habitat for the Arizona gray squirrel, zone-tailed hawk, sulphur-bellied flycatcher, and Sonoran mud turtle. These species are almost entirely dependent on the forest for protection and food. Other species include white-tailed deer, black bear, wild turkey, and a great number of nesting and migrating raptors and songbirds.

Cottonwood—willow forests and woodlands of temperate riparian areas are extremely important to breeding bird populations (Ingles 1950; Carothers and Johnson 1970). More species are recorded nesting in this vegetative type than in any other; several species, for all practical purposes, are restricted to it. Further discussions of the importance of this community to avian species, particularly raptors such as the black hawk, gray hawk, and bald eagle, are presented by Todd (1969, 1970, 1971, 1972a,b) and Hubbard (1971).

Mesquite bosques of subtropical riparian communities are vital to white-winged and mourning doves (Neff 1940; Arnold 1943; Carr 1960; Wigal 1973). Although saltcedar may now provide satisfactory and primary nesting sites for these birds (Carr 1960; Shaw 1961; Wigal 1973), its value to other wildlife leaves much to be desired. Literature relating to other avian species in this area include Brandt (1951), Phillips et al. (1964), and Gavin (1972).

Marshlands of this province provide habitat for a number of rare and interesting species such as the Mexican duck (Todd 1972b). Numerous other waterfowl, rails, and shorebirds are also highly dependent on these communities during nesting and migration (Todd 1972a).

Province 3210, Chihuahuan Desert — Pronghorn antelope and mule deer are the most widely distributed large game animals. The common white-tailed deer is in Texas. The collared peccary or javelina is common in the southern part of the region. Scaled quail and Gambel's quail are present in most of the area, and the bobwhite reaches the eastern portion. The black-tailed jackrabbit, desert cottontail, kangaroo rat, wood rat, and numerous smaller rodents compete with domestic and wild herbivores for available forage and are preyed upon by the coyote, bobcat, golden eagle, great horned owl, red-tailed hawk, and ferruginous hawk.

Numerous rails, shorebirds, and waterfowl, including the Mexican duck and least and American bitterns, are highly dependent on the marshlands of this province, during both nesting and migration (Blair 1940; Wauer 1973). These areas are of great importance especially to wintering geese and sandhill cranes. The use of these areas by the endangered whooping crane is of special interest and will be watched closely as the innovative introduction program proceeds.

Province 3220, American Desert (Mojave—Colorado—Sonoran) — Riparian scrublands and marshlands are most significant to fauna in this province. A comprehensive listing of scrubland species is presented

by Bradley and Deacon (1965). The marshland communities are habitat for a number of rare and threatened species such as the Yuma clapper rail, black rail, and least and American bitterns (Todd 1972a). Many other rails, shorebirds, and waterfowl are also highly dependent on these environments during nesting and migration (Todd 1972a).

Many shorebirds and waterfowl, mostly migrants or winter residents, use these areas for varying periods of the year. The rare river otter has been observed along the Colorado and lower Virgin rivers (Bradley and Deacon 1965).

The cottonwood—willow forests are extremely important to breeding bird populations (Ingles 1950; Carothers and Johnson 1970). More species are recorded as nesting in this vegetative type than any other, and several species, such as the yellow-billed cuckoo and blue-throated hummingbird, are, for all practical purposes, restricted to it. The introduced saltcedar has a similar effect in the Creosote Bush native riparian scrublands where it has created an exclusive disclimax community at the expense of plant and animal diversity (Philips et al. 1964; Ohmart 1973). Further discussions of the importance of the cottonwood—willow community to avian species, particularly raptors such as the black hawk, gray hawk, and bald eagle, are presented by Todd (1969, 1970, 1971, 1972a,b) and Hubbard (1971). A comprehensive list of species utilizing riparian communities is presented by Bradley and Deacon (1965).

Provinces M2110, Columbia Forest (Dry Summer); M2410, Pacific Forest — Large mammals in this province include black bear, deer, elk, mountain lion, and bobcat. Brown bear and moose are found in Alaska. Smaller mammals include mice, squirrels, martens, chipmunks, and wood rats. The more common birds are chestnut-backed chickadees, red-breasted nuthatches, gray jay, Steller's jay, and great gray owls. Blue and ruffed grouse are the most common game birds; hawks and owls are found in the northwestern part of the provinces.

Province M2610, Sierran Forest — Common large mammals include mule deer, mountain lion, coyote, and black bear. Smaller mammals include bushy-tailed wood rat, northern flying squirrel, red fox, fisher, porcupine, long-eared chipmunk, and Trowbridge's shrew. Common birds are mountain quail, Lincoln's sparrow, yellow-rumped (Audubon's) warbler, pine siskin, dark-eyed (Oregon) junco, (blue) snow goose, Williamson's sapsucker, and mountain chickadee. Predatory birds include the common nighthawk, pygmy owl, and great gray owl. The bark beetles *Ips emarginatus* and *I. integer* infest Ponderosa and lodgepole pine. The California mountain kingsnake also lives in this province.

Province M2620, California Chaparral — Mule deer are the most important large mammal. Other large mammals include the coyote, mountain lion, California bobcat, gray fox, wood rat, and spotted and striped skunks. Small mammals peculiar to chaparral include the

Merriam chipmunk (*Eutamias merriami*), California mouse (*Peromyscus californicus*), and kangaroo rats.

The most common birds seen in the dry, summer season are wren-tit, common bushtit, and rufous-sided towhee. In October, white- and golden-crowned sparrows, several races of fox sparrows, hermit thrushes, ruby-crowned kinglets, and yellow-rumped (Audubon's) warblers are present. The California condor, an endangered species, inhabits the mountainous terrain around the San Joaquin Valley.

Reptiles are numerous in all vegetation types. Amphibians appear to be scarce except for the tree frog.

Province M3110, Rocky Mountain Forest — Common large mammals include elk, deer, mountain lion, bobcat, and black bear. Grizzly bear and moose are found in the northern portions of the province. Small mammals include mice, squirrels, martens, chipmunks, and bushy-tailed wood rats. Various species of hawks and owls inhabit most of the region. The numerous and more common birds are the chestnut-backed chickadee, red-breasted nuthatch, gray jay, and Steller's jay. Blue and ruffed grouse are the most common upland game birds.

Province M3120, Upper Gila Mountains Forest — Riparian marshland areas are habitat for a number of rare or threatened species such as the Yuma clapper rail. Numerous rails, shorebirds, and waterfowl are highly dependent on these environments during nesting and migration (Todd 1972a).

Province 3130, Colorado Plateau — Major mammals are the mule deer, mountain lion, coyote, and bobcat; elk are locally important. Pronghorn antelope is the primary large mammal in the arid grasslands. Smaller species include the wood rat, white-footed mouse, cliff chipmunk, jackrabbit, cottontail, rock squirrel, porcupine, and gray fox. The ringtail cat and spotted skunk occur rarely.

The most abundant resident birds are the plain titmouse, scrub jay, red-tailed hawk, golden eagle, common (yellow-shafted) flicker, pinyon jay, bushtit, and rock wren. Summer residents include the chipping sparrow, common nighthawk, black-throated gray warbler, cliff swallow, lark sparrow, and mourning dove. Common winter residents are the dark-eyed (Oregon) junco, gray-headed junco, Rocky Mountain nuthatch, mountain bluebird, American robin, and Steller's jay. Turkeys are locally abundant during the winter.

Reptiles include horned lizards, the collared lizard, and rattlesnakes.

Province A3140, Wyoming Basin — Because of its wilderness character, this region supports a great variety of wildlife species. Seasonal changes in climate force many animals to move from the surrounding mountains onto the desert during the winter. In addition to providing for its resident animals, the sagebrush desert furnishes range for a seasonal influx of migratory birds and mammals from life zones at higher elevations.

Large mammals include coyote, pronghorn antelope, mountain lion, and bobcat. Smaller species include

ground squirrels, white-tailed prairie dog, deer mouse, white-tailed jackrabbit, and porcupine. During severe winters, elk and mule deer move onto the desert. Moose are locally important in the dense willow thickets along desert watercourses.

This region is an important breeding and resting ground for migrating waterfowl. Mallards, pintails, green-winged teal, gadwalls, and Canada geese are the most common. Sage grouse are the most abundant upland game bird. The numerous raptors here include Swainson's hawk, ferruginous hawk, red-tailed hawk, marsh hawk, prairie falcon, great horned owl, and burrowing owl.

Reptiles include sagebrush lizard, horned lizard, and prairie rattlesnake.

Province 1210, Arctic Tundra (Alaska) — Mammals of the Arctic include brown bear, wolf, wolverine, caribou, Arctic hare, mink, weasel, and lemming. Ptarmigans, ravens, hawks, and open country owls are common. Shore and lake areas are rich habitat for millions of migrating waterfowl and shorebirds during the summer months. Polar bear, walrus, and Arctic fox are common on the ice pack and coastal areas during the winter. Gyrfalcons (*Falco rusticolus*) have also been seen on sea ice.

Province 1220, Bering Tundra (Alaska) — River bottomlands provide excellent habitat for furbearers, game birds, and moose. Upland and coastal areas support brown and black bear, wolf, wolverine, coyote, caribou, reindeer, showshoe hare, red fox, lynx, beaver, moose, squirrels, mice, weasel, mink, and marten. Along the northern Bering Sea coast, polar bear, walrus, and Arctic fox are occasionally found. The coastal areas provide extensive and excellent habitat for migrating waterfowl and shorebirds. Other bird species in the area include ospreys, falcons, grouse, ravens, golden eagles, and various hawks and owls.

Provinces 1310, 1320, Yukon Parkland and Yukon Forest (Alaska) — The spruce—hardwood forests provide excellent habitat for furbearers, woodland game birds, and mammals. Brush zones and immature forests recovering from fires furnish especially good browse for moose. Black and brown bear, wolf, wolverine, caribou, and moose are common game species. Smaller mammals include red fox, beaver, mink, muskrat, weasel, land otter, marten, squirrels, and mice. Upland birds include sharp-tailed, spruce, and ruffed grouse; ptarmigan; hawks; woodland owls; and ravens. Cliffs along the Yukon and Porcupine rivers support several raptor species: osprey, gyrfalcon, hawks, and the endangered peregrine falcon.

Province M1210, Brooks Range (Alaska) — The Brooks Range is an important big game area in Alaska and supports brown and black bear, wolf, wolverine, caribou, and Dall sheep. Smaller mammals include marmot, red and Arctic fox, ground squirrel, lemming, and pika. Raptors prominent in many areas include golden eagles,

marsh hawks, gyrfalcons, snowy and other open country owls. Brooks Range is an important resting area for migrating waterfowl and songbirds during the summer.

Province M1310, Alaska Range — The Aleutian Islands support no large mammals. Foxes, bald eagles, and hawks are the primary predators on the millions of seabirds that use the islands and rocks for rookeries. Such marine mammals as seal, sea lion, and sea otter are abundant and use the islands for hauling out and rookeries.

The Alaska Peninsula and Alaska Range support large big game populations of moose, Dall sheep, black and brown bear, wolf, caribou, and wolverine. Smaller mammals include beaver, red fox, lynx, otter, marten, squirrels, weasel, and various rodents. Migrating waterfowl and shorebirds use the coastal areas extensively in the summer. Golden eagles, ptarmigan, ravens, and hawks inhabit the uplands; the rich fish resources support bald eagles and osprey on the coastline.

Province M4210, Hawaiian Islands — Because of their detachment, the Hawaiian Islands have a meager but unique fauna. They have no snakes and few other reptiles. The islands support large populations of such water birds as terns, tropicbirds, boobies, shearwaters, and petrels. The major islands have such special species as the white-tailed tropicbird, the rare Newell's Manx shearwater, and dark-rumped petrel, all of which seek crater walls for nesting. Native land birds include hawks, owls, crows, warblers, and thrushes. Several species, including the crested honeycreeper and ou, are near extinction. Many species of birds have been introduced. Introduced mammals include the axis deer, Hawaiian wild boar, feral sheep, and goats.

ECOLOGICAL CHARACTERISTICS TABLES

Ecological Characteristics tables (tables 65.5, 65.6, 65.7) describing selected species give essential information concerning the status of the species and basic requirements. More detailed information about a particular species for a localized area may be obtained elsewhere (see References section). References for selected species are cited but are not exhaustive.

Groups of species of different genera or several species of the same genus that have similar life histories and habitat requirements are discussed in one place in the Ecological Characteristics tables. For example, all skunks (different genera) are discussed together and all prairie dogs (same genus) are discussed together.

Provinces (Sections) — Provinces and sections identified on the Ecological Characteristics tables are those where

the species are of special importance and are not necessarily the entire range of the species.

Distribution — Distribution references for selected species pertain to the United States only, although migratory routes for certain species are considered. Distribution for birds (due to their migratory nature) is usually their primary breeding range only. The postal system of state abbreviations is used to designate ranges.

Habitat — Habitat for a particular species describes the general physiographic and vegetational environment where the species is naturally found (e.g., conifer swamps, brushy areas, caves).

Features — Features represent the reasons a particular species was selected for a certain area.

Note: Endangered/threatened status may change, so the use of current references as well as consultation with knowledgeable officials is recommended.

Life History — Life history of an animal gives the general breeding behavior, breeding seasons, gestation, and litter size. Also noted, when important, are migratory behavior, feeding ranges, mortality, social tendencies, and activity periods. For birds, nest and egg descriptions are also given.

Special Notes — Special notes include information unique to the species that is important for management practices or the presence of that species on a ROW.

Cover — Cover requirements are general and do not represent all combinations used by a particular species throughout its range. Significant cover types (i.e., dense brier thickets, conifer swamps, etc.) are referenced, since specific plant associations representing these cover types are too varied to discuss adequately. Preferred plant species used are listed.

Food — Food requirements are also general and do not represent all combinations used by a particular species throughout its range. Foods listed, in no particular order of preference, are those most used by wildlife in various parts of their ranges. Many food species also serve as cover types, especially for small animals. Many plants may be noted by common group names (e.g., maples, if the wildlife species happens to use most species of maples).

References — References used for information about a particular species on these tables are indicated by numbers corresponding to the list of *References* at the end of this chapter. The list is by no means an exhaustive literature collection for all species found in this chapter.

Table 65.5 Ecological Characteristics of Selected Mammals of the Western United States

Species	Ecological characteristics
Badger <u>Taxidea taxus</u>	<p>Provinces (Sections): East: 2110 (2111, 2112, 2113); 2210 (2212, 2213, 2215); 2510; 2530.</p> <p>West: 2610; 3110; 3130; 3140; 3210; 3220; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p> <p>Distribution: Eastern prairies westward.</p> <p>Habitat: Prairies westward.</p> <p>Features: Endangered/threatened in IN; threatened in MI. Uncommon fur-bearer throughout most of its range. Controls rodents. Abundant burrows endanger livestock.</p> <p>Life history: Gestation of 5-6 mos. (delayed implantation). Young (2-5) born early to late spring depending on part of country. Breeding in summer. Females first breed at 1.5 yrs. Good digger. Longevity 12 yrs.</p> <p>Special notes: Burrows provide shelter for other wildlife.</p> <p>Cover: Burrows in ground for den and escape. Ground is mostly open, sandy soil.</p> <p>Food: Carnivorous--eats ground squirrels, prairie dogs, gophers, rabbits, mice, lizards, insects, birds.</p> <p>References: 5, 12, 13, 14, 35, 44, 68, 73, 85, 88, 99, 111, 124, 127, 135, 141, 149, 156, 169, 188, 195, 215, 224, 248, 254.</p>
Bat, Hawaiian hoary <u>Lasiurus cinereus semotus</u>	<p>Provinces (Sections): M4210.</p> <p>Distribution: Hawaiian Islands of Hawaii and Kauai.</p> <p>Habitat: Wooded areas.</p> <p>Features: U.S. endangered species. Endangered in HA.</p> <p>Life history: Gestation related to temperature. Young 1-2 per litter; 1 litter per yr.</p> <p>Cover: Trees. Roost among branches during day.</p> <p>Food: Insects.</p> <p>References: 35, 42, 44, 77, 79, 229.</p>
Bear, black <u>Ursus americanus</u>	<p>Provinces (Sections): East: 2110; 2210 (2214); 2310 (2311, 2312); 2320.</p> <p>West: 1220; 1310; 1320; 3110 (3111); 3210; M1210; M1310; M2410; M2610; M3110; M3120; P3130; A3140.</p> <p>Distribution: Upper Great Lakes area; Northeastern States down eastern mountains. FL and Gulf Coast. Lower Mississippi Valley. Rockies and West Coast mountain ranges. AK.</p> <p>Habitat: Forests, swamps, dense thickets, mountainsides.</p> <p>Features: Endangered in AL, MO, MD. Threatened in MS and FL. Rare in NJ, KY, WV. Common big game animal elsewhere. Aesthetic. Some crop and orchard damage.</p> <p>Life history: Breed at 3.5 yrs. Females have litter (2) every other yr. Gestation 7-7.5 mos. Cubs born in winter, weaned following fall. Stay with sow until second winter. Males may range 15 mi. Nocturnal, solitary, semi-hibernate in winter.</p> <p>Special notes: Can damage wood utility poles by scratching. Attracted to camper's and picnicker's food. Raids apiaries.</p> <p>Cover: Dense thickets, forests, river bottoms. Den in hollow logs, trees, or under windfalls.</p> <p>Food: East: Acorns, beech nuts, wild cherries, apples, grapes, blueberries, honey, persimmons, roots and tubers, serviceberries, insects, fish, small mammals, garbage, blackberries.</p> <p>West: Insects, small mammals, fish, pinyon pine seeds, serviceberries, wild cherries, buffaloberries, honey, carrion, garbage.</p> <p>Alaska: Grasses, sedges, horsetails, blueberries, cranberries, bearberries, fish.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Black bear (Continued)	<u>References:</u> 3, 5, 14, 15, 35, 40, 44, 52, 61, 73, 83, 98, 99, 100, 111, 116, 124, 126, 137, 138, 139, 142, 155, 161, 169, 203, 224, 226, 233, 248, 254, 255, 256.
Bear, grizzly <u>Ursus arctos</u>	<u>Provinces (Sections):</u> 1210; 1220; 1310; 1320; M1210; M1310; M2110 (M2111, M2112); M2410 (M2410-AK); M3110 (M3112). <u>Distribution:</u> Rocky Mountain States (WY, MT, ID, WA) up through AK. <u>Habitat:</u> Wilderness woodlands, brushy mountainsides, thickets, tundra. <u>Features:</u> U.S. threatened species throughout. Classified as endangered/threatened in ID, CO, Wa. Big game animal in MT, AK. Rare to uncommon throughout range. <u>Life history:</u> First breeds at 3 yrs. One litter every 2-3 yrs. Mates May-July. Gestation 6 mos. Young (usually 2) born in Jan. in den. Males solitary. Females remain with cubs for yr. Longevity 25 yrs. in captivity. Semi-hibernation. Home range 50+ mi radius. Active usually mornings and evenings. Annual pilgrimages to salmon runs. <u>Special notes:</u> Man is only enemy. Has caused problems with man by preying on livestock when food was scarce. Also frequents garbage dumps and can be dangerous anytime humans are around. <u>Cover:</u> Dens in caves, dug-out dens. Forests, thickets. Bears frequent open tundra, meadows, slopes looking for food. <u>Food:</u> Omnivorous. Eats much vegetation in spring and fall such as grasses, roots, sedges, blueberries, cranberries, elderberries, crowberries. Animal matter includes marmots, small rodents, salmon, carrion, insects, grubs, livestock. Also garbage. <u>References:</u> 3, 15, 35, 44, 45, 73, 83, 124, 141, 142, 203, 226, 229, 231, 244, 246, 254.
Beaver <u>Castor canadensis</u>	<u>Provinces (Sections):</u> East: 2110; 2210; 2310; 2320; 2510; 2520; 2530. West: 1220; 1310; 1320; 2610; 3110; 3120; 3130; 3210; 3220; M1210; M1310; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140. <u>Distribution:</u> All of U.S. and AK except extreme Southwest and FL. <u>Habitat:</u> Bodies of water with trees nearby. <u>Features:</u> Valuable furbearer. Aesthetics. Backups from beaver dams can cause unwanted flooding. <u>Life history:</u> Females breed at 2.5 yrs. One litter per yr. Gestation period is 128 days. Young (2-4) born Apr.-July. Longevity 11 yrs. Mostly nocturnal. Family units live in lodges or burrows in stream bank. Colonial and territorial. <u>Special notes:</u> Flooded areas created by beavers provide additional habitat for other furbearers and waterfowl. Important prey species for wolves in some areas. Water must be deep enough to allow year-round (under-ice) channels. <u>Cover:</u> Underwater; lodges, burrows in stream banks. Thick alder growth. Early successional tree stages along slow-moving waterway. <u>Food:</u> Aspen, willows, birch, hazelnut, water lily, cow lily, serviceberry, maple, alder, ash, sweet gum, pine, Douglas-fir, sweet bay, ironwood, cottonwood; corn, if available. <u>References:</u> 5, 12, 14, 35, 44, 60, 73, 85, 111, 116, 123, 124, 127, 141, 142, 149, 152, 156, 161, 169, 184, 188, 195, 215, 217, 224, 225, 233, 248, 254, 255.
Bison <u>Bison bison</u>	<u>Provinces (Sections):</u> M1310; M3110 (M3112, M3113); A3140. <u>Distribution:</u> Rocky Mountain States (mostly federal lands and parks) and southeastern AK. May be found elsewhere on state lands throughout plains states. <u>Habitat:</u> Plains, grasslands, woodland openings. <u>Features:</u> Nearly extirpated. Now increasing in numbers. Aesthetic symbol of Great Plains. Was entire economy of Plains Indians. Now protected. Endangered/threatened in ID.

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Bison (Continued)	<p><u>Life history:</u> Females breed at 2-3 yrs. Breeds July-Oct. Gestation period 9 mos. Young (1) able to follow mother soon after birth. Diurnal. Gregarious. Grazers. Normally lives 15-20 yrs.</p> <p><u>Cover:</u> No concealment cover. Escape by running. Require dust wallows, water, salt licks.</p> <p><u>Food:</u> Grama grass, dropseed, wind-mill grass, paspalum, saltbush, hiliaria, buffalo grass, little bluestem, joint-fir. Sedges, grasses, willow browse in AK.</p> <p><u>References:</u> 3, 35, 44, 73, 124, 141, 142, 192, 246, 254.</p>
Bobcat <u>Lynx rufus</u>	<p><u>Provinces (Sections):</u> East: 2110; 2210 (2211, 2215); 2310; 2320; 2510; 2520; 2530; 4110.</p> <p>West: 2610; 3110; 3130; 3140; 3210; 3220; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p> <p><u>Distribution:</u> Found almost everywhere west of the Mississippi except central MO and IA. Found in northern Great Lakes region, Northeast, Southeast, and Mississippi Valley.</p> <p><u>Habitat:</u> Usually swamps and brushy areas, but will utilize almost any habitat.</p> <p><u>Features:</u> Endangered in MD, IA, OH. Endangered/threatened in IN. Rare in KY, WV, IL, NJ. Declining in UT. Common furbearer elsewhere.</p> <p><u>Life history:</u> Mostly solitary and nocturnal. Range usually 2 mi radius but will sometimes travel great distances. Mate in spring. Gestation 50-60 days. Young (2-4) born in spring (late). Leave parents in fall.</p> <p><u>Special notes:</u> Versatile as to habitat. Good rodent control.</p> <p><u>Mortality:</u> Hunting, trapping, poisoning.</p> <p><u>Cover:</u> Uses hollow logs, trees, or caves for dens. Uses any available cover vegetation and rocks.</p> <p><u>Food:</u> Rabbits, squirrels, small rodents, birds, sometimes carrions and occasionally poultry and livestock.</p> <p><u>References:</u> 14, 35, 44, 47, 73, 86, 88, 91, 99, 100, 116, 124, 126, 136, 141, 149, 152, 155, 161, 165, 168, 188, 194, 195, 203, 217, 226, 238, 248, 251, 254.</p>
Burro, feral <u>Equus asinus</u>	<p><u>Provinces (Sections):</u> 3130; 3140; 3210 (3211); 3220; M3120; P3130.</p> <p><u>Distribution:</u> Western AZ, southern CA and Grand Canyon are the main areas where burros are found. However, they are found locally in many western desert areas.</p> <p><u>Habitat:</u> Rugged mountainsides and desert canyons.</p> <p><u>Features:</u> Protected under "Wild Horse and Burro Act" on federal lands. Generally regarded as pest species because they strongly compete with natural herbivores (especially desert bighorn) for food and water. Burros consume and destroy a great deal of natural vegetation.</p> <p><u>Life history:</u> Breed at 1.5 yr. in Mar.-Aug. Gestation 365 days. One young per litter. Longevity 20-40 yrs.</p> <p><u>Special notes:</u> Included here because any management affecting desert bighorns will probably affect burros the same way.</p> <p><u>Cover:</u> Rocky canyons, scrub thickets, cliffsides.</p> <p><u>Food:</u> Can and will eat almost all vegetation found within its range. Will even eat creosote bush. Majority of diet is various forbs.</p> <p><u>References:</u> 14, 35, 42, 44, 112, 133, 232.</p>
Caribou <u>Rangifer tarandus</u>	<p><u>Provinces (Sections):</u> 1210; 1220; 1310; 1320; M1210; M1310; M2110.</p> <p><u>Distribution:</u> Throughout most of AK except southern coastal areas. Migrants from Canada come into northeastern WA and northern ID.</p> <p><u>Habitat:</u> Tundra, open coniferous forests.</p> <p><u>Features:</u> Most important to natives in AK for food and clothing. Nomadic migrations--Alaska Pipeline conflict. Endangered/threatened in ID.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Caribou (Continued)	<p><u>Life history:</u> Females breed at 2.5 yrs. Polygamous breeding. Rutting season Sept.-Oct. Gestation 8 mos. Young (1-2) born May-June. Young follow mother immediately. Barren ground caribou migrate in herds of several thousand. Excellent swimmers.</p> <p><u>Special notes:</u> Susceptible to disturbances that damage slow-growing lichens which are a chief food. Calving ranges are critical areas to their existence and should be undisturbed. Effects of migratory barriers are unknown at this time.</p> <p><u>Cover:</u> Winter: Northern boreal forests, such as white spruce. Summer: Lichen tundras. Sedge--heath slopes. Muskegs.</p> <p><u>Food:</u> Tundra: Lichens (reindeer moss), mosses, willows, birch. Woodland: Mountain maple, mountain-ash, willows, red-osier dogwood, highbush cranberry, tree lichens, large-leaved aster, dwarf cornel, mosses, bush honeysuckle.</p> <p><u>References:</u> 3, 35, 44, 47, 73, 124, 246.</p>
Coati (Coatimundi) <u>Nasua nasua</u>	<p><u>Provinces (Sections):</u> 3140; 3210; M3120.</p> <p><u>Distribution:</u> Extreme southwestern TX, southwestern NM, southeastern quarter of AZ.</p> <p><u>Habitat:</u> Open woodlands, brushy semidesert.</p> <p><u>Features:</u> Furbearer. Aesthetic value higher. Rare in U.S.</p> <p><u>Life history:</u> Gestation 2.5 mos. Young (4-6) born in July. Active at day. Runs in bands. Old males solitary. Good climber.</p> <p><u>Cover:</u> Trees, brushy hillsides, canyon thickets.</p> <p><u>Food:</u> Mostly carnivorous--eats lizards, bird eggs, grubs, scorpions, tarantulas. Also eats fruits and nuts.</p> <p><u>References:</u> 12, 14, 35, 44, 73, 217.</p>
Coyote <u>Canis latrans</u>	<p><u>Provinces (Sections):</u> East: 2110; 2210; 2320; 2510; 2520; 2530. West: 1210; 1310; 1320; 2410; 2610; 3110; 3120; 3130; 3140; 3210; 3220; M1310; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p> <p><u>Distribution:</u> Common throughout the U.S. and AK except for extreme Northeastern States and Southeast.</p> <p><u>Habitat:</u> Brushy areas, prairies, open woodlots, western plains and mountains.</p> <p><u>Features:</u> Endangered in MD and KY. Classified as furbearer in eastern part. Unprotected and labelled pest in many states. Very active control measures used in ranching country due to coyote's association with sheep predation. Is still managing to increase its range and numbers, however.</p> <p><u>Life history:</u> Mates Jan.-Mar. Females breed first year. Gestation 60-63 days. Pups (5-10) born Apr.-May. Can interbreed with dogs. Longevity less than 18 yrs. Hunting range approximately 10 mi. Never too far from water. Scavenger. Caches food.</p> <p><u>Special notes:</u> No particular management needed. Apparently able to adjust to extreme human pressures.</p> <p><u>Cover:</u> Dens in ground, under trees or boulders. Brushy ravines or hill-sides for cover.</p> <p><u>Food:</u> Will eat almost anything. Animal matter includes carrion, rabbits, small rodents, birds, eggs, insects, fish, snakes, lizards, frogs, toads, deer fawns. Vegetable matter (usually fleshy fruits, such as blackberries, juniper berries, strawberries, melons, prickly pear, manzanita) makes up insignificant part of diet.</p> <p><u>References:</u> 5, 12, 14, 35, 44, 67, 73, 83, 85, 99, 111, 116, 123, 124, 126, 141, 142, 149, 152, 188, 203, 215, 217, 224, 226, 233, 248, 254, 255, 256.</p>
Deer, axis <u>Axis axis</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Hawaiian Islands of Molokai, Lanai, Oahu, Maui.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Axis deer (Continued)	<p><u>Habitat:</u> Open parkland forest with grasslands.</p> <p><u>Features:</u> Exotic big game species.</p> <p><u>Life history:</u> Breed throughout the yr. Young (1) born Dec.-Feb.</p> <p><u>Cover:</u> Parkland forest vegetation, rain forest vegetation (marginally).</p> <p><u>Food:</u> Kiawe, klu, lantana, guinea grass, Hilo grass, drymaria, ulei, puakeawe.</p> <p><u>References:</u> 77, 78, 237.</p>
Deer, mule (Black-tailed deer) <u>Odocoileus hemionus</u>	<p><u>Provinces (Sections):</u> East: 2530 (2532). West: 2610; 3110; 3120; 3130; 3140; 3210; 3220; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140; M4210.</p> <p><u>Distribution:</u> Western half of U.S. and HA.</p> <p><u>Habitat:</u> Conifer forest, shrub desert, grassland, chaparral--wherever browse is available.</p> <p><u>Features:</u> Most important big game species of Western U.S. Aesthetic. Can damage crops.</p> <p><u>Life history:</u> Mate (rutting season) Oct.-Dec. Females breed at 1.5. Gestation 7 mos. Young (usually 2) born June-July. Longevity 16 yrs. Occur singly or small groups. Active early and late. Migrate (elevational) in mountains.</p> <p><u>Special notes:</u> Readily move into logged or cleared areas to utilize new growth. Prey species for wolves, mountain lions.</p> <p><u>Cover:</u> Prairie: Cottonwoods, willows of stream bottoms. Desert: Creosote bush, mesquite, greasewood, yuccas, cacti. Low to medium elevations: Pinyon pine, junipers, oak, mountain-mahogany, serviceberry. High elevation: Pinyon pine, Douglas-fir, mountain-mahogany, serviceberry, aspen.</p> <p><u>Food:</u> Most used browse: Bitterbrush, mountain-mahoganies, chamise, sagebrush, serviceberry, junipers, cherries, oaks, aspen, cliffrose, snowberry, roses, spiraeas, willows, ceanothus, Oregon-grapes, bearberry, white cedar, Douglas-fir, jack pine, manzanita, rabbit brush. Most used forbs and grasses: Alfalfa, cheat, bluegrass, wheatgrass, fescues, muhlenbergia, brome, ryegrass, bracken fern, dandelion, various crops, sunflower, koeleria, needlegrass, deer vetch, filaree, sweet clover.</p> <p>Hawaii: Passion-flower, guava, uki uki, mushrooms, koa, horseweed.</p> <p><u>References:</u> 3, 12, 14, 35, 44, 52, 54, 73, 77, 78, 83, 102, 111, 124, 125, 141, 142, 151, 152, 178, 190, 203, 211, 217, 219, 226, 237, 254, 255, 256.</p>
Deer, white-tailed <u>Odocoileus virginianus</u>	<p><u>Provinces (Sections):</u> East: 2110; 2210; 2310; 2320; 2510; 2520; 2530; 4110. West: 3110; 3140; 3210; 3220; M2110; M2410 (M2411, M2413, M2415); M3110; M3120; A3140.</p> <p><u>Distribution:</u> Common throughout the U.S. except for Desert Southwest and CA, AK, HI.</p> <p><u>Habitat:</u> Mixed forests, brushy areas, swamps, riparian habitats.</p> <p><u>Features:</u> Primary big game animal in Eastern U.S. Aesthetic value. Can cause crop, orchard, nursery damage.</p> <p><u>Endangered subspecies:</u> Florida Key deer (<i>O. v. clavium</i>): U.S. endangered species. Found in FL Keys (Province 4110). About 350 remain. Very specialized ecosystem of mangrove and scrub-palmetto vegetation. Fire necessary to maintain pine stands. Columbian white-tailed deer (<i>O. v. leucurus</i>): Found in southwest WA and northwest OR on the Columbia River flood plain (Province M2410). U.S. endangered species. Less than 600 remain. Endangered in OR, WA. Reduced due to agriculture which drained and diked wet areas important to the animals. Graze on clovers,</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
White-tailed deer (Continued)	<p><u>Features (Continued):</u> succulent new vegetation in open lowland pastures. Need interspersed wooded areas for cover.</p> <p><u>Life history:</u> Females breed at 1.5 yrs. Males breed later. Gestation 6.5 mos. Fawns (1-3), usually 2, are weaned in 4 mos., but may remain with doe for 1 yr. Bucks tend to be solitary. Winter grouping in "yards" common in Great Lakes and Northeast region. Home range less than 2 sq mi. Longevity of 16 yrs.</p> <p><u>Special notes:</u> Should benefit from ROW management, especially when diverse habitat is created. ROW corridors and access roads help hunters and poachers, however. Prey species for wolves, mountain lions, coyotes.</p> <p><u>Cover:</u> White-tailed deer utilize a very large number of cover species. Brushy, mixed forest types; swamps; riparian vegetation; all serve as general cover types.</p> <p><u>Food:</u> (Partial list only of some preferred foods--see vegetation and management sections for other possible foods.)</p> <p>Northeast: Cedar, apple, yew, hemlock (ground), maple, oak, sumac, dogwood, honeysuckle, fir, ashes, willow, wintergreen, spruce, greenbrier, witch hobble.</p> <p>Midwest: Greenbrier, grape, ferns, blueberry, blackberry, <i>Antennaria</i>, hazelnuts, maples, oaks, sumac, rhododendron, elm, lespedeza, dogwood, junberry, corn.</p> <p>Southeast: Greenbrier, gums, dogwoods, ash, oaks, maples, sumacs, <i>Ilex</i> spp., bays, ironwood, pecan, French mulberry, trumpet creeper, honeysuckle, dewberry, rattan, fungi.</p> <p>Prairies: Cedar, bearberry, ponderosa pine, buckbrush, rose, aspen, clovers, mesquite, lespedeza, broomsedge, oaks, acacias, condalia, prickly pear, snowberry, persimmon, corn.</p> <p>Rocky Mountains: Buckbrush, bearberry, ceanothus, choke-cherry, dogwood, <i>Amelanchier</i> spp., aspen, Oregon-grape, juniper.</p> <p><u>References:</u> 14, 34, 35, 44, 51, 53, 60, 73, 83, 85, 102, 110, 111, 116, 120, 124, 141, 142, 149, 151, 156, 161, 168, 169, 179, 187, 195, 203, 211, 215, 217, 224, 226, 233, 236, 239, 248, 249, 251, 254.</p>
Elk (Wapiti) <i>Cervus elaphus</i>	<p><u>Provinces (Sections):</u> East: 2110.</p> <p>West: 3110 (3111, 3112); 3130 (3131, 3133, 3134); 3210; M2110; M2410; M2610; M3110; M3120; A3140.</p> <p><u>Distribution:</u> Western mountain ranges (Rockies); Pacific Coast; MT, SD. Also found transplanted in Eastern States (Ozarks, northern MI).</p> <p><u>Habitat:</u> Open forests, mountain meadows, foothills, valleys.</p> <p><u>Features:</u> Big game animal. High aesthetic value. Rare tule elk (<i>C. e. nannodes</i>) confined to preserves in southern CA.</p> <p><u>Life history:</u> Females breed at 2.5 yrs. Rutting season starts Sept. Harem breeding by oldest, toughest males. Gestation 8.5 mos. Young (1-2) born May-June. Active mornings, evenings. Found in groups year-round, but males together in summer. Elevational migration.</p> <p><u>Cover:</u> Wooded, oak brush mountain slopes. Grassy meadows and valleys at forest edge. Thickets of aspen, alder, willow.</p> <p><u>Food:</u> Ceanothus, pine, willows, sedges, needlegrass, wheatgrass, <i>Agoseris glauca</i>, <i>Geranium</i> spp., <i>Agropyron spicatum</i>, fescue, bluegrass, <i>Amelanchier</i> spp., aspen, oak, choke-cherry, pinque.</p> <p><u>References:</u> 12, 14, 15, 35, 44, 52, 73, 83, 107, 111, 124, 141, 142, 152, 203, 219, 226, 232, 254, 255, 256.</p>
Ferret, black-footed <i>Mustela nigripes</i>	<p><u>Provinces (Sections):</u> East: 2530.</p> <p>West: 3110; 3210; M3110 (M311, M3113); M3120; P3130; A3140.</p> <p><u>Distribution:</u> Sparsely scattered from north border prairies down to western TX.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Black-footed ferret (Continued)	<p><u>Habitat:</u> Short-grass prairies (same habitat as prairie dog).</p> <p><u>Features:</u> U.S. endangered species. One of the rarest mammals in the U.S.</p> <p><u>Life history:</u> One litter per yr.; 1-4 young per litter. Females bring out young in July. Remain together until Sept.-Oct. Generally solitary. Life history data is scant due to the animal's rarity and underground life.</p> <p><u>Special notes:</u> Man's destroying of prairie dog colonies has been one of the decimating factors to ferrets.</p> <p><u>Cover:</u> Dens in prairie dog burrows. Usually found near prairie dog colony at all times.</p> <p><u>Food:</u> Prairie dogs, gophers, small rodents.</p> <p><u>References:</u> 35, 37, 44, 73, 89, 114, 124, 141, 150, 178, 215, 229, 238, 254.</p>
Fox, Arctic <u>Alopex lagopus</u>	<p><u>Provinces (Sections):</u> 1210; 1220; M1210; M1310; M2410 (M2410-AK).</p> <p><u>Distribution:</u> Coastal AK and associated islands.</p> <p><u>Habitat:</u> Tundra, rocky beaches, ice flows.</p> <p><u>Features:</u> Furbearer. Aesthetics. Main part of Eskimo economy.</p> <p><u>Life history:</u> Gestation 51-54 days. Young (5-6) born Apr.-June. Wanders far out on ice in winter. Limited travel with pups in summer. Cyclic population fluctuations with lemmings. Longevity 14 yrs. in captivity.</p> <p><u>Cover:</u> White coat blends with snow. Digs dens on well-drained slopes. Will burrow into snow for temporary den.</p> <p><u>Food:</u> Eats lemmings, hares, birds, eggs, berries--but mainly a scavenger. Follows polar bears, wolves and eats carrion of ungulates, marine mammals, fish.</p> <p><u>References:</u> 35, 44, 73, 123, 124.</p>
Fox, gray <u>Urocyon cinereoargenteus</u>	<p><u>Provinces (Sections):</u> East: 2110; 2210; 2310; 2320; 2510; 2520; 2530; 4110. West: 2610; 3110 (3112, 3113); 3130; 3140; 3210; 3220; M2410; M2620; M3120; P3130; A3140 (A3142).</p> <p><u>Distribution:</u> Most of U.S. except northwestern quarter.</p> <p><u>Habitat:</u> Open woodlots, chaparral, brushy fields.</p> <p><u>Features:</u> Considered furbearer. Good rodent control.</p> <p><u>Life history:</u> Nocturnal; very secretive. Mates in late winter. Gestation period 51 days. Young (3-7) born in Apr.-May. Longevity less than 10 yrs. Can climb trees.</p> <p><u>Special notes:</u> Any management that would increase rodent populations would benefit gray fox.</p> <p><u>Cover:</u> Ground burrows, hollow logs, or under boulders and trees. Dense cover preferred, such as forests, thickets, vegetated ravines.</p> <p><u>Food:</u> Mainly carnivorous--eats wild birds, eggs, rabbits, small rodents, poultry. Vegetation eaten--mostly fleshy fruits such as apples, persimmons, cherries, grapes, pokeweed, hackberry, blueberries, blackberries, corn, peanuts, opuntia.</p> <p><u>References:</u> 5, 12, 14, 35, 44, 58, 60, 73, 85, 111, 116, 124, 127, 149, 156, 161, 188, 215, 224, 233, 236, 248, 254.</p>
Fox, kit <u>Vulpes macrotis</u>	<p><u>Provinces (Sections):</u> 2610; 3130; 3140; 3220; M2620; M3120.</p> <p><u>Distribution:</u> Desert Southwest to CA; Great Basin to ID.</p> <p><u>Habitat:</u> Desert (level ground); semi-arid grassland.</p> <p><u>Features:</u> San Joaquin subspecies (<u>V. m. mutica</u>) is U.S. endangered. Found only in southern end of San Joaquin Valley, CA. Furbearer elsewhere, although endangered in OR; endangered/threatened in ID; and rare in NV. Aesthetic value. Good rodent control.</p> <p><u>Life history:</u> Breed in Dec.-Feb. Young (4-7) born Feb.-Apr. Gestation 49-55 days. Nocturnal--holes up during day.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Kit fox (Continued)	<p><u>Special notes:</u> Rare because of predator poisoning campaigns; conversion of habitat to agricultural land.</p> <p><u>Cover:</u> Low desert shrubs such as greasewood, saltbush, rabbit brush, juniper. (<i>V. m. mutica</i>) has very close association with habitat types utilized by favorite prey, kangaroo rats. Such habitat types are grasslands of brome, filaree, fescue grass.</p> <p><u>Food:</u> Kangaroo rats and other small rodents; rabbits, birds.</p> <p><u>References:</u> 12, 14, 35, 38, 44, 56, 73, 111, 124, 152, 169, 188, 203, 232, 246.</p>
Fox, red <i>Vulpes vulpes</i>	<p><u>Provinces (Sections):</u> East: 2110; 2210; 2310 (2312); 2320; 2510; 2530. West: 1210; 1220; 1310; 1320; 2610; 3110; 3130; M1210; M1310; M2410 (M2411, M2413, M2415, M2410-AK); M3110; A3140.</p> <p><u>Distribution:</u> Over most of U.S. and AK, excluding extreme Southeast, Southwest, western prairies, coastal CA.</p> <p><u>Habitat:</u> Mixture of woodlands, fields (both crop and fallow).</p> <p><u>Features:</u> Classified anywhere from furbearer to game animal to pest species depending on area. Some states issued bounties. Aesthetic species. Race (Cascade fox) is threatened.</p> <p><u>Life history:</u> Male and female breed late winter. Gestation 51 days. Pups (4-9) born Mar.-Apr. One litter per yr. Pups leave parents in fall. Home range usually less than 2 sq mi. May travel long distances in search of food.</p> <p><u>Special notes:</u> Any management practices which increase populations of small rodents or rabbits will benefit foxes.</p> <p><u>Cover:</u> Any brushy area for hiding. Dens are ground burrows on sloped ground, usually sandy soil. Ditches and fence rows next to cultivated fields serve as cover and hunting routes.</p> <p><u>Food:</u> Mainly carnivorous--eats rabbits, hares, small rodents, insects, birds, reptiles, amphibians. Vegetation is mainly fleshy fruits (apples, persimmons, grapes, cherries, blueberries) and also corn.</p> <p><u>References:</u> 5, 35, 44, 53, 58, 60, 85, 111, 116, 123, 124, 127, 141, 149, 156, 161, 168, 169, 188, 194, 206, 224, 226, 248, 254, 255, 256.</p>
Fox, swift <i>Vulpes velox</i>	<p><u>Provinces (Sections):</u> East: 2530. West: 3110; M3110 (M3113).</p> <p><u>Distribution:</u> Western prairie states: MT to ND, primarily.</p> <p><u>Habitat:</u> Short-grass prairies, desert.</p> <p><u>Features:</u> Endangered in NE and ND, possibly extinct in MT. Threatened in OK. Uncommon elsewhere. Suffered from poison campaigns for other predators. Good rodent control.</p> <p><u>Life history:</u> Young (4-7) born Feb.-Apr. Gestation 49-55 days.</p> <p><u>Special notes:</u> Considered by some as a subspecies of kit fox. Susceptible to overgrazing.</p> <p><u>Cover:</u> Burrows in ground. Efficient at running over open ground to escape danger. Prefers open, level ground.</p> <p><u>Food:</u> Small rodents, such as the kangaroo rat; jackrabbits, snakes, lizards, beetles, grasshoppers.</p> <p><u>References:</u> 35, 44, 66, 73, 101, 124, 141, 150, 178, 227.</p>
Goat, feral <i>Capra hircus</i>	<p><u>Provinces (Sections):</u> M3110 (M3113); M4210; M2620.</p> <p><u>Distribution:</u> All Hawaiian Islands; scattered isolated locations in Rockies, Channel Islands off California.</p> <p><u>Habitat:</u> Cliff edges, canyons, lava flows.</p> <p><u>Features:</u> Big game species. Cause extensive damage by denuding vegetation, allowing erosion.</p> <p><u>Life history:</u> Females can breed at 5 mos. Gestation 140-160 days. Can bear young twice a yr.; 1-2 young per litter.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Feral goat (Continued)	<p><u>Cover:</u> Escape cover is sheer cliffs and rock edges. Will go into dense forests only under hunting pressure.</p> <p><u>Food:</u> Probably any green plant found within its range.</p> <p><u>References:</u> 77, 78, 101, 237.</p>
Goat, mountain <u>Oreamnos americanus</u>	<p><u>Provinces (Sections):</u> 3110 (3111, 3112); M1310; M2110 (M2112); M2410 (M2410-AK); M3110 (M3112).</p> <p><u>Distribution:</u> Local population in western SD. Found western and central mountains of MT, northwestern WY, northern ID. Also in AK mountain range and southern AK coastal mountains. Possibly few in northeastern WA.</p> <p><u>Habitat:</u> Slopes and mountain cliffs near timberline.</p> <p><u>Features:</u> Big game species seen by few people. Aesthetic.</p> <p><u>Life history:</u> First breed at age 2.5. Mating in Oct.-Dec. Polygynous breeding. Gestation 147-178 days. Young (1-2) born May-June. Elevational migration summer-winter. Longevity 12-18 yrs. Occur in small herds.</p> <p><u>Special notes:</u> Need salt in diet.</p> <p><u>Cover:</u> Alpine tundra; timberline habitat. Predator avoidance by specialized ability to climb, walk on sheer cliffs.</p> <p><u>Food:</u> Summer: Timberline grasses and shrubs, such as groundsel, mountain brome, mosses, ceanothus, reedgrass, dogwood, alder, ninebark, butterweed, bluebell, sheep fescue, alpine bluegrass, sedges, rushes (<i>Juncus</i> spp.), lupine, polemonium, sweet vetch, cow parsnip, alumroot, cinquefoil.</p> <p>Winter: Hemlock, Douglas-fir, alpine fir, juniper, Michaux sage.</p> <p><u>References:</u> 3, 15, 35, 44, 73, 83, 111, 124, 138, 141, 142, 195, 203, 226, 254.</p>
Gophers, pocket <u>Geomys</u> spp. (Eastern) <u>Thomomys</u> spp. (Western)	<p><u>Provinces (Sections):</u> East: 2310; 2320; 2510; 2520; 2530; 4110. West: 2410; 2610; 3110; 3120; 3130; 3140; 3210; 3220; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p> <p><u>Distribution:</u> Western species: Found in upper Great Plains and Rockies westward. Eastern species: Found in prairies and Southeast States.</p> <p><u>Habitat:</u> Mountain meadows, grasslands, open forests, pastures, roadside and railroad ROWs.</p> <p><u>Features:</u> Generally considered pest species because of extensive burrowing and crop damage. <i>G. fontinalis</i> and <i>G. colonus</i> endangered in GA. <i>G. bursarius</i> endangered/threatened in IN.</p> <p><u>Life history:</u> Varies per species. Generally 2 litters per yr. in South and 1 litter per yr. in North. Number of young usually 3-7. Normally solitary, usually below ground. Does some night foraging above ground.</p> <p><u>Special notes:</u> Prey species of owls, coyotes, foxes.</p> <p><u>Cover:</u> Burrows and tunnels below ground. Prefer loose workable soil. Will burrow through snow in winter.</p> <p><u>Food:</u> Eastern species: Alfalfa, sunflowers, gay-feather, potatoes, corn, wheat, red clover, seeds and nuts of various trees. Western species: Brome, oak, brodiaea, filaree, sagebrush, dandelion, spring-beauty, starwort, wheat, potatoes.</p> <p><u>References:</u> 35, 44, 66, 73, 88, 116, 124, 215, 236.</p>
Hare, snowshoe (Varying hare) <u>Lepus americanus</u>	<p><u>Provinces (Sections):</u> East: 2110; 2210 (2214). West: 1220; 1310; 1320; 3110 (3111, 3112); M1210; M1310; M2110; M2410 (M2411, M2413, M2415, M2410-AK); M2610; M3110; A3140.</p> <p><u>Distribution:</u> Northeastern States down through eastern mountain chain, westward across northern border states. Down through Rocky Mountains and down along West Coast States to northern Sierras. AK.</p> <p><u>Habitat:</u> Forests, swamps, mountains.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Snowshoe hare (Continued)	<p><u>Features:</u> Small game animal throughout range.</p> <p><u>Life history:</u> Mostly nocturnal, sitting in "forms" during the day. Home range about 10-20 acres, although hare may travel farther. Females have 2-3 litters per yr.; 2-4 young per litter. Gestation 36-37 days. Populations fluctuate with 10-11 yr. peaks.</p> <p><u>Special notes:</u> Competes heavily for deer browse in winter. Important prey species, especially of Canada lynx. RI reports that snowshoe hares will not cross a ROW if it bisects their habitat.</p> <p><u>Cover:</u> Swamp conifers, brushy mixed forests. Utilize bare ground for dust baths. Will nest in "forms" under shrubs.</p> <p><u>Food:</u> Northeast: White pine, red pine, white spruce, birch, aspen, huckleberry, various forbs and grasses. Great Lakes: Birch, white cedar, sugar maple, aspen, pines, spruces, willows, grasses, hazelnut, ferns, clovers, sumac, dandelions. West: Douglas-fir, willow, snowberry, maple, serviceberry, aspen, alder.</p> <p><u>References:</u> 5, 27, 35, 44, 73, 122, 123, 124, 141, 170, 179, 226, 238, 244, 254.</p>
Horse, feral <u>Equus caballus</u>	<p><u>Provinces (Sections):</u> 3130; A3140.</p> <p><u>Distribution:</u> Scattered on many government (BLM) lands throughout western plains. Populations in southern MT, WY.</p> <p><u>Habitat:</u> Grassy, rolling plains.</p> <p><u>Features:</u> Protected on federal lands under "Wild Horse and Burro Act." Controversy over killing and selling horses. Rancher complaints on grazing competition with domestic livestock. Aesthetic value.</p> <p><u>Life history:</u> Mature at 1 yr. Breed any time. Gestation about 336 days; 1 young per litter. Longevity 60 yrs.</p> <p><u>Cover:</u> Canyons, thickets. No particular concealment cover.</p> <p><u>Food:</u> Low-growing grasses, Russian thistle, dropseed, mesquite, junegrass, marsh grasses, saltbush, greasewood, rabbit brush, juniper.</p> <p><u>References:</u> 42, 59, 75, 254.</p>
Jackrabbit, black-tailed <u>Lepus californicus</u>	<p><u>Provinces (Sections):</u> East: 2510 (2512); 2520; 2530. West: 2610; 3110 (3112, 3113); 3120; 3130; 3140; 3210; 3220; M2410; M2610; M2620; M3110 (M3112, M3113); M3120; P3130.</p> <p><u>Distribution:</u> Prairie states, Desert Southwest; CA.</p> <p><u>Habitat:</u> Prairies, grasslands, deserts.</p> <p><u>Features:</u> Small game; pest species. Ranchers don't like because of competition for food with cattle.</p> <p><u>Life history:</u> Breed Dec.-Sept. Gestation 43 days. Approximately 4 litters per yr.; 2-4 young per litter. Nest in depressions in fields. Live 1-2 yrs. in wild. Gets water requirements probably from succulent vegetation consumed. Active early morning and late evening. Spends day in "forms". Use dust wallows.</p> <p><u>Special notes:</u> Prey species for many predators, such as foxes, coyotes, raptors.</p> <p><u>Cover:</u> Escape is by extreme speed. "Forms" in cover vegetation, such as various grasses, thistles, sagebrush, prickly pear, pinweed.</p> <p><u>Food:</u> Mesquite, grama grasses, alfalfa, erigonum, spiderling, prickly pear, sagebrush, greasewood, saltbush, rabbit brush, filaree, western wheatgrass, fescue, sand dropseed, summer cypress, wheat, sorghum, alfilaria, juniper.</p> <p><u>References:</u> 12, 14, 35, 44, 73, 111, 123, 124, 139, 141, 149, 170, 197, 215, 218, 226, 236.</p>
Jackrabbit, white-tailed <u>Lepus townsendii</u>	<p><u>Provinces (Sections):</u> East: 2210 (2213, 2215); 2510 (2511); 2530. West: 3110; 3120; 3130; M2110; M2610; M3110; P3130 (P3131); A3140.</p> <p><u>Distribution:</u> Eastern prairie region westward through the Rockies.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
White-tailed Jackrabbit (Continued)	<p><u>Habitat:</u> Open grassy or sagebrush plains. Exposed mountain slopes.</p> <p><u>Features:</u> Endangered in MO. Rare in IL. Game species throughout because of its wariness and speed. Causes some crop damage.</p> <p><u>Life history:</u> Nocturnal, in "forms" during daylight. Tunnels in snow. Young (3-6) born after 30-40 day gestation. Young are concealed in vegetation, not nests. Usually 1 litter per yr.</p> <p><u>Special notes:</u> Prey for foxes, coyotes, raptors, weasels.</p> <p><u>Cover:</u> "Forms" in deep grass, shrubs, sagebrush. Grass meadows interspersed with low-growing conifer cover.</p> <p><u>Food:</u> Snakeweed, rabbit brush, sagebrush, bluestems, dropseed, gramas, broomweed, sedges, wheatgrass, creambush, dandelions.</p> <p><u>References:</u> 5, 35, 44, 116, 122, 139, 141, 149, 152, 169, 195, 203, 226, 238, 254.</p>
Jaguar <u>Felis onca</u>	<p><u>Provinces (Sections):</u> 3140; 3210.</p> <p><u>Distribution:</u> In U.S. only in southeastern AZ, southwestern NM, extreme southwestern TX.</p> <p><u>Habitat:</u> Chaparral, mountain slopes, open woodlands.</p> <p><u>Features:</u> Extremely rare and listed on federal endangered list throughout its range of Central and South America. Endangered in NM, TX.</p> <p><u>Life history:</u> Breeds in Jan. Gestation 99-105 days. Young (2-4) born Apr.-May. First breeds at 3.</p> <p><u>Special notes:</u> Included here because of endangered status, but its rarity in the U.S. would create little impact.</p> <p><u>Cover:</u> Forests, brush along rivers.</p> <p><u>Food:</u> Peccaries, small mammals, turtles, fish, livestock.</p> <p><u>References:</u> 14, 35, 44, 146, 157, 216, 229.</p>
Lion, mountain (cougar, panther, puma) <u>Felis concolor</u>	<p><u>Provinces (Sections):</u> East: 2110 (2111); 2210 (2215); 2310; 2320; 2510; 4110.</p> <p>West: 3110; 3130; 3140; 3210; 3220; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p> <p><u>Distribution:</u> Western half U.S.; Gulf Coast States; possibly some scattered up Mississippi Valley; north central MN.</p> <p><u>Habitat:</u> Rugged mountains; forests; swamps.</p> <p><u>Features:</u> Endangered subspecies hunted as big game in West. Viewed by western sportsmen as competition for deer.</p> <p><u>Endangered subspecies:</u></p> <p>Eastern cougar (<u>F. c. cougar</u>): U.S. endangered. East of Mississippi River mainly. Scattered reports in a few states of its presence.</p> <p>Florida panther (<u>F. c. coryi</u>): U.S. endangered. Southern FL (Everglades). Endangered in AL, FL, LA.</p> <p>Yuma mountain lion (<u>F. c. browni</u>): Endangered in AZ.</p> <p><u>Life history:</u> Breeds 2-3 yrs. of age. One litter every 2-3 yrs. Gestation 88-97 days. Young (usually 2) born any month. Chiefly nocturnal. Secretive. Can climb trees. Longevity 18 yrs. Feeding range 75-100 mi.</p> <p><u>Special notes:</u> Only management is preservation of wilderness habitat for the endangered subspecies.</p> <p><u>Cover:</u> Swamps, mountains, deep forests. Dens in caves, windfalls, hollow logs.</p> <p><u>Food:</u> Carnivorous--eats deer, rabbits, gophers, rats, squirrels, sometimes livestock.</p> <p><u>References:</u> 12, 13, 14, 35, 44, 52, 66, 73, 83, 100, 109, 111, 116, 124, 136, 137, 141, 142, 152, 161, 203, 212, 217, 224, 225, 226, 229, 248, 254.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Lynx <u>Lynx lynx</u>	<p>Provinces (Sections): East: 2110 (2111, 2112, 2114). West: 1210; 1220; 1310; 1320; M1210; M1310; M2110; M2410; M3110 (M3111, M3112); A3140.</p> <p><u>Distribution</u>: Northern MN and possibly northern MI and WI. Migrates into northern parts of upper New England. Upper Rockies (northeastern OR, MT, ID, UT, western WY, northeastern WA, AK).</p> <p><u>Habitat</u>: Dense conifer forests, swamps, tundra.</p> <p><u>Features</u>: Endangered in WI, VT, CO. Threatened in MA. Rare to uncommon furbearer everywhere else.</p> <p><u>Life history</u>: Mostly solitary and nocturnal. Can range over 50 mi. Mates in winter. Gestation 62 days. Young (1-4) born in spring.</p> <p><u>Special notes</u>: Populations fluctuate in about 10 yr. cyclic peaks corresponding to principle prey, snowshoe hares.</p> <p><u>Cover</u>: Dense wooded areas. Use hollow logs for dens.</p> <p><u>Food</u>: Snowshoe hare is principle prey. Also eats other small rodents and birds.</p> <p><u>References</u>: 35, 43, 44, 45, 73, 83, 111, 123, 124, 129, 136, 141, 203, 226, 238, 240, 251, 254, 256.</p>
Marmots (Western) <u>Marmota</u> spp.	<p>Provinces (Sections): 1310; 1320; 2410; 3120; 3130; M1210; M1310; M2110; M2410 (M2411, M2413, M2415); M2610; M3110; P3130; A3140.</p> <p><u>Distribution</u>: Western U.S. and AK except Desert Southwest and Pacific Coast.</p> <p><u>Habitat</u>: Talus slopes, meadows, valleys.</p> <p><u>Features</u>: Very common, conspicuous inhabitant of these areas. Aesthetic. Olympic marmot (<u>M. olympus</u>) is rare and protected in Olympic region of WA.</p> <p><u>Life history</u>: Gestation 4-5 weeks. Young (3-6) born late spring, early summer. Hibernates during winter. Diurnal.</p> <p><u>Cover</u>: Burrows or crevices in rock slopes. Usually seen near boulders, in alpine meadows. Will avoid forested areas.</p> <p><u>Food</u>: Various grasses, locoweed, apple, serviceberry, blackberry, sedges. Relishes alfalfa when available.</p> <p><u>References</u>: 35, 44, 73, 124, 206, 226, 256.</p>
Mink <u>Mustela vison</u>	<p>Provinces (Sections): East: 2110; 2210; 2310; 2320; 2510; 2520; 2530; 4110.</p> <p>West: 1210; 1220; 1310; 1320; 2410; 2610; 3110; 3130 (3131, 3134, 3135); M1210; M1310; M2110; M2410; M2610; M3110; A3140.</p> <p><u>Distribution</u>: U.S. and AK except Desert Southwest.</p> <p><u>Habitat</u>: Stream and lake banks, marsh edges.</p> <p><u>Features</u>: Valuable furbearer. Damage to muskrat ranchers.</p> <p><u>Life history</u>: May breed first yr. Mate Jan.-Mar. Gestation 39-75 days (delayed implantation). Young (2-6) born Apr.-May. Chiefly nocturnal. Good swimmer. May range many miles following a stream.</p> <p><u>Special notes</u>: FL endangered subspecies: Everglades mink (<u>M. v. evergladensis</u>). Wetland preservation essential to management of mink.</p> <p><u>Cover</u>: Burrows in stream bank. Hollow logs. Crevices under tree roots. Riparian thickets.</p> <p><u>Food</u>: Carnivorous--eats small rodents, birds, eggs, crayfish, fish, frogs, snakes, muskrats, aquatic beetles.</p> <p><u>References</u>: 5, 35, 44, 61, 73, 74, 85, 99, 111, 116, 123, 127, 139, 141, 142, 149, 152, 156, 161, 188, 195, 215, 224, 233, 236, 248, 254, 255, 256.</p>
Moose <u>Alces alces</u>	<p>Provinces (Sections): East: 2110 (2111, 2112, 2114). West: 1210; 1220; 1310; 1320; M1210; M1310; M2110; M2410 (M2410-AK); M3110 (M3111, M3112); A3140.</p> <p><u>Distribution</u>: Northern MN and MI. Northern ME. Rocky Mountain areas</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Moose (Continued)	<p><u>Distribution (Continued)</u>: (ID, northeastern WA, MT, WY, CO) and AK.</p> <p><u>Habitat</u>: Mixed forests with lakes, marshes interspersed.</p> <p><u>Features</u>: Rare in NH, WI. Threatened in MA. Common big game animal elsewhere. Aesthetic.</p> <p><u>Life history</u>: Usually solitary or small family groups. Excellent swimmer. Breeding occurs in fall. Gestation 8 mos. Young (1-2) born in spring. Females first breed at 3 yrs. Longevity of approximately 20 yrs.</p> <p><u>Special notes</u>: Early stages of succession of browse species are important.</p> <p><u>Cover</u>: Conifer cover, dense swamps.</p> <p><u>Food</u>: ME and Great Lakes region: Willows, aspen, white birch, hazelnut, fire-cherry, balsm fir, mountain-ash, sedges, mountain maple, pond lilies, juneberry.</p> <p>Western region: Alder, buffaloberry, bearberry, honeysuckle, choke-cherry, stem willow, elder, spiraea, snowberry, arnica, sticky geranium, waterleaf, peavine, sedges, aspen, dogwood, paper birch, mountain-ash, deer vetch.</p> <p>AK: Willow, Kenai birch, dwarf birch, aspen, grasses. Willow most important because of its abundance.</p> <p><u>References</u>: 3, 35, 44, 73, 83, 106, 124, 129, 141, 142, 173, 226, 240, 251, 254.</p>
Mouflon <u>Ovis musimon</u>	<p><u>Provinces (Sections)</u>: M4210.</p> <p><u>Distribution</u>: Hawaiian Islands of Hawaii and Lanai.</p> <p><u>Habitat</u>: Mountain forests, grassland coasts.</p> <p><u>Features</u>: Exotic big game species.</p> <p><u>Life history</u>: Breeding season Dec.-Jan. Rams fight to gain control of small groups of ewes. Gestation 5 mos. Lambs (1-2) born Apr.-May.</p> <p><u>Cover</u>: Dense mountain forests as escape cover. Utilizes kiawe and grassland coast.</p> <p><u>Food</u>: Available grasses. Hay, barley.</p> <p><u>References</u>: 77, 78, 237</p>
Mouse, salt marsh harvest <u>Reithrodontomys</u> <u>raviventris</u>	<p><u>Provinces (Sections)</u>: M2620.</p> <p><u>Distribution</u>: San Francisco Bay, CA.</p> <p><u>Habitat</u>: Salt marshes.</p> <p><u>Features</u>: U.S. endangered species. One of few mammals that can drink salt water.</p> <p><u>Life history</u>: One-4 litters per yr.; 3-4 young per litter.</p> <p><u>Special notes</u>: Decline due to filling and diking of marshes. Preservation of existing habitat essential.</p> <p><u>Cover</u>: Marsh plants that form dense mat a few inches above ground. <u>Salicornia</u>, with peat soils that are moist. Also will inhabit song sparrow nests along marsh.</p> <p><u>Food</u>: Seeds, some insects.</p> <p><u>References</u>: 35, 38, 44, 82, 89, 229, 232.</p>
Musk ox <u>Ovibos moschatus</u>	<p><u>Provinces (Sections)</u>: 1210; 1220.</p> <p><u>Distribution</u>: Extreme northern AK coast and Nunivak Island.</p> <p><u>Habitat</u>: Tundra.</p> <p><u>Features</u>: Rare--once extinct in AK. Now reintroduced. Formerly an important part of Eskimo economy.</p> <p><u>Life history</u>: Cows usually breed in second yr., bulls at 4-6. Polygamous. Social competition in breeding. Breeding July-Aug. Young (1) born Apr.-May. Usually every other year for females. Habit of encircling young by large males to protect against predators (wolves). Makes easy target for hunters. Wander out on ice and can't get back.</p> <p><u>Special notes</u>: Northern range of this animal keep it out of the</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Musk ox (Continued)	<p><u>Special notes (Continued):</u> influence of any transmission lines at present.</p> <p><u>Cover:</u> None.</p> <p><u>Food:</u> Sedges, willows, beach ryegrass, crowberry, Labrador-tea, bear-berry.</p> <p><u>References:</u> 3, 35, 44, 73, 199.</p>
Muskrat <u>Ondatra zibethicus</u>	<p><u>Provinces (Sections):</u> East: 2110; 2210; 2310; 2320; 2510; 2530. West: 1220; 1310; 1320; 2410; 2610; 3110; 3130; 3210; M1210; M1310; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p> <p><u>Distribution:</u> Found almost everywhere in U.S. except extreme Southeastern States (FL), extreme southern TX and southwestern deserts, and HA.</p> <p><u>Habitat:</u> Ponds, lakes, streams, marshes--especially those with lush aquatic vegetation.</p> <p><u>Features:</u> Popular fur animal. Causes damage by burrowing into earthen dikes and dams.</p> <p><u>Life history:</u> Females breed in summer in North; winter in South. Have 2-3 litters per yr.; 5-6 young per litter. Gestation 22-30 days. Family units usually have house (mound) made from local vegetation. Burrows in banks also. Aquatic but migrate overland. Home range usually less than .5 mi of birthplace.</p> <p><u>Special notes:</u> Competes with nutria. Is prey for mink, snapping turtles.</p> <p><u>Cover:</u> Water, aquatic vegetation. Dens in bank or builds house from aquatic vegetation.</p> <p>Southeast: Most muskrats come from marshes where three-cornered grass is dominant.</p> <p>Prairies and Midwest: Sedges, bulrushes, cat-tails.</p> <p><u>Food:</u> Cat-tails, bulrushes, bur-reed, water-starwort, pondweed, arrow-head, corn, cutgrass, panic-grass, cordgrass, water lilies, three-cornered grass, wire-grass, paille-fine, cottonwood, white clover, bluegrass, sedges, duckweed, smartweed. Also eats clams, mussels, fish, crayfish, frogs, snails.</p> <p><u>References:</u> 5, 12, 14, 35, 44, 53, 60, 73, 85, 111, 116, 124, 127, 141, 142, 149, 152, 156, 161, 186, 188, 195, 207, 217, 224, 233, 248, 254, 255, 256.</p>
Nutria <u>Myocastor coypus</u>	<p><u>Provinces (Sections):</u> East: 2310; 2320; 2510 (2512); 2520. West: 3110 (3113); 3130 (3131); M2410 (M2411, M2413); M3110 (M3112).</p> <p><u>Distribution:</u> Eastern VA and NC. Scattered throughout Southeast and TX. Isolated spots in Rockies, northern NV, western WA and OR.</p> <p><u>Habitat:</u> Marshes, swamps.</p> <p><u>Features:</u> Introduced species. Not that valuable as furbearer. Clears out marsh vegetation, but competes heavily with muskrat. Generally disliked.</p> <p><u>Life history:</u> Females sexually mature at 5 mos. Gestation 130 days; 1-9 young per litter. Female can breed again within 2 days of giving birth. Very prolific. Chiefly aquatic. Longevity 4 yrs.</p> <p><u>Special notes:</u> Can apparently withstand stagnant, polluted water.</p> <p><u>Cover:</u> Thick aquatic vegetation. Dens in abandoned burrows or dig their own in canal banks.</p> <p><u>Food:</u> Most aquatic vegetation including cane and rice crops, water hyacinths.</p> <p><u>References:</u> 32, 35, 44, 73, 111, 116, 124, 127, 141, 142, 152, 161, 215, 224, 233, 236.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Ocelot <u>Felix pardalis</u>	<p>Provinces (Sections): 3140; 3210.</p> <p><u>Distribution:</u> In U.S. only in extreme southeastern AZ, southern NM, and southwestern TX, migrating up from Central and South America.</p> <p><u>Habitat:</u> Thorn scrub brush, rocky areas.</p> <p><u>Features:</u> On federal list of endangered species in Central and South America. Migrates occasionally to U.S. Endangered in TX.</p> <p><u>Life history:</u> Two young per litter, usually born in fall.</p> <p><u>Special notes:</u> Included here because of endangered status but little impact because of rarity in the U.S.</p> <p><u>Cover:</u> Thorny thickets, rugged canyons.</p> <p><u>Food:</u> Peccaries, birds, reptiles.</p> <p><u>References:</u> 14, 35, 44, 146, 216.</p>
Opossum <u>Didelphis virginiana</u>	<p>Provinces (Sections): East: 2110 (2113, 2114); 2210; 2310; 2320; 2510; 2520; 2530; 4110.</p> <p>West: 2610; 3110 (3113); M2610; M2620; M3120.</p> <p><u>Distribution:</u> Eastern half U.S. except extreme Northern States. West Coast.</p> <p><u>Habitat:</u> Farm areas, wooded areas near water; urban areas where trees are present.</p> <p><u>Features:</u> Considered furbearer although not valuable. Hunted in South. Damage to poultry.</p> <p><u>Life history:</u> Have 1-2 litters per yr. Gestation about 13 days. Young (up to 14) remain in mother's pouch for 2 mos. Home range about 40 acres, but move longer distances in fall. Feigns death when cornered. Chiefly nocturnal.</p> <p><u>Cover:</u> Holes in trees, hollow logs, rock piles, old buildings, brush-piles, culverts.</p> <p><u>Food:</u> Omnivorous, but animal matter makes up much larger percentage of diet.</p> <p>Animals: Mice, birds, eggs, insects, carrion, snails, crayfish, rabbits (young).</p> <p>Plants: Grapes, acorns, persimmons, corn, mulberries, hackberries, blackberries, blueberries, pokeweed. Also garbage.</p> <p><u>References:</u> 5, 12, 14, 35, 44, 45, 47, 53, 60, 73, 85, 116, 124, 149, 156, 161, 188, 195, 209, 224, 233.</p>
Otter, river <u>Lutra canadensis</u>	<p>Provinces (Sections): East: 2110; 2210; 2310; 2320; 2510; 2520; 2530; 4110.</p> <p>West: 1210; 1220; 1310; 1320; 2410; 3110; 3120; 3130; M1210; M1310; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p> <p><u>Distribution:</u> All states except Desert Southwest and HI.</p> <p><u>Habitat:</u> Thickets and wooded areas along streams and lakes.</p> <p><u>Features:</u> Valuable furbearer. Aesthetic values. Endangered in MO, OK, CO, NM, ND, OH. Threatened in AZ, IA, TN.</p> <p><u>Life history:</u> Aquatic, but will travel overland to reach another body of water. Usually travel in pairs. Gestation 9.5-10 mos. Young (1-5) born Apr.-May. Feeding range approximately 15 mi.</p> <p><u>Special notes:</u> Clean, open water essential. Mortality: Trapping; also, habitat loss through water pollution, stream diversion or impoundment.</p> <p><u>Cover:</u> Dens in banks usually with a below-water entrance. Cover is any waterside vegetation.</p> <p><u>Food:</u> Fish, frogs, crayfish, aquatic invertebrates, snakes.</p> <p><u>References:</u> 5, 12, 13, 14, 15, 35, 44, 45, 47, 53, 73, 91, 99, 111, 116, 123, 124, 127, 139, 141, 142, 152, 156, 157, 161, 165, 178, 188, 212, 227, 233, 238, 248, 254.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Peccary (Javelina) <u>Tayassu tajacu</u>	<p>Provinces (Sections): 3140; 3210; 3220 (3222); M3120.</p> <p><u>Distribution</u>: Southwestern TX, southern NM and AZ.</p> <p><u>Habitat</u>: Brushy semidesert; chaparral; along cliffs near water. Prey for mountain lion.</p> <p><u>Features</u>: Game animal. Destroys prickly pear cactus. Prey for mountain lion.</p> <p><u>Life history</u>: Breed throughout year. Gestation 144 days. Young (1-5) can follow mother at 1 day old. Social--found in groups up to 25. Active early mornings and late evenings.</p> <p><u>Cover</u>: Thickets (usually near water) of cactus, scrub oak, mesquite.</p> <p><u>Food</u>: Animal matter: Grubs, bird eggs, worms, reptiles, toads. Vegetation: Prickly pear, acorns, mesquite beans, cacti fruits, manzanita berries, century plants.</p> <p><u>References</u>: 12, 14, 35, 44, 55, 73, 124, 217.</p>
Prairie dogs <u>Cynomys</u> spp.	<p>Provinces (Sections): East: 2520 (2521); 2530 (2532, 2533). West: 3110; 3210; M3110 (M3112, M3113); P3130; A3140.</p> <p><u>Distribution</u>: Black-tailed prairie dog: Western prairies from MT south through TX. White-tailed prairie dog: Eastern Rockies and plateaus. MT south through AZ and NM.</p> <p><u>Habitat</u>: Black-tailed prairie dog: Upland prairies (short-grass). White-tailed prairie dog: Mountain valleys 5000-8500 ft.</p> <p><u>Features</u>: UT species (<u>C. parvidens</u>) is U.S. endangered. Black-tailed prairie dog is most popular prairie symbol. Black-tailed prairie dogs are favorite prey of endangered black-footed ferret. Target of wide-spread poisoning.</p> <p><u>Life history</u>: Black-tailed prairie dogs mate in early Feb. First breed after 2 yrs. Gestation 30-35 days. Young (3-5) born in late Mar., first come above ground after six weeks. Live in "towns" of extensive burrows with sentry posted. White-tailed prairie dogs habits similar, although about 1 mo. behind in breeding seasons. White-tailed prairie dogs hibernate in winter; black-tailed prairie dogs just become dormant.</p> <p><u>Cover</u>: Extensive burrows in ground. Black-tailed prairie dogs are in more open land so danger is easily detected. White-tailed prairie dogs may inhabit slightly brushy areas of junipers and pines.</p> <p><u>Food</u>: Wheatgrass, Russian thistle, brome, fescue, bluegrass, grama grass, saltbush, sagebrush, barley, prickly pear, globe mallow, onion bulb, dandelion, grasshoppers, other insects.</p> <p><u>References</u>: 35, 44, 73, 103, 114, 124, 141, 149, 215, 229, 236, 238, 254.</p>
Black-tailed prairie dog <u>C. ludovicianus</u>	
White-tailed prairie dog <u>C. leucurus</u>	
Utah prairie dog <u>C. parvidens</u>	
Pronghorn <u>Antilocapra americana</u>	<p>Provinces (Sections): East: 2530 (2532, 2533). West: 3110; 3120; 3130; 3140; 3210; 3220; M3110; M3120; P3130; A3140; M4210.</p> <p><u>Distribution</u>: Western prairie states through Rocky Mountain parklands and into Great Basin.</p> <p><u>Habitat</u>: Prairies, sagebrush plains.</p> <p><u>Features</u>: Popular big game animal. Aesthetic values.</p> <p><u>Life history</u>: Breed at 1.5 yrs. (Aug.-Oct.). Gestation 230-240 days. Young (1-3) born Apr.-May in South, May-June in North. Occur in bands, diurnal. Longevity 14 yrs. Run 40 mph but has limited vertical jumping ability.</p> <p><u>Special notes</u>: U.S. endangered species: Sonoran pronghorn (<u>A. a. sonoriensis</u>) in Southern AZ. AZ threatened species: Mexican pronghorn (<u>A. a. mexicana</u>).</p> <p><u>Cover</u>: Important cover is for fawning and is usually sagebrush. Various heights are important for better protection.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Pronghorn (Continued)	<p><u>Food:</u> Sagebrush is very important, usually comprising a large percentage of the pronghorn's diet when available. Other food: rabbit brush, saltbush, snowberry, alfalfa, snakeweed, cedar, buffalo grass, wheat-grass, broomsedge, grama grass, mountain-mahogany, tansy mustard, prickly pear, knotweed, wild rose, cheat, sedges, vetch, locoweed.</p> <p><u>Hawaii:</u> Haole koa.</p> <p><u>References:</u> 12, 14, 16, 35, 44, 52, 73, 77, 78, 111, 124, 141, 142, 151, 152, 168, 203, 217, 219, 226, 229, 232, 237, 254.</p>
Rabbit, brush <u>Sylvilagus bachmani</u>	<p><u>Provinces (Sections):</u> 2610; M2410; M2610; M2620.</p> <p><u>Distribution:</u> CA, western third of OR.</p> <p><u>Habitat:</u> Chaparral, thick brush.</p> <p><u>Features:</u> Small game species.</p> <p><u>Life history:</u> Promiscuous breeding. Gestation 28-30 days. Several litters (2-5 young) raised each year. Active early mornings, late evenings. Never are far from dense brush. Rarely uses burrows.</p> <p><u>Cover:</u> Thick brush of rose, willows, blackberry near streams, or under scrub oak. Trails through brush. Usually not far from brush.</p> <p><u>Food:</u> Eragrostis, spikerush, foxtail grass, oat grass, wild rose, thistles, blackberry, pennywort, lupine, clover.</p> <p><u>References:</u> 35, 44, 73, 111, 122, 124, 170.</p>
Rabbit, desert cottontail (Audubon cottontail) <u>Sylvilagus audubonii</u>	<p><u>Provinces (Sections):</u> 2610; 3110; 3130 (3132, 3133, 3134); 3140; 3210; 3220; M2620; M3110 (M3112, M3113); M3120; P3130; A3140.</p> <p><u>Distribution:</u> Western Great Plains, Desert Southwest, Rocky Mountains.</p> <p><u>Habitat:</u> Open plains, brushlands, valleys.</p> <p><u>Features:</u> Important small game animal. Girdles young trees.</p> <p><u>Life history:</u> Females breed first yr. Gestation 28 days; 4 young per litter; 3-5 litters per yr. Active mornings and evenings. Solitary.</p> <p><u>Special notes:</u> Important prey for raptors, foxes, coyotes, weasels.</p> <p><u>Cover:</u> Nests in grass-lined depression. Uses burrows. Thickets of pinons, junipers, sagebrush, oak brush, saltbrush, bitterbrush, grape, rose, willows. Utilizes old buildings.</p> <p><u>Food:</u> Mesquite, prickly pear, bitterbrush, choke-cherry, sagebrush, fluffgrass, red brome, lovegrass, Coulter lupine, hiddenflower, Indianwheat, three-awns, rose, sedges, blackberry.</p> <p><u>References:</u> 35, 44, 73, 101, 115, 122, 124, 152, 170, 222.</p>
Rabbit, eastern cottontail <u>Sylvilagus floridanus</u>	<p><u>Provinces (Sections):</u> East: 2110 (2111, 2112, 2113); 2210; 2310; 2320; 2510; 2520; 2530.</p> <p>West: 3110; 3140; 3220; M3110 (M3113); M3120; P3130; A3140.</p> <p><u>Distribution:</u> Eastern third of U.S. including Desert Southwest but excluding extreme northern New England States.</p> <p><u>Habitat:</u> Heavy brush, forest and swamp edges, weed and fallow fields, fence rows.</p> <p><u>Features:</u> Very common within range. No. 1 small game animal in many states.</p> <p><u>Life history:</u> Active evenings through the morning. Spends daylight hours in burrows, "forms", or heavy brush. Range 3-20 acres. Gestation 26-30 days. Females have 3-4 litters per yr.; 4-7 young per litter.</p> <p><u>Special notes:</u> Good species to utilize ROWs. Will cause some tree and shrub damage in periods of low food supply. Prey species for many predators.</p> <p><u>Cover:</u> Burrows, dense thickets of multiflora rose, blackberry patches, brushpiles, hollow logs, sericea.</p> <p><u>Food:</u> Crabgrasses, bluegrass, clovers, truck crops, plantains, sheep-sorrel, rose, wild strawberry, dandelion, goldenrod, ryegrass, vetch,</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Rabbit, eastern cottontail (Continued)	<u>Food (Continued):</u> oats, chufa, soybeans, timothy, chickweed, sedges, cranberry, blueberry, and the bark of many trees and shrubs in winter, such as gray birch, red maple, apple, sumac, dogwood, basswood, blackberry, aspen, cherry. <u>References:</u> 5, 12, 14, 35, 44, 50, 60, 73, 85, 100, 124, 127, 141, 142, 151, 179, 195, 224, 233, 254.
Rabbit, Nuttall cottontail (Mountain cottontail) <i>Sylvilagus nuttallii</i>	<u>Provinces (Sections):</u> 3110; 3130; M2110; M2610; M3110; A3140. <u>Distribution:</u> Great Basin, Rocky Mountains. <u>Habitat:</u> Thickets, sagebrush, rocks, cliffs, brushy edges. <u>Features:</u> Small game mammal; prey for many predators. <u>Life history:</u> Promiscuous breeding. Gestation 28-30 days; 2-3 litters per year; 4-8 young per litter. Active early and late in the day. <u>Cover:</u> Streamside thickets, sagebrush, bunchgrass hills, rocky slopes. <u>Nest</u> is shallow depression lined with twigs. <u>Food:</u> Sagebrush, juniper, sedges, various grasses in summer. <u>References:</u> 35, 41, 44, 73, 101, 111, 122, 152, 170.
Rabbit, pygmy <i>Sylvilagus idahoensis</i>	<u>Provinces (Sections):</u> 3130; M3110 (M3112). <u>Distribution:</u> Great Basin, western Rockies. <u>Habitat:</u> Sagebrush stands. <u>Features:</u> Small game mammal. Prey for many predators. Rare in WA. <u>Life history:</u> Promiscuous breeding. One or more litters per yr.; 5-8 young per litter. Active early mornings, late evenings. Dig own burrows. Usually not found more than 30 yds from burrow. <u>Cover:</u> Burrows in soft soil in sagebrush clumps. <u>Food:</u> Sagebrush, rabbit brush. <u>References:</u> 35, 44, 73, 111, 122, 152, 203, 226.
Raccoon <i>Procyon lotor</i>	<u>Provinces (Sections):</u> East: 2110; 2210; 2310; 2320; 2510; 2520; 2530; 4110. West: 2610; 3110; 3130; 3140; M2410; M2610; M2620; M3110; M3120; P3130. <u>Distribution:</u> Covers much of U.S. except scattered areas in Rocky Mountain region. <u>Habitat:</u> Rock cliffs, wooded areas near water and fields. <u>Features:</u> Popular and valuable furbearer. Trapped and hunted. <u>Aesthetic.</u> Damage to corn, poultry. <u>Life history:</u> Females can mate at 1 yr. Mate late winter in South, early spring in North. Gestation period of 63 days. Young (2-7) born in Apr. or May; 1 litter per yr. Young leave mother in fall; may emigrate great distance. Mostly nocturnal. Excellent swimmers. <u>Special notes:</u> Although primarily a woodland species, its foraging leads it through all habitat types including clearings and the forest edges. Adaptable to urban areas. <u>Cover:</u> Hollow trees and logs, rock crevices, ground burrows, squirrel nests. Usually near waterways. <u>Food:</u> Insects, frogs, birds and eggs, fish, small mammals, crayfish, crabs, snails, earthworms, poultry. Northeast and Midwest: Acorns, corn, persimmon, pokeweed, grape, sweet corn, tomatoes, choke-cherries. Southeast: Acorns, corn, palmetto, greenbrier, grape, persimmon, sweet corn, tomatoes, pecans. Prairies: Acorns (where available), persimmon, grape, mulberry, grasses, corn, blackberry, raspberry. West: Acorns, hollyleaf cherry, buckthorn. <u>References:</u> 5, 12, 35, 44, 53, 60, 69, 73, 74, 85, 111, 116, 124, 127, 141, 149, 156, 161, 188, 195, 224, 233, 248, 254.

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Rat, Morro Bay kangaroo <u>Dipodomys heermanni</u> <u>morroensis</u>	<p>Provinces (Sections): M2620.</p> <p><u>Distribution:</u> Southern side Morro Bay, southern CA. Near communities of Los Osos and Baywood.</p> <p><u>Habitat:</u> Dry grassy plains with sandy soil.</p> <p><u>Features:</u> U.S. endangered species. Probably about 3,000 left.</p> <p><u>Life history:</u> Give birth in July; 2-5 young per litter. Sometimes more than 1 litter per yr. Females can breed first year.</p> <p><u>Special notes:</u> Preservation of existing habitat essential.</p> <p><u>Cover:</u> Coastal sage scrub, coastal strand; dens in ground. Sometimes prefers fairly cleared ground with scattered annuals or grass.</p> <p><u>Food:</u> <u>Lupinus</u> spp., <u>Lotus</u> spp., <u>Corethrogyne filaginifolia</u>, seeds, brome, filaree, fescue. On occasion, insects.</p> <p><u>References:</u> 35, 38, 44, 124, 205, 229, 232.</p>
Rat, Ord's kangaroo <u>Dipodomys ordii</u>	<p>Provinces (Sections): 3110; 3130; 3140; 3210; M3110; M3120; P3130; A3140.</p> <p><u>Distribution:</u> Western plains, Rockies and Great Basin.</p> <p><u>Habitat:</u> Sandy soils.</p> <p><u>Features:</u> Most widely distributed kangaroo rat. Threatened in western range (WA) because increased irrigation is destroying habitat.</p> <p><u>Life history:</u> Young (2-5) born May-June. May have second litter. Nocturnal. Active year round. Stores seeds.</p> <p><u>Cover:</u> Burrows in sandy soil.</p> <p><u>Food:</u> Sorghum, purslane, golden crown-beard, pigweed, prickly pear, squirreltail grass, false buffalo grass, lycium, puncturevine, bursage, saltbush, plucea, ragweed.</p> <p><u>References:</u> 35, 44, 73, 124, 206.</p>
Ringtail (Ringtail cat, civit) <u>Bassaricus astutus</u>	<p>Provinces (Sections): 2610; 3140; 3210; 3220; M2410 (M2412, M2414); M2610; M2620; M3110; M3120; P3140.</p> <p><u>Distribution:</u> Southwestern U.S. from TX to CA coast.</p> <p><u>Habitat:</u> Chaparral, ridges, cliffs; all near water.</p> <p><u>Features:</u> Furbearer. Aesthetic value probably higher.</p> <p><u>Life history:</u> One litter per yr; 3-4 young born in May-June. Parents bring food for 1 mo. Young leave parents in Aug.-Sept. Longevity of 8 yrs. (captivity). Nocturnal. Partially colonial but usually found in pairs.</p> <p><u>Cover:</u> Rock piles and brushy slopes (interspersed with scrub oak, pine and cedar). Dens in rock piles, hollow logs, cliff crevices. Rock piles created by mining operations in CA created suitable habitat.</p> <p><u>Food:</u> Animal matter: Mice and other small rodents, birds, insects, rabbits, squirrels.</p> <p><u>Vegetation:</u> Persimmon, cedar, hackberries, mistletoe, madrone, manzanita, cascara, blackberries, acorns.</p> <p><u>References:</u> 12, 14, 35, 44, 73, 101, 124, 188, 210.</p>
Sheep, bighorn <u>Ovis canadensis</u>	<p>Provinces (Sections): 3110; 3130; 3210; 3220; M2110; M2410 (M2415); M2620; M3110; M3120.</p> <p><u>Distribution:</u> Western mountains from Southwest up through Basin and Rockies into ID and northeastern WA.</p> <p><u>Habitat:</u> Rugged mountains and canyons.</p> <p><u>Features:</u> Uncommon big game animal throughout range. Endangered in TX. Rare in CA. Threatened in AZ. Endangered/threatened in ID.</p> <p><u>Life history:</u> Females breed at 2.5. Polygamous. Rutting season Nov.-Dec. Gestation 180 days. Young (1-2) born May-June. Gregarious, sexes usually separate in summer. Seasonal elevational migration. Longevity 15 yrs. Diurnal.</p> <p><u>Special notes:</u> Repeatedly use same bedding grounds in semi-open country.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Bighorn sheep (Continued)	<p><u>Special notes (continued):</u> Highly susceptible to disease and parasites and disturbance by man. Need salt. Wild burrows in Death Valley compete for food and water.</p> <p><u>Cover:</u> Open slopes and mountain cliffs. Desert canyons. Alpine meadows.</p> <p><u>Food:</u> Desert (southern part of range): Hilaria, prickly pear, pinyon pine, grama grass, needlegrass, eriogonum, saltbush, gumweed, joint-fir, sumac, buckthorn, acacia, parachute plant, desert holly, rush bebbia, pebble pinchusion, primroses, wirelettuce, Wright's silk-tassel, ceanothus, mountain-mahogany, winterfat, sagebrush, speargrass, bitterbrush.</p> <p>Northern mountains (northern part of range): Fescue grass, wheatgrass, sagebrush, needlegrass, ricegrass, muhly, mountain-mahogany, mountain-lover, twinflower, sedge, bluegrass, gooseberry, cinquefoil, dwarf clover.</p> <p><u>References:</u> 12, 13, 14, 15, 33, 35, 44, 52, 73, 83, 101, 111, 124, 141, 142, 152, 203, 216, 217, 219, 220, 232, 245, 246, 254.</p>
Sheep, feral <u>Ovis aries</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Hawaiian Islands of Hawaii and Kahoolawe.</p> <p><u>Habitat:</u> Mountain slopes.</p> <p><u>Features:</u> Game species. Will deplete its available food supply if undisturbed, seriously reducing regeneration of preferred foods.</p> <p><u>Life history:</u> Ewes can breed at 5 mos. One lamb born first time, then 1-3 lambs born every 6 mos after. Live in flocks.</p> <p><u>Cover:</u> Mountain slope grassland areas.</p> <p><u>Food:</u> Mamani, puakeawe, various grasses.</p> <p><u>References:</u> 77, 78, 237.</p>
Sheep, Dall (white sheep) <u>Ovis dalli</u>	<p><u>Provinces (Sections):</u> M1210; M1310; M2410 (M2410-AK).</p> <p><u>Distribution:</u> Scattered through Brooks and Alaska ranges in AK.</p> <p><u>Habitat:</u> Rough mountain slopes.</p> <p><u>Features:</u> Big game species. Only wild white sheep in world. Aesthetic.</p> <p><u>Life history:</u> Females mature at 18-30 mos. Breeding Nov.-Dec. Gestation 180 days. Lambs (1) born May-June. Lambs have low survival. Some seasonal migration. Main mortality due to winter weather. Cold, moderate snowfall, and wind are required to provide access to feeding areas. Salt required in diet.</p> <p><u>Special notes:</u> Included here because of aesthetic and unique aspects, but its habitat would most likely be out of the influence of any transmission line.</p> <p><u>Cover:</u> Cliffs and rugged rock outcrops for escape.</p> <p><u>Food:</u> Bunchgrass, sedges, willows, lichens.</p> <p><u>References:</u> 3, 35, 44, 73.</p>
Skunks All spp.	<p><u>Provinces (Sections):</u> East: 2110; 2210; 2310; 2320; 2510; 2520; 2530; 4110.</p> <p>West: 2410; 2610; 3110; 3120; 3130; 3140; 3210; 3220; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.</p>
Striped skunk <u>Mephitis mephitis</u>	<p><u>Distribution:</u> Striped skunk: Everywhere.</p>
Spotted skunk <u>Spilogale putorius</u>	<p>Spotted skunk: All but upper Midwest and Northeast.</p> <p>Hooded skunk: Southern AZ and NM</p> <p>Hog-nosed skunk: Southern TX, NM, AZ.</p>
Hooded skunk <u>Mephitis macroura</u>	<p><u>Habitat:</u> Brushy areas, open woodlots, prairies, rocky foothills; near water.</p>
Hog-nosed skunk <u>Conepatus leuconotus</u>	<p><u>Features:</u> Spotted skunk is threatened in IA; rare/endorsed in KY. Furbearer; good rodent control. Poultry damage, rabies carrier.</p> <p><u>Life history:</u> Young (about 4) born in spring. Gestation about 2 mos.</p>

continued

Table 65.5 (Continued)

Species	Ecological characteristics
Skunks (Continued)	<p><u>Life history (continued)</u>: for striped skunk, hooded skunk, hog-nosed skunk. About 4 mos. for spotted skunk. Chiefly nocturnal. Has defensive odor. Several may den together.</p> <p><u>Cover</u>: Dens in burrows, under buildings, rock piles, crevices, rock cliffs. Can climb trees to escape, but usually uses scent to ward off an enemy. Dens are usually close to water.</p> <p><u>Food</u>: Mostly animal matter. Plant foods are insignificant for eastern skunks, but more important to western species.</p> <p>Striped skunk: Insects, spiders, amphibians, reptiles, mice, gophers, turtle and bird eggs, grapes, blueberries, peanuts, blackberries, ground-cherry, prickly pear, nightshade.</p> <p>Spotted skunk: Mice, chipmunks, insects, spiders, snakes, eggs, crayfish, fungus, persimmons, grapes, mulberries.</p> <p>Hooded skunk: Horned toads, insects, lizards, mesquite, manzanita.</p> <p>Hog-nosed skunk: Insect grubs, small mammals, persimmons, prickly pear.</p> <p><u>References</u>: 5, 12, 14, 35, 44, 60, 73, 85, 91, 98, 99, 111, 116, 124, 127, 139, 141, 149, 152, 156, 161, 188, 195, 224, 248, 254, 255, 256.</p>
Squirrel, Apache fox <u>Sciurus apache</u>	<p><u>Provinces (Sections)</u>: 3140.</p> <p><u>Distribution</u>: Found only in Chiricahua Mountains of southeastern AZ.</p> <p><u>Habitat</u>: Canyon bottom thickets.</p> <p><u>Features</u>: Game species. AZ Game Commission lists it as one so limited in distribution, a major disturbance could threaten its existence.</p> <p><u>Life history</u>: Not much known. Mating possibly keyed to rainy season so young would be born during summer rains. Young 2-3. Gestation 44 days.</p> <p><u>Cover</u>: Pine and oak thickets. Dens in hollow tree or leaf nest.</p> <p><u>Food</u>: Acorns, fruits, various seeds, green buds, insects.</p> <p><u>References</u>: 13, 14, 35, 44, 73, 119.</p>
Squirrel, eastern fox <u>Sciurus niger</u>	<p><u>Provinces (Sections)</u>: East: 2110 (2111, 2112, 2113); 2210; 2310; 2320; 2510; 2520; 2530; 4110. West: 3110 (3112, 3113).</p> <p><u>Distribution</u>: Eastern half of U.S. to the Rocky Mountain States, excluding Northeastern States. Introduced to some western cities.</p> <p><u>Habitat</u>: Open woodlots, pine forests with clearings.</p> <p><u>Features</u>: Popular game animal. Aesthetic in city parks. Some crop damage along woodlot borders.</p> <p><u>Endangered subspecies</u>:</p> <p>Delmarva Peninsula fox squirrel (<u>S. n. cinereus</u>): U.S. endangered species. Found in MD and VA.</p> <p>Mangrove fox squirrel (<u>S. n. aricennia</u>): Endangered in FL.</p> <p>Sherman's fox squirrel (<u>S. n. shermani</u>): Threatened in FL.</p> <p>Lowry and Davis fox squirrel (<u>S. n. bachmani</u>): Endangered in NC.</p> <p><u>Life history</u>: Yearling females have 1 litter per yr. Older females have 2 per yr.; late winter, late summer. Gestation period 44 days. Young (2-5) weaned in 2-3 mos. Active early morning, evening. Spends much time on ground foraging.</p> <p><u>Special notes</u>: Its ground foraging and use of openings near woods would allow it to utilize ROWs.</p> <p><u>Cover</u>: Trees. Nests in leaf nest, twig nest, or tree cavity. Will usually run to nearest tree to hide.</p> <p><u>Food</u>: Acorns, corn, hickory nuts, elm buds and seeds, wheat, beech nuts, walnuts, maple buds and seeds, pecan nuts, wild grapes, wild strawberries; plus insects, bird eggs, cambium on young trees, fungi.</p> <p><u>References</u>: 5, 35, 44, 61, 73, 85, 100, 124, 127, 151, 156, 160, 189, 195, 215, 229, 236, 242, 248, 254.</p>

continued

Table 65.5 (Concluded)

Species	Ecological characteristics
Weasels <u>Mustela</u> spp.	<u>Provinces (Sections):</u> East: 2110; 2210; 2310; 2320; 2510; 2520; 2530; 4110. West: 1210; 1220; 1310; 1320; 2410; 2610; 3110; 3120; 3130; 3140; 3210; M1210; M1310; M2110; M2410; M2610; M2620; M3110; M3120; P3130; A3140.
Shorttail weasel (ermine) <u>Mustela erminea</u>	<u>Distribution:</u> Shorttail weasel: Northern States and AK., down Pacific coast Least weasel: Midwest, upper plains and AK. Longtail weasel: Everywhere excluding Southwest and AK.
Least weasel <u>Mustela nivalis</u>	<u>Habitat:</u> Farms, brushlands, open woods, meadows near water.
Long-tailed weasel <u>Mustela frenata</u>	<u>Features:</u> Furbearer and beneficial predator on rodents. Ermine weasel endangered in IA. Least weasel is endangered in MD; threatened in IA; rare to uncommon elsewhere. Longtail weasel threatened in IA. <u>Life history:</u> Gestation 8-10 mos. depending on species and geographical location. Usually 1 litter per yr. Young (3-8) can all breed by end of first yr. All chiefly nocturnal. <u>Cover:</u> Ground burrows, old stumps, brush and rock piles, old buildings. All are used for dens and hunting areas. <u>Food:</u> Carnivorous--eats mice, rabbits, squirrels, gophers, birds, eggs, snakes, frogs, fish. No significant plant intake. <u>References:</u> 5, 12, 14, 35, 44, 47, 53, 73, 85, 91, 111, 116, 123, 124, 126, 139, 141, 155, 160, 161, 188, 195, 224, 238, 254.
Wolf, gray <u>Canis lupus</u>	<u>Provinces (Sections):</u> East: 2110 (2111, 2112). West: 1210; 1220; 1310; 1320; 3140; M1410; M1310; M2110 (M2111, M2112); M2410 (M2415); M3110 (M3112). <u>Distribution:</u> Northern MN, possibly MI's Upper Peninsula and northern WI. Upper Rockies (northwestern WY) and Glacier National Park. Common in AK. Possible northeastern WA and northern ID. Also Isle Royale National Park in Lake Superior. Possible in southeastern AZ. <u>Habitat:</u> Wilderness forests, mountain forests, tundra. <u>Features:</u> U.S. endangered species. Although still hunted in MN and AK as game animal. <u>Life history:</u> Gregarious, highly organized social structure with dominance hierarchy. Hunt in packs. Large range of 60 mi diameter. Can breed in second yr. Gestation of 9 weeks. Pups (3-14) born in spring. Parents bring pups food by regurgitation. <u>Special notes:</u> Although a wilderness species and very shy of man, might benefit from ROW if adequate prey species' habitat was created. <u>Cover:</u> Uses dug-out ground dens or abandoned beaver lodges. Escape cover is usually dense woody areas. <u>Food:</u> Large ungulates such as deer, mountain sheep, moose, caribou; also beaver, hares, small rodents. Have taken livestock. <u>References:</u> 3, 13, 35, 44, 73, 83, 124, 134, 135, 136, 141, 203, 226, 229, 254.

Table 65.6 Ecological Characteristics of Selected Birds of the Western United States

Species	Ecological characteristics
Akepa <u>Akakane, akepeuie</u> <u>Loxops coccinea</u>	Provinces (Sections): M4210. <u>Distribution:</u> Hawaii akepa: Endemic to the islands of HA. In danger of extinction. Near extinction on Maui; extinct on Oahu. Maui akepa: Endemic to Maui; facing extinction. <u>Habitat:</u> Koa forests of Hawaii and Koa; old lava flows. <u>Features:</u> U.S. endangered species. High value in the forests. Destroys insects ordinarily concealed from other native birds. <u>Life history:</u> Hawaii akepa: Nests composed largely of moss, lined with fine grasses and thin strips of soft bark. Eggs (2-3) white with dark brown speckles. Maui akepa: Unknown. <u>Food:</u> Insects, caterpillars, spiders from foliage. Occasionally drinks nectar from ohia and other flowers. Seeks food from leaves and twigs of trees. <u>References:</u> 25, 147, 175, 229.
Akialoa, Kauai <u>Hemignathus procerus</u>	Provinces (Sections): M4210. <u>Distribution:</u> Endemic to Kauai. Near extinction. <u>Habitat:</u> Inhabits upper rain forest of Kauai. <u>Features:</u> U.S. endangered species. <u>Life history:</u> Unknown. <u>Food:</u> Insects, and their eggs and larvae. Also nectar from lehua flowers. Forages for grubs and insects among the dead leaves. <u>References:</u> 25, 147, 229.
Akiapolaau <u>Hemignathus wilsoni</u>	Provinces (Sections): M4210. <u>Distribution:</u> Endemic to HA. <u>Habitat:</u> Found in localities differing greatly in climates. Forests of mixed Koa Mamani and Naeo from 3,500 ft upwards. In the trees of the Hilo forest with excessive rainfall (150+ in). <u>Features:</u> U.S. endangered species. Logging is biggest threat. <u>Life history:</u> Little is known of the breeding biology of this species. Eggs, nests, and chicks never described. Steals nesting material from active nests of same or different species. <u>Food:</u> Creeps over tree trunks, woodpecker-like habits. Insectivorous; grubs, insects. <u>References:</u> 9, 25, 147, 229.
Albatross, short-tailed <u>Diomedea albatrus</u>	Provinces (Sections): 1220, 2410, M2410 (M2412, M2413, M2414, M2415), M2620. <u>Distribution:</u> Formerly bred on Ryukue Island of Japan and Waloe Island ranging along entire coast of China, Japan, across the North Pacific to the coast of North America, south to Baja, CA. Presently thought to breed on Alaskan coast of Wake Island. <u>Habitat:</u> Tundra, open ground. <u>Features:</u> U.S. endangered species. Virtually extinct due to Japanese plumage hunters. Also has decreased from volcanic eruptions and natural enemies such as parasitic insects and crows. <u>Life history:</u> Nests on the ground in cup shape mound of earth. Almost exclusively on islands. Clutch size 1 with long incubation period of 6 wks. Young fly at about 6 mos. Eggs white. <u>Food:</u> Squid, shrimp, fish. <u>References:</u> 65, 70, 229.

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Condor, California <u>Gymnogyps californianus</u>	<p>Provinces (Sections): M2620.</p> <p><u>Distribution:</u> Ranges in the following counties of CA: San Benito, Fresno, Monterey, San Luis, Obispo, Santa Barbara, Los Angeles, Tulare; with the majority located in Ventura and Kern Counties.</p> <p><u>Habitat:</u> Roost in conifers on cliffs (40-70 ft), coastal mountains, plateaus, canyons, and desert. Nests in mountains, cliffs easily approachable by air.</p> <p><u>Features:</u> U.S. endangered species. Was hunted in early 1900s for quills and eggs. Destruction of habitat by urban development, roads, dams, oil development. Death from feeding on baited carcasses set for coyotes, panthers and grizzlies.</p> <p><u>Life history:</u> Nests in a recess among rocks, with suitable roosting sites nearby offering protection from storms. Condors do not breed until at least their sixth yr. Breeding success is low due to high mortality with unskilled flight of young. Mating takes place in early Feb. to late Mar. Incubation is 6 wks., clutch size 1 egg; fledgling period is 5 mos., thus a nest may be in use for 7 mos. Both parents incubate and brood young. Natural life span is from 30-45 yrs. At present population contains about 40-60 individuals. Condors are easily disturbed by close human contact and loud noises. Eggs white.</p> <p><u>Cover:</u> Roosting trees sugar and yellow pine; big cone spruce.</p> <p><u>Food:</u> Carrion, beef cattle, calves, deer, ground squirrels, jack rabbits, cottontails. Will feed on almost any carcass in any state of decomposition.</p> <p><u>References:</u> 9, 10, 28, 104, 148, 201, 229.</p>
Coot, Hawaiian Alae keo keo <u>Fulica americana alai</u>	<p>Provinces (Sections): M4210.</p> <p><u>Distribution:</u> All main islands except Lanai; especially common on Kauai and Kanaha Pond on Maui. Population approximately 1,700.</p> <p><u>Habitat:</u> Fresh and brackish water; ponds with stable levels containing extensive growths of tall bullrush (for nesting purposes). In winter, also fields and salt bays.</p> <p><u>Features:</u> U.S. endangered species. Permanent residents of Hawaiian Islands; non-migratory. Poisoning operations by sugar plantations for control of filamentous algae clogging drainage ditches may destroy coot habitat and food sources.</p> <p><u>Life history:</u> Builds large floating nests of aquatic vegetation. Length of breeding season unknown. Nests and young found Apr.-Sept. Eggs (clutch varies, 8-12) light buffy-tan speckled with tiny flecks of dark brown or tan. Incubation period undetermined. Precocial young.</p> <p><u>Food:</u> Stems, leaves, stems of water plants; lagoon molluscs.</p> <p><u>References:</u> 9, 25, 147, 175, 228, 229.</p>
Crane, whooping <u>Grus americana</u>	<p>Provinces (Sections): East: 2510 (2512). West: 3110 - migratory.</p> <p><u>Distribution:</u> Restricted to southern Mackenzie and northern Saskatchewan. Migrates southward and winters on TX Gulf Coast.</p> <p><u>Habitat:</u> Prairies, marshes, barren grounds, pothole lakes well bordered by vegetation.</p> <p><u>Features:</u> U.S. endangered species. Decline due to decreased winter habitat, draining of marshes. Also shot during migration.</p> <p><u>Life history:</u> Nests consist of grasses heaped 1-2 ft above water, also on top of abandoned muskrat houses. Nest size ranges to 2 ft across. Clutch size 2, incubation about 1 mo. Incubation performed by both sexes. Migrates north in late Mar., Apr. Eggs buff, blotched.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Whooping Crane (Continued)	<p><u>Cover:</u> Live oak, pine oak, bluejack oak, saltgrass, salt-flat grass, saltwort, sea ox-eye, salicornia. Roosts in shallow ponds, some distance from solid land.</p> <p><u>Food:</u> Shrimp, pistol shrimp, grass shrimp, river shrimp, hermit crab, blue crab, grasshoppers, cricket frog, leopard frog, tree frog, toad, corn and succulent roots of aquatic plants. Feeds at brackish water front.</p> <p><u>References:</u> 9, 101, 148, 229, 243.</p>
Creeper	<u>Provinces (Sections):</u> M4210.
<u>Loxops maculata</u>	<p><u>Distribution:</u> Hawaii creeper: Endemic to HA, verging on extinction. Molokai creeper: Endemic to Molokai. Rare.</p> <p>Oahu creeper: Rare on Oahu.</p> <p><u>Habitat:</u> Hawaii creeper: Thick bush layer in high mountain forests on Kauai; rare on Oahu, Maui and Hawaii. Extinct on Molokai.</p> <p>Molokai creeper: Thick forests.</p> <p>Oahu creeper: Thick forests.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Hawaii creeper: Little known of breeding biology. Molokai creeper: Nests, eggs, chicks never been described.</p> <p><u>Food:</u> Hawaii creeper: Taken from trunks and limbs of forest trees and bushes. Expert climbers. Extremely partial to large Koa trees and smaller mamani trees. Caterpillars, spiders, beetles, moths, myriapods, slugs form major part of diet. Occasional nectar from ohia and other flowers. Obtains larva on both foliage and under bark or in dead wood.</p> <p>Molokai creeper: Caterpillars, spiders, beetles, moths, myriapods, slugs.</p> <p>Oahu creeper: Same as Molokai creeper.</p> <p><u>References:</u> 9, 25, 145, 175, 229.</p>
Crow, Hawaiian	<u>Provinces (Sections):</u> M4210.
<u>Corvus tropicus</u>	<p><u>Distribution:</u> Endemic to the island of Hawaii, on the slopes of Mauna Loa and Hualalai. Population estimated 60-70 birds in 1975.</p> <p><u>Habitat:</u> Forests, places with relatively undisturbed native vegetation. Found at elevations of 3,750 ft and higher. Dry woods, adjacent country.</p> <p><u>Features:</u> U.S. endangered species. Feathers were used by Hawaiians for Kahilis and for dressing idols.</p> <p><u>Life history:</u> Little known of breeding biology. Nests built of twigs and sticks, lined by finer plant materials. Nests heavily foraged by arthropods. Eggs (5) pale, greenish-blue ground color heavily spotted with brown.</p> <p><u>Food:</u> <u>Vaccinium calycinum</u>, thimbleberries, Physalis, o-her berries and fruits, carrion.</p> <p><u>References:</u> 9, 25, 147, 175, 229, 230.</p>
Curlew, Eskimo	<u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320.
<u>Numenius borealis</u>	<u>West:</u> M2410, M2620.
(U.S. Coasts)	<p><u>Distribution:</u> Formerly northern Canada and AK; East of Fort Anderson and up to the Arctic Coast States. Winters in southern Uruguay, central Argentina, and southern Chile.</p> <p><u>Habitat:</u> Barren grounds and grassy tundra, open country and near marshes.</p> <p><u>Features:</u> U.S. endangered species. Decline due to over-shooting. Previously was a gamebird. Now nearly extinct -- one sighting since 1971.</p> <p><u>Life history:</u> Nests are hollows in the ground, lined with decayed leaves. Clutch size 3-4, usually 4.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Eskimo Curlew (Continued)	<p><u>Food:</u> Curlew berries, blueberries, bog cranberries, bearberries. Insects, crickets, grasshoppers, bloodworms, black and yellow fiddler crabs, snails.</p> <p><u>References:</u> 9, 48, 65, 70, 72, 148, 191, 229.</p>
Dove, mourning (Turtle dove) <u>Zenaida macroura</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Southeastern AK, central British Columbia, central Alberta, central Saskatchewan, south throughout Western U.S.; Nova Scotia, southern ME, Ontario and Manitoba south to the Gulf Coast.</p> <p><u>Habitat:</u> Open woods, evergreen plantations, orchards, roadside trees, suburban gardens; avoids dense woods.</p> <p><u>Features:</u> Gamebird; aesthetic. Most widespread gamebird.</p> <p><u>Life history:</u> Nest as high as 50 ft in trees typically evergreens; in tangles of shrubs or vines; rarely on ground. Platform of sticks, little if any lining of grass, weeds, rootlets. Sometimes uses nest of robin, catbird, common grackle and other species as foundation for its twig platform. Eggs (2-3, rarely 4) oval to elliptical; shell smooth with slight gloss; white, unmarked. Incubation by both sexes; 13-14 days. Females incubate from dusk to dawn, when male replaces her. Two or more broods. Spring migration, Mar.-Apr. Life span 6-7 yrs.</p> <p><u>Special notes:</u> Predators include snakes, squirrels, raccoons, opossums, crows, jays, cats.</p> <p><u>Cover:</u> Evergreens, tangles of brush and vines.</p> <p><u>Food:</u> Northeast: Bristlegrass, corn, wheat, buckwheat, ragweed, poke-weed, knotweed, crabgrass. Southeast: Corn, bristlegrass, crowfoot grass, cowpea, crabgrass, ragweed, oats, pine, doveweed, pokeweed, panic-grass, paspalum, wheat, carolina geranium. Prairies: Pigweed, corn, doveweed, bristlegrass, spurge, wheat, knotweed, sunflower, panic-grass. Mt. deserts: Wheat, doveweed, pigweed, sunflower, horse-purslane, barley, bristlegrass, knotweed. Pacific: Turkey mullein, fiddleneck, California poppy, star-thistle, redmaids, mustard, wheat, sunflower, tarweed, pigweed, chickweed.</p> <p><u>References:</u> 124, 182.</p>
Dove, white-winged <u>Zenaida asiatica</u>	<p><u>Provinces (Sections):</u> East: 2520. West: 3140, 3210, 3220, M3120.</p> <p><u>Distribution:</u> Breeds in TX, NM, AZ, CA. Winters in Mexico.</p> <p><u>Habitat:</u> River woods, mesquite groves, saquaros, desert oasis, towns.</p> <p><u>Features:</u> Gamebird.</p> <p><u>Life history:</u> Arrives in breeding grounds late Mar., returns to same nesting spots and in some cases same nest. Nests in thickets, trees. Nest consists of loosely constructed twigs, 10 ft above ground. Male gathers material and female builds nest. Clutch size 2, eggs pure white to creamy buff. Both parents incubate 13-15 days. Migrates south in Sept. and Nov. Some birds do not migrate. Life span 5 yr. potential, mortality rate 30-50%.</p> <p><u>Special notes:</u> Drought is main cause of reproduction curtailment. Hawks prey on adults; domestic cats, bobcats, ring-tailed cats, opossums, raccoons, rats prey on young.</p> <p><u>Cover:</u> Dense mesquite and ebony thickets. Many have been cleared and are now replaced by citrus farms, which the dove also uses for nest</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
White-winged dove (Continued)	<p><u>Cover (Continued)</u>: sites, but they prefer the former thorns which offered protection from predation and wind.</p> <p><u>Food</u>: Animals (very small percent): Ants, beetles, insects.</p> <p>Plants: TX--doveweed, sunflower, corn, sorghum. AZ--barley, wheat, giant cactus, acacia, sorghum, doveweed. Other areas--bristlegrass, prickly-ash, lycium, condalia.</p> <p><u>References</u>: 14, 124, 182, 215, 217.</p>
Duck, Hawaiian (Koloa, koloa maoli) <u>Anas wyvilliana</u>	<p><u>Provinces (Sections)</u>: M4210.</p> <p><u>Distribution</u>: Once found on all the major islands but Lanai; now inhabits Kauai and Oahu (scarce on Oahu). Casual on other main islands. Recently transplanted on Hawaii. World population 3,000, almost all on Kauai.</p> <p><u>Habitat</u>: Wide variety of habitats; rushing mountain streams to banks of slow-moving streams and marshes along coasts. Any elevation from sea level to 3,500 ft and where annual rainfall is as low as 35 ins or as high as 125 ins. Also inhabits drainage ditches and agricultural land.</p> <p><u>Features</u>: U.S. endangered species. Hunting and drainage and alteration of marshland has led to its decline.</p> <p><u>Life history</u>: Breeding season Dec.-May. Nests well concealed built on the ground of honohoho grass and lined with feathers. Eggs (6-12) white, buff or light tan; short-oval in shape. Precocial young.</p> <p><u>Special notes</u>: Predators include dogs, largemouth bass, frogs.</p> <p><u>Food</u>: Plants (green algae, rice, several species of grasses) and earthworms, dragonflies, snails.</p> <p><u>References</u>: 25, 77, 147, 175, 228, 229.</p>
Duck, Mexican <u>Anas platyrhynchos diazi</u>	<p><u>Provinces (Sections)</u>: 3140, 3210.</p> <p><u>Distribution</u>: Ranges in the interior highlands of Mexico, north to southeastern AZ, Rio Grande Valley north to Albuquerque, NM.</p> <p>Breeding range: Limited to a few areas along the Rio Grande River in San Simon Valley near Rodeo, NM. Also sighted in Alpine, TX.</p> <p>Wintering range: Jalisco, Michoacan, Guanajuato Harbor.</p> <p><u>Habitat</u>: Wetlands, meadows close to water.</p> <p><u>Features</u>: U.S. endangered species. Decline due to conversion of wetlands to cropland and rangeland, water diversion for farming.</p> <p><u>Life history</u>: Nests are well hidden in meadows and marshes. Courtship begins in Dec., pair bonding in Jan. Location of nests to water is crucial. Hybridizes with common mallard. Eggs water-green.</p> <p><u>Cover</u>: Nesting in salt grass, sedge, rushes.</p> <p><u>Food</u>: Similar to mallard. Feeds along river banks, drainage canals, ponds, cat-tail swamps, flooded alfalfa fields. Green shoots of alfalfa, cat-tail, corn, wheat, small fresh water snails.</p> <p><u>References</u>: 18, 20, 48, 229.</p>
Eagle, northern bald <u>Haliaeetus leucocephalus</u> <u>alascanus</u> (Above 40° latitude)	<p><u>Provinces (Sections)</u>: East: 2110, 2210, 2530.</p> <p>West: 2410, 3110, 3120, M2110, M2410, M3110.</p> <p><u>Distribution</u>: Breeds in boreal forests from northwestern AK, Mackenzie and Quebec, south to British Columbia and Great Lakes. Winters south to WA, MT, and southern New England.</p> <p><u>Habitat</u>: Restricted to coasts, lakes, rivers, though seen along mountain ridges in the interior during migration. In the winter common around open rapids, spillways.</p> <p><u>Features</u>: Endangered in OH, WI. Endangered/threatened in ID. Rare/endangered in KY. National bird, aesthetic. Destruction of nest trees, shooting, egg collecting, and other forms of direct and indirect human disturbances have reduced the number of this species in</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Northern bald eagle (Continued)	<p><u>Features (Continued):</u> certain areas. Poisoning by insecticides have decreased breeding success.</p> <p><u>Life history:</u> Nests on cliffs, mountainous areas, or in trees elsewhere; also rocky promontory or even on ground on islands. Nest material consists of sticks, lined with pine needles. Nesting site is usually coastal or, if inland, near water. Species mates for life and returns to same nest year after year, adding new material. Clutch size 2, plain white eggs. Incubation performed by both parents, 35 days. Reaches breeding age at 4-5 yrs.</p> <p><u>Cover:</u> Roosts in large trees protruding from forest canopy, preferably close to feeding areas and away from disturbances.</p> <p><u>Food:</u> Primarily fish; also crippled waterfowl, occasionally rodents. Will also feed on carrion but prefers live prey. Is often seen taking prey from the osprey.</p> <p><u>References:</u> 9, 29, 98, 99, 165, 201, 246, 251.</p>
Eagle, southern bald <i>Haliaeetus leucocephalus</i> <i>leucocephalus</i> (Below 40° latitude)	<p><u>Provinces (Sections):</u> East: 2310, 2320, 4110. West: M2620.</p> <p><u>Distribution:</u> SC, Gulf States, southern CA, Mexico, predominately along coastal areas.</p> <p><u>Habitat:</u> Along coasts and interior lake regions, rocky outcrops, and cliffs.</p> <p><u>Features:</u> U.S. endangered species. Decline due to pesticide contamination, DDT causing egg shell thinning, low breeding success, unhatched eggs. Also disturbed by intruders; chain saws, snowmobiles, lumbering operations and hurricanes.</p> <p><u>Life history:</u> Nests located near shores of bays and inlets, 50-100 ft above ground in cliffs and large pines. Mating season late Sept.-Oct.; eggs layed in winter, early Nov.-early Feb. Clutch size 2, incubation 35 days; both sexes incubate and rear young. The nesting period is long to provide time for young eaglets to develop protective plumage before hot weather comes in early spring; also it is easier to find food when waterfowl is abundant. Nest material consists of large sticks, rubbish, pine needles, Spanish moss. Bald eagles reach maturity in 4-5 yrs. and at this time they begin to mate. They mate for life and return to the same nest for several yrs., adding new material each yr. Nest width is 3-7 ft. Roosts in large trees close to feeding areas. Eggs dull white.</p> <p><u>Cover:</u> Nesting and roosting sites in longleaf pine, black mangrove and baldcypress.</p> <p><u>Food:</u> Mainly fish: Including catfish, black bass, sergeant fish, crevalle, pompano, mullet. Waterfowl: Including black duck, lesser scaup, horned grebe, coot. Mammals: Including marsh rabbits, prairie dogs, and tree squirrels. Also turtles.</p> <p><u>References:</u> 9, 23, 130, 148, 198, 200, 201, 202, 229.</p>
Eagle, golden <i>Aquila chrysaetos</i>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2320, 2510, 2520, 2530. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Western U.S. west of Mississippi River. Few are noted along migratory routes in east; Hawk Mountain, PA. West: AK, Canada CA, central Mexico, TX, SD. East: NH, ME, Nova Scotia, Alleghenies to southwestern NC.</p> <p><u>Habitat:</u> Prefers mountainous regions throughout its range.</p> <p><u>Features:</u> Unique, uncommon, endangered in AL, TN. Rare/endangered in KY. Previously was hunted because of threat posed to livestock. Was also hunted by Plains Indians for feathers.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Golden eagle (Continued)	<p><u>Life history:</u> Nests along cliffs, promontories, and also roosts and watches for prey along these sites. Much of its hunting is done while in flight. Mates for life, will remate if death interferes. Average territory defended--36 sq. mi. Nest materials consists of sticks, lined with hay, twigs, and grass. Returns to same nest every year adding new material. Average nest width 4-5 ft. Clutch size 2, eggs white spotted with brown, purple. Incubation 1 mo. Longevity 25-30 yrs.</p> <p><u>Cover:</u> Nesting trees: Sycamores, pines, or oaks.</p> <p><u>Food:</u> Living prey and carrion. Rodents form the staple diet, varying with local conditions. Also feeds on rabbits, woodchucks, prairie dogs, ground squirrels, turkeys, grouse, young livestock; lambs, pigs, poultry. Important in keeping rodent population in check.</p> <p><u>References:</u> 2, 15, 98, 99, 148, 201, 212.</p>
Falcon, peregrine <u>Falco peregrinus</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110.</p> <p>West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p>
American peregrine falcon <u>F. p. anatum</u>	<p><u>Distribution:</u> American peregrine falcon: Breeds in Arctic south locally to northern GA and northern LA, Baja, CA, AZ, AK, NM, and western TX. Winters in northern U.S., southern Canada, south to Gulf of Mexico, southern Pacific States inland mainly from AZ and southern CO.</p>
Arctic peregrine falcon <u>F. p. tundrius</u>	<p>Arctic peregrine falcon: Breeds across top of continent from AK to Greenland. Winters in South America.</p> <p><u>Nesting Habitat:</u> American peregrine falcon: Cliffs, especially those that intergrade with slopes and rivers. Some tree nests in natural cavities.</p> <p>Arctic peregrine falcon: Tundra ground nests, in bogs, low hummocks, small bluffs.</p> <p><u>Features:</u> U.S. endangered species. Has declined in number due to pesticide contamination, DDT causing egg shell thinning. Also illegally shot, habitat destruction, falconery.</p> <p><u>Life history:</u> Peregrine falcons do not breed as yearlings. There is strong pair bonding, usually seen in pairs. Longevity of 2-3 yrs. after sexually mature. Clutch size 2-5, incubation 1 mo. Home range 3-5 mi. Very little nesting materials are used, if any; sticks, fur, feathers, rotten wood are used in scrapes in earth and cliff crevices. Will also use old nests of buzzards, ravens, and eagles. Roosts near breeding sites in rocks and trees. Competition for nesting sites does occur where range overlaps with ravens and eagles. Eggs reddish, spotted.</p> <p><u>Food:</u> Mainly birds: Including passerines, finches, grouse, doves, young and crippled waterfowl, least and crested auklets, gulls, teal, poultry.</p> <p>Mammals: Including rabbits, ground squirrels, rodents. Also insects.</p> <p><u>References:</u> 10, 29, 70, 174, 201, 229, 250.</p>
Falcon, prairie <u>Falco mexicanus</u>	<p><u>Provinces (Sections):</u> 1210, 1220, 1310, 1320, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Western U.S. east to western ND, SD down through western TX.</p> <p><u>Habitat:</u> Cliffs, or steep stream banks.</p> <p><u>Features:</u> Unique, uncommon.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Prairie falcon (Continued)	<p><u>Life history:</u> Nest, on cliff or bank, is made from sticks and lined with grass. Eggs (2-5) white with reddish-brown spots. Flies up and down canyons and watches over several square miles of territory.</p> <p><u>Food:</u> Mostly ground squirrels and other small rodents, birds, insects.</p> <p><u>References:</u> 8, 23, 29, 44, 124, 174.</p>
Finch, Laysan <u>Psittirostra cantans</u> <u>cantans</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to Laysan; introduced but extirpated on Midway. Population fluctuated between 6,800-12,400 between 1967-1974.</p> <p><u>Habitat:</u> All plant associations on Laysan Island, especially bunchgrass, low scrubs.</p> <p><u>Features:</u> U.S. endangered species. No other passerine on Laysan.</p> <p><u>Life history:</u> Nests in low shrubs, grass. Clutch 2-4, dotted eggs. Nest a grass cup in bush, grass or rocks. Incubation period 12-14 days.</p> <p><u>Food:</u> Insects, seeds, flower buds and eggs of the common noddly and other eggs as well.</p> <p><u>References:</u> 9, 25, 147, 229.</p>
Finch, Nihoa <u>Psittirostra cantans</u> <u>ultima</u>	<p><u>Provinces (Sections):</u> M4210</p> <p><u>Distribution:</u> Endemic to Nihoa. Population fluctuated from 6,700 (1968) to just 1,300 (1973). However, 5,000 were estimated in 1974.</p> <p><u>Habitat:</u> All plant associations on Nihoa Island, especially bunchgrass and low scrubs.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life History:</u> Nests built in holes in cliff outcrops at elevations from 100 to 850 ft. Incubation 15-21 days.</p> <p><u>Food:</u> Omnivorous. Insects, seeds, flower buds; eggs of smaller sea-birds, especially the common noddly.</p> <p><u>References:</u> 9, 25, 147, 175, 229, 230.</p>
Gallinule, Hawaiian (Alae, alae ula, koki) <u>Gallinula chloropus</u> <u>sandvicensis</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Occurs on Kauai, Oahu, and Molokai. Attempts to re-establish the species on Hawaii and Maui appear to have been unsuccessful. Population several hundred.</p> <p><u>Habitat:</u> Thickly vegetated marshes interspersed with small fresh water ponds with stable levels, settling basins and swamps, irrigation ditches, reservoirs, taro patches and rice fields.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Builds nests of reeds and other aquatic vegetation. Large clutch, 6-13. Light brown egg with small dark brown spots thicker at the end, ovoid. Precocial young.</p> <p><u>Special notes:</u> Predators include mongoose, rats, cats.</p> <p><u>Food:</u> Algae, aquatic insects, molluscs.</p> <p><u>References:</u> 25, 77, 147, 175, 229.</p>
Goose, Aleutian Canada <u>Branta canadensis</u> <u>leucopareia</u>	<p><u>Provinces (Sections):</u> M1310, M2410 (M2411, M2413, M2412).</p> <p><u>Distribution:</u> Range confined to Buldir Island, near the tip of the Aleutian Chain. Migration occurs eastward along Aleutian Chain to Izembek Bay. Recent evidence shows that they also migrate down the Pacific Coast to northern CA and inland to winter in the Central Valley.</p> <p><u>Habitat:</u> Great diversity of nesting sites; marshes, islands, cliffs, elevated platforms in trees, muskeg, tundra regions.</p> <p><u>Features:</u> U.S. endangered species. Population status shows approximately 1,000-1,500 birds.</p> <p><u>Life history:</u> Nesting sites listed above. Nesting requirements include close proximity to water, nesting cover, and exposed view for incubating the brood. Nests consist of hollows rounded out, mainly</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Aleutian Canada goose (Continued)	<p><u>Life history (Continued):</u> in bulrushes. Clutch size 5. Incubation is performed by female for one month. Nest success is 70%. Nest failure results from predators, natural agents and desertion. Species breeds at 2-3 yrs., mating for life, except when separated by death. Pairs will return to same nesting site for many years.</p> <p><u>Food:</u> Feed grain, cereal foods, clovers, grasses.</p> <p><u>References:</u> 10, 18, 184, 229.</p>
Goose, Canada <u>Branta canadensis</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Entire U.S.</p> <p><u>Habitat:</u> Ponds, lakes, rivers, marshes, fields.</p> <p><u>Features:</u> Migratory gamebird; aesthetic.</p> <p><u>Life history:</u> Mates for life. Nest is large, bulky. Usually built in open, such as on top of muskrat house, log, etc. Clutch size 6-7. Eggs are dull white with brown splotches. Incubation period is 28-30 days performed by female. Male guards nest and young. Young begin flying in 42-85 days depending on subspecies. Live 15-20 yrs.</p> <p><u>Special notes:</u> See discussion on wetlands in Wildl. Mgmt. Chapter.</p> <p><u>Food:</u> Cordgrass, widgeon-grass, spikerush, pondweed, glasswort, eel-grass, brome, saltgrass, bulrush, barley, wheat, oats, corn.</p> <p><u>References:</u> 18, 44, 105, 124, 174, 182.</p>
Goose, Hawaiian (Nene) <u>Branta sandvicensis</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to islands of Hawaii. Smallest range of any species of goose. Nests on Mauna Loa and Hualalai.</p> <p><u>Habitat:</u> Highly specialized, adapted for living in rugged habitat of lava flows far from water. Elevations between 5,000 and 8,000 ft.</p> <p><u>Features:</u> U.S. endangered species. Anatomical specialization of reduction in the webbing between the toes. Marked homing instinct to return to same area to nest in successive years.</p> <p><u>Life history:</u> Nests in fall. 3.2% of females lay eggs near the end of their first year of life (but thus far all eggs of such females have been infertile). 84% lay during second year, 13% during third. Ganders able to fertilize eggs for at least 12 yrs, beginning in their first year. Nests are built on lava, although typically well concealed in clumps of vegetation. Eggs (2-8) creamy white. Incubation period between 24-31 days. Precocial. Unable to fly until 10-12 weeks old.</p> <p><u>Food:</u> Vegetarian; greens, fruits, seeds.</p> <p><u>References:</u> 25, 77, 147, 175, 229.</p>
Goshawk <u>Accipiter gentilis</u>	<p><u>Provinces (Sections):</u> 3130, M2110, M3110.</p> <p><u>Distribution:</u> West to central AK, northwestern Mackenzie, northern Alberta, northern Saskatchewan, south in mountains to central CA, western NM; wooded regions of Canada, south to northern MI, northern NY, northern New England, and sparingly in mountains to PA.</p> <p><u>Habitat:</u> Heavily wooded, remote wilderness areas, often mountain forests.</p> <p><u>Features:</u> Most destructive of the hawks to gamebirds.</p> <p><u>Life history:</u> Nests usually in conifer at great heights and in most inaccessible depths of evergreen woods; constructed of sticks, twigs, weed stalks and leaves, lined with strips of bark, grass, hemlock twigs. Eggs (3-4, sometimes 5) pale bluish-white. Incubation 36-38 days.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Goshawk (Continued)	<p><u>Food:</u> Mainly birds: Including poultry, songbirds, ruffed grouse. Small mammals.</p> <p><u>References:</u> 15, 76, 80, 148.</p>
Grouse, blue <u>Dendragapus obscurus</u>	<p><u>Provinces (Sections):</u> 2410, 3110, 3130, M2110, M2410, M2610, M3110, M3120.</p> <p><u>Distribution:</u> Southeastern AK, southern Yukon, southwestern Mackenzie, western Alberta, Vancouver; along coast to northern CA, along mountains to southern CA, northeastern AZ, west-central NM.</p> <p><u>Habitat:</u> Closely associated with the distribution patterns of true fir and especially Douglas-fir in Western States. In the Pacific Northwest lumbering and fire produces a more open forest that improves the breeding habitat by opening forest cover. In winter, the blue grouse depends heavily on coniferous cover for protection, which is probably determined more by cover type than by altitude: Ponderosa pine, Douglas-fir zones. Its preferred habitat includes aspens, a variety of shrubs, pines, firs, providing food and escape cover. Habitat occupies a broad vertical range in mountains.</p> <p><u>Features:</u> Gamebird.</p> <p><u>Life history:</u> Species breeds at lower elevations, foothills, and spends fall and winter near timber line or above. By the end of Sept., the grouse has moved up to higher slopes in the coniferous zone. Male plays no role in nest defense, incubation, or brooding. Clutch size 6-10 eggs, incubation 26 days. Egg color pinkish buff, spotted. Life span 10-15 yrs.</p> <p><u>Special notes:</u> Nest failure due to predation by foxes, weasels, ravens, magpies, bobcats, lynxes, martens, hawks, owls, eagles.</p> <p><u>Cover:</u> Winter requirements: Sufficient trees to provide roosting and escape cover, and a supply of needles. Tree species: Hemlock, Douglas-fir, larches, white fir.</p> <p>Spring requirements: Breeding habitat open and dry with shrubs and herbs interspersed with bare ground. Strutting areas: Forest edge habitats with combined grassy open forest borders and a dense coniferous stand. Brooding requirements: Nest is usually located near logs or under low tree branches and is fairly well concealed. Found in more open timber along forest edge. Home range requirements: Semi-open vegetation and available water. Display sites: Aspen, Ponderosa pine, mixed fir and aspen, open and dense aspen, mixed shrubs, sagebrush, wheat fields, roadsides. Physical features: Earth mounds, rocks, logs, cut banks. Hooting areas: Elevated sites on ground and tall trees, fir, pines.</p> <p><u>Food:</u> Douglas-fir is the most important food source. Also hemlock, larches, firs, Ponderosa pine. Young feed exclusively on insects, ants, beetles; later feed on plant material.</p> <p>WA and OR: True firs, Douglas-fir, cat's-ear, blueberry, bearberry (98% plant material; 65.8% conifer needles, 17% berries, 17.2% miscellaneous, 1.7% animal matter).</p> <p>Rocky Mountain area: Douglas-fir, pines, eriogonum leaves, blueberry.</p> <p>CA: Needles of white pine are important in winter.</p> <p><u>References:</u> 14, 15, 93, 111, 115, 122, 124, 152, 182, 226, 254.</p>
Grouse, ruffed <u>Bonasa umbellus</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2320, 2510, 2530 (2531). West: 2410, 3110 (3111), 3120, M2110, M2410, M3110 (M3111, M3112).</p> <p><u>Distribution:</u> Western AK, central Yukon, Great Slave Lake south: 1) in coast belt to northern CA; 2) in mountains to northeastern OR, central UT, WY, western SD; 3) on wooded plains to central Alberta, southern Saskatchewan; Canada south to NJ (and in Appalachians to GA, AL). Also in Mississippi Valley to MI, WI, and northeastern IA; locally to OH, IN, MO.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Ruffed grouse (Continued)	<p><u>Habitat:</u> Forested areas of conifers, deciduous trees or mixed.</p> <p><u>Features:</u> Popular gamebird.</p> <p><u>Life history:</u> Nest in thick woods and dense cover; female hollows site for nest at base of tree, under log, rock, or root, or in dense brush in dry situation:--lined with hardwood leaves, pine needles, available material, mixed with few grouse feathers. Eggs (9-12) occasionally less, sometimes to 14; 1 egg laid daily until clutch complete; short-oval to long-oval. Shell smooth, slight gloss; buffy, few speckled with brownish spots. Incubated by female along 21-24 days. Male promiscuous, no pair bond formed. One brood. Does not migrate. Life span 3-4 yrs.</p> <p><u>Special notes:</u> Predators include great horned owl, barred owl, snowy owl, gyra-falcon, goshawk, Cooper's hawk, sharp-shinned hawk, fox, bobcat, lynx, snakes, skunks, opossums, raccoon, weasel, mink, etc., which steal eggs, chicks, and adults, if possible.</p> <p><u>Cover:</u> Aspen, fire-cherry, scrub oak, alder. Mixed species, stands of hardwood shrubs, trees and mixtures of hardwood and coniferous species; blackberries, raspberries.</p> <p><u>Food:</u> Young eat quantities of insect larvae, beetles, flies, snails, spiders, ants. Also consume seeds, especially sedges.</p> <p>Northeast, mainly NY: Aspen bud and flower; clover flower; hazelnut bud and flower; birch flower; greenbrier fruit and leaf; sumac; grape; apple hawthorn fruit and bud; blackberry and raspberry fruit and bud; strawberry leaf; willow bud; wild cherry bud and flower.</p> <p>Virginia Alleghenies: Oak; grape; greenbrier fruit and leaf; wintergreen fruit and leaf; mountain laurel leaf and bud; wild rose; sheep-sorrel; pussy's-toes; blueberry; hazelnut bud and flower; dogwood bud and fruit; ferns; viburnum.</p> <p>PA: Large-toothed aspen, grape, hawthorn, dock, oak, hophornbeam, blueberry, huckleberry, wild black cherry, witch-hazel, mountain-laurel, pear, wintergreen, birch, ferns, foam flower, hazelnut.</p> <p>OH: Greenbrier fruit and leaf; aspen; dogwood; grape; sumac; beech bud and leaf; witch-hazel; oak; bittersweet; rattlesnake fern; mitrewort leaf; apple fruit, bud and leaf; hawthorn fruit and leaf.</p> <p>WI: Quaking aspen, hazelnut, catkin, white clover, blackberry, wild cherry, birch, dogwood.</p> <p><u>References:</u> 5, 15, 76, 83, 92, 93, 100, 122, 124, 139, 156, 159, 164, 174, 175, 195, 203, 226, 248.</p>
Grouse, sage <u>Centrocercus</u> <u>urophaisanus</u>	<p><u>Provinces (Sections):</u> 3110 (3111, 3112), 3130, M3110 (M3111, M3112), A3140.</p> <p><u>Distribution:</u> Southern British Columbia, eastern WA, southern ID, southeastern Alberta, southwestern Saskatchewan, western ND, south (east of Cascades, Sierra) to east-central CA, NV, UT, northwestern NM, northwestern NE.</p> <p><u>Habitat:</u> Sagebrush plains.</p> <p><u>Features:</u> Endangered in NM. Gamebird. Largest member of grouse family in North America.</p> <p><u>Life history:</u> Nest usually in bowl scraped out by female in the earth under a cluster of sagebrush, lined with a few leaves or grasses. Eggs (7-9) vary greatly in color, smooth. Incubation by female, 25 days. Does not migrate. Life span 5 yrs.</p> <p><u>Special notes:</u> Predators include ground squirrel, badger, magpie, coyote.</p> <p><u>Food:</u> Small amount of insects, chiefly ants and beetles, true bugs, such as chinchbugs. 3/4 food consists of leaves and flower clusters of different species of sagebrush.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Sage grouse (Continued)	<p><u>Food (Continued):</u> Northern desert: Dandelion leaf and flower; alfalfa vegetable and seed; white clover leaf and seed; pussy's-toes; gilia; agoseris.</p> <p><u>References:</u> 15, 83, 93, 142, 152, 157, 174, 175, 182, 203, 238, 254.</p>
Grouse, sharp-tailed <u>Pedioecetes phasianellus</u>	<p><u>Provinces (Sections):</u> East: 2110 (2111, 2112, 2113), 2530 (2531, 2532). West: 3110, 3130 (3131), M2110, M3110, A3140.</p> <p><u>Distribution:</u> North central AK, Yukon, south to eastern OR, northern NE, UT, northeastern NM, NE; from northern Quebec and northern Manitoba south to WI, MN.</p> <p><u>Habitat:</u> Prairie brushlands, woodland clearings, open forests, with considerable brushy growth, often in or near marshy areas. Prefers 25-50% wooded vegetation; 20-40% ideal.</p> <p><u>Features:</u> Endangered in CO, NM; endangered/threatened in ID. Gamebird; destruction of habitat (brushlands) primary reason for decline of population. Parasites, disease and accidents further reduce population.</p> <p><u>Life history:</u> Nest under thick tufts of grass, thick weeds, bushes. Well-hidden hollow scraped in ground; sparingly lined with grasses, dry leaves and ferns, a few feathers. Breeds in Apr.-June. Female builds nests. Openings important as brood habitat. Eggs (9-17, average 12) oval, shell smooth, with slight gloss. Light brown to olive-buff, often with dark brown speckles. Incubation by female alone; about 21 days. Does not migrate except when forced by food requirements at different seasons.</p> <p><u>Special notes:</u> Predators include crows, magpies, badgers, ground squirrels, snakes, fox, coyote, dogs, cats, hawks, owls, and eagles.</p> <p><u>Cover:</u> Open aspens, cutover pines, 43% shrub cover, 3-6 ft high; 4% tree cover in excess of 6 ft. Choke-cherry, willow, alder, aspen, spruce, juneberry, jack pine, scrub oak.</p> <p><u>Food:</u> 10% insects, such as grasshoppers, caterpillars, small insects; 90% vegetation.</p> <p>Great Lakes area: White birch seeds and buds; mountain-ash fruit and bud; white clover leaf; alder bud and flower; cranberry; willow bud and leaf; wild rose; raspberry; oats; fire-cherry; aspen bud; knotweed; wheat; corn; dandelion; choke-cherry; sedge; hazelnut; dwarf cornel; viburnum; vetch; goldenrod; snowberry; bearberry.</p> <p>Western NB: Dandelion; prairie rose; white clover leaf; sweet clover leaf; snowberry fruit and leaf; ground-cherry; poison ivy.</p> <p>UT: Wheat, grasses, sunflower, choke-cherry, alfalfa, maple buds, sagebrush, wyethia, yarrow, dandelion, rosinweed, wild rose, willow.</p> <p>ND: Wild rose, wild cherry bud and seed, willow bud, poplar buds, corn, hawthorn, poison oak, oats, wheat, dandelion, snowberry, knotweed, gromwell, serviceberry, bristlegrass, ragweed.</p> <p><u>References:</u> 5, 15, 45, 76, 93, 124, 142, 157, 159, 174, 175, 182, 195, 246, 254.</p>
Grouse, spruce <u>Canachites canadensis</u>	<p><u>Provinces (Sections):</u> East: 2110. West: M2110, M2410 (M2415), M3110 (M3111, M3112).</p> <p><u>Distribution:</u> West to north AK, northern Yukon, northern Mackenzie, south in mountains to northeastern OR, central ID, northwestern WY; in boreal forests to central Alberta, central Saskatchewan; Labrador; in New England, NY, northern MI and northern MN.</p> <p><u>Habitat:</u> Coniferous forests, tamarack swamps, cedar bogs, lowlands bordering sluggish streams.</p> <p><u>Features:</u> Gamebird. Breeding population diminishing by expansion of forest cutting and need for agricultural land.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Spruce grouse (Continued)	<p><u>Life history:</u> Nest sheltered and well-concealed place in tangle of bushes or most often under low overhanging spruce limb; shallow hollow, commonly found in moss on top of low mound; lined sparsely with dead leaves, grasses, spruce needles, and few feathers--female builds. Eggs (4-10, typically 6-8) laid every other day. Oval to long-oval, shell smooth with a slight gloss; cinnamon to buff, marked with large brown spots. Incubation by female alone; 17-24 days. Male polygamous. Life span 5-7 yrs.</p> <p><u>Special notes:</u> Fox, bobcat, coyote, wolf, lynx, mountain lion, marten, fisher, wolverine, bear, crow, raven, hawks, owls, eagles are its primary predators.</p> <p><u>Cover:</u> Blueberry, trailing arbutus, black spruce, white spruce, birch, poplar, spirea, cranberry, black lichen, lodgepole pine, aspen.</p> <p><u>Food:</u> Exclusively vegetarian.</p> <p>Canada and Northwest: Jack pine, white spruce, blueberry leaf and fruit, larch leaf, birch bud and seed, fir leaf, bearberry, sabal, moss capsule, sedge, beech, Christmas fern, wood fern, dwarf cornel.</p> <p><u>References:</u> 5, 15, 83, 93, 124, 174, 175, 182, 203.</p>
Hawk, broad-winged <u>Buteo platypterus</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2320, 2310, 4110, 2510, 2520, 2530.</p> <p>West: 3110 (3112).</p> <p><u>Distribution:</u> Eastern U.S. west to TX, OK, NE, KS to western ND.</p> <p><u>Habitat:</u> Deciduous forests.</p> <p><u>Features:</u> Beneficial hawk.</p> <p><u>Life history:</u> Nest usually in crotch of 10-80 ft high; constructed of coarse twigs and bark and lined with roots or bark strips. Eggs (2-5) pale green or gray with many brown spots. Hunts by slowly gliding, hovering, or sitting for hours. Silent and appears sluggish.</p> <p><u>Food:</u> Insects, amphibians, reptiles, small mammals.</p> <p><u>References:</u> 8, 23, 29, 44, 124, 174.</p>
Hawk, Cooper's <u>Accipiter cooperii</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110.</p> <p>West: 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Found throughout most of the contiguous 48 States.</p> <p><u>Habitat:</u> Secluded woods, older trees.</p> <p><u>Features:</u> Known as swift predator.</p> <p><u>Life history:</u> Nest in tall trees 10-50 ft high; usually made from old crow's or hawk's nest with additional material added every yr. Eggs (3-6) pale blue with brown spots.</p> <p><u>Food:</u> Poultry, doves, grouse, chipmunks, ground squirrels, other small mammals.</p> <p><u>References:</u> 8, 23, 29, 44, 124, 174.</p>
Hawk, ferruginous <u>Buteo regalis</u>	<p><u>Provinces (Sections):</u> East: 2530.</p> <p>West: 3110, 3130, M2110, M3110, A3140.</p> <p><u>Distribution:</u> Eastern WA, southern Alberta, southwestern Saskatchewan south to eastern OR, NV, AZ, NM, northwestern TX.</p> <p><u>Habitat:</u> Arid plains, open rangeland.</p> <p><u>Features:</u> Uncommon; rodent, insect control. Endangered/threatened in ID.</p> <p><u>Life history:</u> Nests of sticks, on cliff, tree, or ground. Eggs (2-6) white.</p> <p><u>Food:</u> Meadow mice and lemmings.</p> <p><u>References:</u> 15, 101, 148, 246.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Hawk, Hawaiian (Io) <u>Buteo solitarius</u>	<p>Provinces (Sections): M4210.</p> <p><u>Distribution:</u> Resident only on Hawaii Island. The only hawk resident in HI. Found on the slopes of Mauna Loa, on both windward and Kona coasts and less commonly on Mauna Kea.</p> <p><u>Habitat:</u> Widespread, open forests, agricultural land, grassland; likely to be found anywhere below 8,500 ft where woody vegetation exists.</p> <p><u>Features:</u> U.S. endangered species. Beneficial species. Population estimated in low hundreds. Chief reason for decline in numbers believed to be illegal shooting and drastic alteration of environment by man and introduced animals.</p> <p><u>Life history:</u> Very few nests ever sited, consequently little is known of the breeding biology. Nest is bowl-shaped, composed of sticks, loosely piled in a platform in tree fork; lined with stems and ferns. Nests during summer and fall. Eggs (2-3) light blue.</p> <p><u>Food:</u> Mice, rats, spiders, hawkmoths, caterpillars, small birds, dragonflies, praying mantis, crayfish.</p> <p><u>References:</u> 25, 76, 229.</p>
Hawk, red-shouldered <u>Buteo lineatus</u>	<p>Provinces (Sections): East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110.</p> <p>West: M2410 (M2412, M2414), M2620.</p> <p><u>Distribution:</u> Northern CA to Baja; Eastern U.S. to eastern NE, OK, TX.</p> <p><u>Habitat:</u> Woodlots, open woods.</p> <p><u>Features:</u> Beneficial to farmers.</p> <p><u>Life history:</u> Nest in fork of tall tree, usually not conifers; made entirely of sticks, large and bulky. Eggs (2-4) dull white with umber spots. Usually has a favorite perch and appears tame. Migrates.</p> <p><u>Cover:</u> Cover is large trees--elm, birch, maple, beech.</p> <p><u>Food:</u> Insects, small rodents, birds, with most of the diet made up of "farm pests".</p> <p><u>References:</u> 8, 23, 29, 44, 124, 174.</p>
Hawk, red-tailed <u>Buteo jamaicensis</u>	<p>Provinces (Sections): East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110.</p> <p>West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Central AK to northern British Columbia, northwestern Alberta; Newfoundland, northern Ontario, and Saskatchewan south to Gulf of Mexico and FL.</p> <p><u>Habitat:</u> Breeds in dry woodlands, open country, mountains, deserts.</p> <p><u>Features:</u> Beneficial.</p> <p><u>Life history:</u> Nest large, bulky structure placed in forks of large trees 40-80 ft above ground; constructed of large sticks and lined with smaller twigs, bits of bark, and usually with tips of hemlock branches, fern leaves and moss. Same nest occupied year after year, built by both sexes. Eggs: In Eastern and Southern areas, 2-4; in Central and Western areas, 4, rarely 1 or 5. Eggs dull whitish or bluish-white, exhibiting a wide variation in form and markings. Incubation by female, 28-32 days, average 30. Pairs usually mate for life.</p> <p><u>Food:</u> Mainly mammals: Including mice, rats, arboreal and ground squirrels, rabbits, voles.</p> <p>Insects: Including grasshoppers, crickets, beetles.</p> <p>Birds: Including poultry, gamebirds.</p> <p><u>References:</u> 15, 76, 80, 148.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Hawk, rough-legged <u>Buteo lagopus</u>	<p>Provinces (Sections): East: 2-10, 2210, 2320, 2510, 2520. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p>Distribution: Northern AK, Yukon, northern Mackenzie, south to Aleutians, southern AK, Great Slave Lake.</p> <p>Habitat: Tundra escarpments, Arctic Coasts; in winter, open plains, marshes.</p> <p>Features: Beneficial.</p> <p>Life history: Nests of twigs, moss; on cliff, ravine, or tree top. Eggs (2-6) dingy to buffy-white, sprinkled with blotches of dark brown.</p> <p>Food: Mainly mammals. Also birds, insects.</p> <p>References: 15, 76, 80, 148.</p>
Hawk, sharp-shinned <u>Accipiter striatus</u>	<p>Provinces (Sections): East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p>Distribution: North America down to Panama.</p> <p>Habitat: Cliffs, trees (conifers).</p> <p>Features: Fierce predator; bad reputation as a "chicken hawk."</p> <p>Life history: Nest is usually in a conifer or rock ledge; constructed of twigs, no lining. Eggs (4-5) dull blue or green splotched with brown. Migrates.</p> <p>Cover: Conifers, woodlots.</p> <p>Food: Mostly other birds including poultry.</p> <p>References: 8, 23, 29, 44, 124, 174.</p>
Hawk, Swainson's <u>Buteo swainsoni</u>	<p>Provinces (Sections): East: 2510, 2520, 2530. West: 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p>Distribution: Northeastern AK, northwestern Mackenzie, south-central Saskatchewan, south throughout most of Western U.S.; east to Plains in NM, NE, KS, etc.</p> <p>Habitat: Dry plains, open foothills, alpine meadows, rangeland, open forest, sparse trees.</p> <p>Features: Considered a most useful and beneficial hawk.</p> <p>Life history: Nest on the ground in bushes or on ledges; generally in tallest trees toward the end of horizontal branches; constructed of small branches and twigs, and lined with few leaves, moss or feathers; sometimes rehabilitates old nests. Eggs (2-4, average 2) white, greenish-white, or buff-white, usually spotted or blotched with reddish-brown; sometimes unmarked.</p> <p>Food: Small rodents, principally striped gophers and mice; grass-hoppers, large crickets.</p> <p>References: 15, 76, 148.</p>
Honeycreeper, crested <u>Palmeria dolei</u>	<p>Provinces (Sections): M4210.</p> <p>Distribution: Once inhabited both Molokai and Maui, now extinct on Molokai. Persists only on northeastern slope of Haleakaea (5,800-6,700 ft) on Maui.</p> <p>Habitat: Dense forests and deep gulches.</p> <p>Features: U.S. endangered species.</p> <p>Life history: Unknown.</p> <p>Food: Nectar of the ohia flower, caterpillars.</p> <p>References: 25, 147, 229, 230.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Kestrel, American (Sparrow hawk) <u>Falco sparverius</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Central AK, northwestern Mackenzie south throughout West. FL and Gulf of Mexico to Newfoundland, southern Quebec and Saskatchewan.</p> <p><u>Habitat:</u> Fields, pastures, open wooded areas, orchards, buildings on farms, in cities.</p> <p><u>Features:</u> Perches on poles, wires; utilizes openings--all for hunting.</p> <p><u>Life history:</u> Nests in natural cavities of trees, deserted woodpecker holes, in rock cavities, holes in banks, artificial nesting boxes, or in crannies of outbuildings without nesting materia. Eggs (4-5) ground color varying from creamy-white to reddish-buff speckled with shades of red and brown.</p> <p><u>Food:</u> Primarily feeds on grasshoppers, small mammals, small birds, crickets, beetles, spiders.</p> <p><u>References:</u> 76, 80, 148.</p>
Kite, white-tailed <u>Elanus leucurus</u>	<p><u>Provinces (Sections):</u> East: 2310 (2311, 2320). West: M2410 (M2412, M2414), M2620.</p> <p><u>Distribution:</u> Western CA from Humboldt County south to Baja. Also southeastern OK and TX and Peninsular FL.</p> <p><u>Habitat:</u> Wooded areas along streams and rivers.</p> <p><u>Features:</u> Unique; aesthetic.</p> <p><u>Life history:</u> Nests in tops of tall trees; nest made of twigs and lined with grass. Eggs (3-5) dull white splotched with red or brown blotches. Hunts by crossing fields and hovering, then dropping down on prey.</p> <p><u>Cover:</u> Large trees (live oak).</p> <p><u>Food:</u> Insects, reptiles, small birds, mammals.</p> <p><u>References:</u> 8, 23, 29, 44, 124, 174.</p>
Merlin (Pigeon hawk) <u>Falco columbarius</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Northwestern AK, northern Yukon south to OR, northern ID, northern MT, northern ND; in East, breeds in conifers from northern edge of U.S. limit of trees.</p> <p><u>Habitat:</u> Open woods or heavy timber in wilderness areas; cliffs; in migration also foothills, marshes, open country.</p> <p><u>Features:</u> Aesthetic; endangered in ND.</p> <p><u>Life history:</u> Nests on cliffs, in trees, tree hollows, magpie nests, on ground; constructed of sticks, weed stems, grass, or moss; lined with feathers and strips of soft inner bark. Eggs (3-6) rusty, spotted.</p> <p><u>Food:</u> Shorebirds, especially sanderlings and ringed plovers. 63% birds, 30% insects, 4% mammals, 1% poultry game, 2% miscellaneous.</p> <p><u>References:</u> 15, 76, 148, 227.</p>
Millerbird, Nihoa <u>Acrocephalus familiaris kingi</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to Nihoa, the only passerine on Nihoa. Population estimated to be 428 in mid-1974.</p> <p><u>Habitat:</u> Low scrub, grass.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Nihoa millerbird (Continued)	<p><u>Features:</u> U.S. endangered species. Called millerbird for its attraction to large "miller" moths.</p> <p><u>Life history:</u> Extended breeding season, Apr. through Aug. Nest is composed primarily of strips and pieces of grass stems and blades with varying amounts of rootlets. Eggs (1-2) pale, brown-spotted, pale blue egg. Breeding cycle unknown.</p> <p><u>Food:</u> Moths, insects.</p> <p><u>References:</u> 9, 25, 147, 175, 229.</p>
Nukupuu, Kauai <u>Hemignathus lucidus</u> <u>hanapepe</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to Kauai. Very rare. Only 2 sightings between 1900-1968; 2 more between 1968-1975. Extinct on Oahu, HI.</p> <p><u>Habitat:</u> Seldom found below 4,000 ft. Thick forests.</p> <p><u>Features:</u> U.S. endangered species. Curbs forest insect populations.</p> <p><u>Life history:</u> Unknown.</p> <p><u>Food:</u> Forages trees and leaves for grubs, weevils and beetles, caterpillars. Also found to eat bananas and oranges, spiders (<u>Thyrocopa</u>).</p> <p><u>References:</u> 9, 25, 147, 229.</p>
Nukupuu, Maui <u>Hemignathus lucidus</u> <u>affinis</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to Maui. Very restricted range, northwestern slope of Haleakala; chiefly found about a mi below the upper edge of the forest at an elevation of 4,000-4,500 ft.</p> <p><u>Habitat:</u> Seldom found below 4,000 ft. Thick forests.</p> <p><u>Features:</u> Nests, eggs, and young have never been described for any of the sub-species of the nukupuu.</p> <p><u>Food:</u> Insects, their eggs, and larvae, grubs, weevils and beetles. Hammers on surface of trunk or branch. Sucks nectar of the ohai.</p> <p><u>References:</u> 9, 25, 147, 229.</p>
Oo, Kauai <u>Moho braccatus</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to Kauai. Now in danger of extinction. Probably no more than 2 dozen individuals extant.</p> <p><u>Habitat:</u> From sea level to over 4,000 feet. Thick forest habitat, Alaka'i Swamp region.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Active bird, quick in flight. First nest found in 1971 in a tree cavity.</p> <p><u>Food:</u> Cockroaches, spiders, millipeds, crickets and other insects. Caterpillars, taken mostly from under the loose bark, were its principal food. Also fresh flower bracts and honey from the flowering ohia and other trees.</p> <p><u>References:</u> 11, 211, 213, 216.</p>
Osprey <u>Pandion haliaetus</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Breeds northwestern AK, across to Hudson Bay, Labrador, Newfoundland; south to central CA, western Mexico, Gulf Coast, FL Keys. Winters from FL and Gulf Coast States through lower CA, Mexico to Central America and West Indies.</p> <p><u>Habitat:</u> Usually close to large bodies of water, lakes, rivers, reservoirs, sea coasts; in undisturbed wooded areas.</p> <p><u>Features:</u> Endangered in AL, NJ, NY, TN, VT. Rare/endangered in KY. Decline in numbers due to pesticide contamination of fish, human</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Osprey (Continued)	<p><u>Features (Continued)</u>: disturbance of nests. Nests on snags, poles, transmission line structures.</p> <p><u>Life history</u>: Nest material consists of huge mass of sticks, twigs, and moss placed on ground, telephone poles, dead stubs, cliffs, or trees. Nests are used year after year with new material added. Clutch size 3, rarely 4; eggs pinkish white blotches with brown. Hunts from flight and diving.</p> <p><u>Food</u>: Primarily fish, rarely other birds. Also feeds on frogs, snakes, ducks, crows, night herons; rarely chickens.</p> <p>Western lakes: Trout, salmon, mullet, shad.</p> <p>Southwest, Gulf Coast: Catfish, carp, perch, sunfish.</p> <p><u>References</u>: 2, 98, 99, 148, 155, 158, 159, 201, 212.</p>
Ou <u>Psittirostra psittacea</u>	<p><u>Provinces (Sections)</u>: M4210.</p> <p><u>Distribution</u>: Local and very scarce on HI. Still exists on Kauai. Now extinct on Oahu, Molokai, Lanai, and Maui.</p> <p><u>Habitat</u>: Wide range, dense mountain rain forest with fern understory.</p> <p><u>Features</u>: U.S. endangered species. Feathers used in Hawaiian feather work.</p> <p><u>Life history</u>: Unknown.</p> <p><u>Food</u>: Female inflorescence of the Freycinetia, leaf bracts, fruits of several trees, berries of the Lobeliaceae and Clermontia. Young fed larvae and caterpillars.</p> <p><u>References</u>: 9, 25, 147, 175, 229.</p>
Owl, burrowing <u>Athene cunicularia</u>	<p><u>Provinces (Sections)</u>: East: 2510, 2520, 2530. West: 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution</u>: Unforested portions of western U.S. and southwestern Canada from Pacific Coast to western MN, SD, NE, KS, TX, LA, north to WA and southern Canada. South through lower CA, through Mexico to Guatemala. Local population central FL.</p> <p><u>Habitat</u>: Plains region, prairies, grassy plains, high sandy islands, canal dikes, airports, golf courses, large vacant urban lots, and broad road shoulders.</p> <p><u>Features</u>: Unique; endangered in IA.</p> <p><u>Life history</u>: Eggs deposited 5-10 ft from entrance of abandoned prairie dog, skunk, fox, or badger burrow in an enlarged chamber. Nest consists of weed stalks, dried broken bits of horse and cow manure. Clutch size 5-7; eggs white. Diurnal in its habits; frequently seen in broad daylight. Species will also dig its own cavity to nest if no suitable ones are available.</p> <p><u>Food</u>: Ground squirrels, snakes, lizards, grasshoppers, mice, gophers, crickets, beetles.</p> <p><u>References</u>: 15, 91, 48, 201.</p>
Owl, great horned <u>Bubo virginianus</u>	<p><u>Provinces (Sections)</u>: East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution</u>: From Yukon drainage in AK and tree limit in Mackenzie south through West; resident from Labrador and Hudson Bay to FL, TX, and Mexico.</p> <p><u>Habitat</u>: Forests, woodlands, thickets, chaparral, streamsides, open country, deserts, canyons, cliffs.</p> <p><u>Features</u>: Unique; aesthetic.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Great horned owl (Continued)	<u>Life history:</u> Nests in old nest of heron or hawk; in tree, pothole, cliff, or river bluff, even on ground. Prefers nests deserted by crows, eagle, hawks, osprey, or Caracara; constructed of twigs, weed stalks, roots, and feathers. Eggs (2-3) white. Incubation mostly by female, 28-35 days. Jan.-Mar. nesting. One brood. <u>Food:</u> Domesticated fowl, small mammals, birds, woodchuck, skunk, crayfish, frogs, large insects. <u>References:</u> 15, 124, 148, 201.
Palila <u>Psittirostra bailleui</u>	<u>Provinces (Sections):</u> M4210. <u>Distribution:</u> Extensive in the Maunali belt of middle and north Kona districts (4,000-6,000 ft). Now only in the mamani-naio forests on Mauna Kea. Common above 7,000 ft, nearly to tree line. <u>Features:</u> U.S. endangered species. Survival of species dependent upon continued maintenance of the mamani-naio forest on Mauna Kea. Dependent upon complete halt of further bulldozing of the forest and to planting of exotic plants (including gamebird foods). <u>Life history:</u> Nests dry grass interwoven with grey lichen; inside same lichen with slender rootlets interwoven. Eggs (2-3) white with reddish/brown marking forming dense cap around large end of egg. <u>Special notes:</u> Predators include feral pigs, goats, sheep. <u>Food:</u> Seeds of the Mamani tree and the green pods. Feeds on young caterpillars (Pyralid). <u>References:</u> 9, 25, 147, 229.
Parrot, thick-billed <u>Rhynchopsitta pachyrhyncha</u>	<u>Provinces (Sections):</u> 3140. <u>Distribution:</u> Breeds in the forests of Mexico's Sierra Madre, wanders into AZ and NM near Chiricahua Mountains and Santa Cruz and Gila Rivers. <u>Habitat:</u> Highland pine forests. <u>Features:</u> U.S. endangered species. Decline due to rapid destruction of pine forests. <u>Life history:</u> Believed to mate for life, nests in tree holes dug by other birds. Clutch size 3-5. Wanders about range in search of food. <u>Cover:</u> Limited to stands of Ponderosa pine. <u>Food:</u> Feeds exclusively on pine seeds; pinyon and Ponderosa pine. <u>References:</u> 113, 148, 176, 229.
Parrotbill, Maui <u>Pseudonestor xanthophrys</u>	<u>Provinces (Sections):</u> M4210. <u>Distribution:</u> Restricted to small portion of forest on the northwestern slope of Haleakala (Maui) at an elevation of 4,000-5,000 ft. <u>Habitat:</u> Koa trees (forest regions). <u>Features:</u> U.S. endangered species. <u>Life history:</u> Nest, eggs, and young have never been studied. <u>Food:</u> Larvae, pupae and immature beetles of the native <u>Cerambycidae</u> and <u>Clylarlus</u> , in enormous quantities. Also visits trees where it obtains larvae of <u>Plagithmysus</u> . <u>References:</u> 9, 25, 147, 175, 229.
Partridge, chukar <u>Alectoris chukar</u>	<u>Provinces (Sections):</u> 3120, 3130 (3131, 3132, 3133, 3135), 3220 (3221), M2110 (M2111), M2610, M2620, M3110, A3140. <u>Distribution:</u> Two races introduced in U.S.: Indian stock (<u>Alectoris chukar chukar</u>) and Turkish stock (<u>Alectoris cypristes</u> or <u>kurdistan</u>). The Turkish birds are thought to have merged with Indian stock or disappeared, except in NM and CA. Present range: southern interior of British Columbia south through eastern parts of WA, OR, and CA to the northern part of Baja, CA. East in Great Basin uplands through NV, ID, UT, western CO, MT, WY, with small populations in AZ, NM, western SD and southern Alberta.

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Chukar partridge (Continued)	<p><u>Habitat:</u> Throughout range species inhabits a sagebrush-grassland community. Also occurs in southern CA, Mexico in a saltbrush community type. At higher elevations snow may cause the bird to move down into snow free areas. The presence of rocky slopes and outcroppings are important for escape and roosting cover. WA habitat: .25-.5 area in talus slopes, rocky outcrops, cliffs, bluffs; .5 covered by sagebrush, cheat, and small amount of brushy cover.</p> <p><u>Features:</u> Gamebird. 42 states and 6 provinces attempted introductions; only 10 states and 1 province had sufficient success to declare legal seasons.</p> <p><u>Life history:</u> Social unit is the covey, ranging in size from 5 to 40, average 20. In late winter coveys disband as pair formation begins. Migrations are altitudinal, moving to lower valleys during winter, followed by a return to higher elevation in spring. Nest consists of a hollow scratched out in the earth, located near or up against a stump, bush, rock, or clump of grass. Lined with local grasses or feathers. Eggs are laid late Apr.; clutch size 10-20, average 15; eggs white with brown spots. Incubation 24 days, reneesting does occur of unsuccessful females. Young leave the nest a few weeks after hatching. Life span 5-7 yrs.</p> <p><u>Special notes:</u> Predators include foxes, coyotes, skunks, raccoons, bobcats, hawks, owls, eagles, which prey on eggs, chick, and adults.</p> <p><u>Cover:</u> Nesting cover: Sagebrush, grassland areas on mountains, several hundred ft above creek bottoms, often on south facing slopes. The availability of water during summer months is a significant habitat factor. Reproductive success in CA appeared to correlate with normal or above normal late winter and early spring precipitation, associated with improved vegetation growth for food and nest cover. Sites for dusting and obtaining grit have posed no problem and roost sites are usually abundant. Preferred roosting sites: Talus slopes, similar rocky areas, sometimes underneath shrubs, low trees. During the winter in WA, birds roost in protected niches, caves, rocky cliff faces.</p> <p><u>Food:</u> Mainly plant: Including predominately grasses; leaves of cheat, alfalfa, clover, sweet clover, dandelion, fringe cup, shepherd's purse. Seeds of cheat, Russian thistle, filaree, fiddleneck, locust, bunchgrass, wheat (fall). Fruits of serviceberry, hawthorn, choke-cherry, sumac, wild rose.</p> <p><u>Animal:</u> Including grasshoppers, crickets, ants, beetles, yellow jackets.</p> <p>Young birds are first fed insects and then later fed plants.</p> <p><u>References:</u> 15, 45, 83, 93, 122, 152, 182, 203, 226, 254.</p>
Partridge, gray (Hungarian partridge) <u>Perdix perdix</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210 (2212, 2213), 2530 (2531, 2532). West: 2410, 3110 (3111, 3112), 3120, 3130, M3110.</p> <p><u>Distribution:</u> Introduced locally in a number of eastern States; most successful in upper Mississippi Valley, southern British Columbia, central Alberta, south-central Saskatchewan south to northeastern CA, central NE, northern UT, central WY.</p> <p><u>Habitat:</u> Open farmland, grainfields, typically associated with extremely fertile soils associated with natural grasslands.</p> <p><u>Features:</u> Gamebird.</p> <p><u>Life history:</u> Nest is a hollow scraped in earth, lined with local grasses, usually hidden among clumps of grass or beneath low-hanging branches of bushes. Breeds late Feb., early Mar. Eggs (18-20) olive brown in color, without splotches or markings. Incubated by female, 23-25 days. Male might help to incubate eggs. Both male and female help with raising of young. Unmated male and female will sometimes</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Gray partridge (Continued)	<p><u>Life history (Continued):</u> adopt and raise orphaned chicks. One brood. Does not migrate unless weather becomes exceptionally cold and snowy; will then move from open areas to hedgerows and brushy areas. Life span 5-7 yrs.</p> <p><u>Special notes:</u> Predators include rats, snakes, fox, coyote, ground squirrels, cats, dogs, weasels, crows, hawks, owls.</p> <p><u>Cover:</u> Croplands, particularly small grain crops and herbaceous cover in the form of native grasses, hayfields, or weedy herbaceous growth with abundance of dead herbaceous plant growth.</p> <p><u>Food:</u> Small ants, other invertebrates found on low vegetation. Grasshoppers, crickets, bugs, beetles, ants and other Hymenoptera; flies and their larvae, moths and butterflies and their larvae; centipedes, millipeds, daddylonglegs. Seeds.</p> <p>Northeast: Grass or grain, corn, wheat, bristlegrass, ragweed, dandelion, buckwheat, knotweed, barley, oats.</p> <p>Northwest: Wheat, barley, oats, knotweed, bristlegrass, tarweed, alfalfa, clover, grass blades, fiddleneck, sunflower, buckwheat.</p> <p><u>References:</u> 5, 15, 76, 83, 92, 93, 124, 152, 159, 174, 175, 182, 195, 203, 226, 238.</p>
Pelican, brown <u>Pelecanus occidentalis</u>	<p><u>Provinces (Sections):</u> East: 2310, 2320, 2510, 4110. West: M2620.</p> <p><u>Distribution:</u> Eastern brown pelican: Atlantic and Gulf Coasts from NC to TX. Winters in FL and along Gulf Coast, West Indies, coasts of Central and South America.</p> <p>California brown pelican: CA Coast to Pt. Lobos and Monterey County. A few wander to lower Colorado River and AZ. Winters along Mexican Coast and southern Chile.</p> <p><u>Habitat:</u> Open sea, sea coast, larger bays, harbors, and breakwaters.</p> <p><u>Features:</u> U.S. endangered species. Decline due to reproduction failure resulting from toxic contamination; DDT and DDE eggshell thinning.</p> <p><u>Life history:</u> Nests in colonies; rookeries located on shores or marshy islands usually on ground or in low trees. Nest materials are twigs, sticks, coarse grass, weeds. Clutch size of 3. Incubation period 30 days, fledglings stage 10-11 weeks. Both parents incubate; they lack brood patches and incubate with their feet. Adults easily disturbed and leave nest when intruders appear. Eggs whitish.</p> <p><u>Cover:</u> Mangrove trees, brushy vegetation.</p> <p><u>Food:</u> Fish, mullet, pigfish, pinfish, Gulf menhaden, crevalle, herring. Feeds by diving.</p> <p><u>References:</u> 38, 148, 174, 175, 200, 229.</p>
Petrel, Hawaiian dark-rumped (Uau, Uuau, Uwau) <u>Pterodroma phaeopygia sandwichensis</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Formerly nested on all of the main islands of HI except Niihau. Now found only on Maui and HI. Second race breeds on the Galapagos Islands.</p> <p><u>Habitat:</u> Nesting sites located at high elevations (1,500-10,000 ft) near volcanoes. Burrows dug under lichen-covered lava (on Hawaii) or in soil or ash deposits overlain by bedrock lava (Maui).</p> <p><u>Features:</u> U.S. endangered species. Natives once used birds for food. Young birds once considered a delicacy, reserved for chief. Losses of adults and agricultural encroachments on the breeding area causes concern for the future of the species.</p> <p><u>Life history:</u> Nest a slight depression at end of burrow, with skimpy collection of twigs and feathers. Eggs (1) white with semi-glossy finish. Incubation period 50-54 days, with adults taking turns incubating for 3-5 day periods. Young leave nest when about 115 days old. Nesting success extremely low, with only four young fledged out of a minimum of 67 eggs laid, due to black rats.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Hawaiian dark-rumped petrel (Continued)	<u>Food:</u> Young feed partially digested food by regurgitation. Food consists of fish, squid, crustaceans, etc. <u>References:</u> 9, 25, 77, 147, 175, 229.
Pheasant, ring-necked <u>Phasianus colchicus</u>	<u>Provinces (Sections):</u> East: 2110 (2111, 2113, 2114), 2210 (2212, 2213, 2214), 2320, 2510 (2511), 2530. West: 2410, 2610, 3110, 3130 (3131), 3220, M2410, M2610, M2620, M3110, A3140, M4210. <u>Distribution:</u> Southern British Columbia, central Alberta, central Saskatchewan, south to southern CA, NE, UT, NM, northwestern Panhandle of TX; established in farming country north of Mason/Dixon Line (DE, northern NY, southern OH, southern ID, MO, northern OK) and north only as far as snows will allow (southern MA, northern NY, southern Ontario, southern MI, MN, and southern Saskatchewan). <u>Habitat:</u> Irrigated land, grain-growing farmlands, bushy pastures, hedgerows; rarely in woods or at any great distance from water. Survives best in belt between 38° and 52° parallels in farmland districts. <u>Features:</u> Introduced from China, 1888. Tasty gamebird. Highest pheasant densities occur on most fertile agricultural lands which in turn are diversified and provide food, water, and cover in close proximity. <u>Life history:</u> Nest on ground in open weedy fields, bushy pastures, hayfields; natural hollow, or one scraped by female, lined with weed stalks, grasses, leaves. Surrounding vegetation helps concealment. Hayfields used as nesting sites when preferred cover unavailable to accommodate the breeding population of an area. When fields are mowed, females invariably desert hayfield nests regardless of stage of incubation. Known to lay in other birds' nests: Ruffed grouse, domestic fowl, common bobwhite, blue-winged teal, blue grouse. Eggs (6-15, commonly 10-12) oval to short-oval. Shell smooth with slight gloss; rich brownish olive or olive-buff, unmarked. Incubation by female alone; 23-25 days. Males polygamous; pair bonds tenuous. Life span 3-5 yrs. <u>Special notes:</u> Predators are snakes, crows, hawks, fox, coyote, raccoon, skunk, opossum, weasels. <u>Cover:</u> Woody plants, especially evergreen shrubs, vines, alfalfa, unharvested soybeans, corn, sweet clover. <u>Food:</u> Seed feeder, chicks eat primarily insects. Corn primary food source. Also berries, fruits and weed seeds, particularly ragweed. Animal matter: Earthworms, snails, ants, grasshoppers, crickets, beetles, caterpillars, egg cases of praying mantis. <u>Northwest:</u> Seeds of grass family (<u>Gramineae</u>), wild grass and weed seeds, barley, wheat, oats, corn, ragweed, bristlegrass, Russian thistle, bur clover, sweet clover, wild rose, ground-cherry, bean, wild cherry, snowberry, dandelion, knotweed, sunflower, sorghum, wild lettuce, alfalfa. <u>Northeast:</u> Corn, ragweed, skunk cabbage, grape, oak, oats, elderberry, buckwheat, cherry, wheat, nightshade, bristlegrass, sumac, burdock, soybean, dogwood. <u>Lake Plains region:</u> Corn, blackberry, apple, grape, wheat, sumac, oats, strawberry, barley, beans, sedge. <u>References:</u> 4, 5, 14, 15, 38, 53, 76, 85, 92, 95, 122, 124, 127, 142, 151, 156, 161, 168, 169, 174, 175, 182, 195, 215, 217, 226.
Pigeon, band-tailed <u>Columba fasciata</u>	<u>Provinces (Sections):</u> 2410, M2410, M2610, M2620, M3110. <u>Distribution:</u> CA, AZ, NM, TX, and Mexico. <u>Habitat:</u> Oak canyons, foothills, chaparral, mountain forests.

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Band-tailed Pigeon (Continued)	<p><u>Features:</u> Gamebird.</p> <p><u>Life history:</u> Non-migratory birds stay in desert regions of Baja, CA; these birds have been observed to nest in every season except Nov. and Dec. Migrating birds nest in Apr. and May. Mate for life with long courtships and breeding periods. Nests are constructed by both males and females; consist of a flimsy platform of twigs, located from 4-100 ft above ground in trees, and also on ground. Usually located on slopes, mountain sides, or edge of watercourse. Clutch size 1, sometimes 2; eggs pure white. Both parents incubate 18-20 days. Both parents also care for young. Life span 5-6 yrs.</p> <p><u>Special notes:</u> Squirrels, crows, ravens, jays prey on eggs and young. Owls, goshawks, Cooper's hawk, falcons prey on adults.</p> <p><u>Cover:</u> Nesting trees: Conifer trees, some oaks, alders.</p> <p><u>Food:</u> Young are fed pigeon's milk made by parents for first three weeks, then seeds and fruits. Adults eat acorns, fruits of cherry, dogwood, elderberry, mulberry, hackberry, sumac. Seeds of pines, wheat, oats, barley, peas, grapes, prunes. Species need salt which it obtains from drinking ocean or mineral spring water.</p> <p><u>References:</u> 111, 122, 124, 182.</p>
Poo-uli <i>Melamprosops phaeosoma</i>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Hawaiian island of Maui.</p> <p><u>Habitat:</u> Northern slopes (5,300-6,800 ft.elev.) of Koolau Forest Preserve.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> No information available.</p> <p><u>Food:</u> No information available.</p> <p><u>References:</u> 9</p>
Prairie chicken, greater <i>Tympanuchus cupido</i> <i>pinnatus</i>	<p><u>Provinces (Sections):</u> East: 2110 (2111, 2112, 2113), 2210 (2212, 2213), 2510, 2530. West: 3110 (3112).</p> <p><u>Distribution:</u> Southern Saskatchewan through Dakota's to central CO, KS; southern Manitoba south to IL, MO, AK; east to MI and ID. Also coast of TX and southwestern LA.</p> <p><u>Habitat:</u> Tall-grass prairie, open meadows, brushy pastures, drained peat grasslands; sometimes adjacent to woodlands.</p> <p><u>Features:</u> Endangered in CO, MO. Gamebird. Once abundant, now much reduced by market hunting and agricultural invasion of native habitat. Future of species very insecure.</p> <p><u>Life history:</u> Nest on ground among grasses, weeds, low bushes. Natural cavity or hollow scraped by bird, concealed by heavy vegetation; sparsely lined with grass, sedges, small twigs, feathers. No roof built, but cover naturally arched. Female builds nest within mile of booming grounds. Eggs (5-17, average 12) usually laid at irregular intervals; number of laying days about 2 times the number of eggs laid; olive-buff or grayish olive, mostly dotted with fine spots. Incubation by female alone; 23-24 days, 1 brood. Life span: 5-6 yrs.</p> <p><u>Special notes:</u> Predators are snakes, ground squirrels, skunks, magpies, badger, bobcat, fox, coyote, dogs, cats, crows, hawks, owls, eagles.</p> <p><u>Cover:</u> Sagebrush, cornfields, grasses. Michigan sweet-fern, leather-leaf, goldenrod, dewberry, bluegrass, willow, blueberry, aspen.</p> <p><u>Food:</u> Mainly vegetation. Also insects (grasshoppers, crickets, ants). Northern prairies: Corn, oats, knotweed, wild rose, wheat, clover, bristleglass, oak, birch, sorghum, roughleaf dogwood, barley, curlydock, snowberry, beaked hazelnut, greenbrier, buckwheat, sumac. Southeast IL: Blackberry, buttonweed, flower spurge, giant ragweed, goldenrod, wheat, partridge-pea, panicle dogwood, black cherry, prairie rose, smartweed, bristleglass. WI: Oats, white clover, quaking aspen, blackberry, knotweed, sedge,</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Greater prairie chicken (Continued)	<p><u>Food (Continued):</u> sedgegrass, buckwheat, cherry, dogwood, dandelion, spirea, bluegrass, jewelweed, violet, Solomon's-seal, viburnum.</p> <p><u>TX:</u> Ruellia, western ragweed, blue-eyed grass, false garlic, button-weed, corn, doveweed, gaura-grape.</p> <p><u>References:</u> 5, 45, 76, 93, 95, 124, 135, 139, 174, 175, 178, 182, 195, 215, 217, 226.</p>
Prairie chicken, lesser <u>Tympanuchus</u> <u>pallidicinctus</u>	<p><u>Provinces (Sections):</u> 3110 (3113).</p> <p><u>Distribution:</u> Resident locally in southeastern CO, southwestern KS, western OK, northeastern NM, northwestern TX (Panhandle). Said to be established on Nihoa (HI).</p> <p><u>Habitat:</u> Open meadows, prairies, haymarshes, brush pastures, drained peat grasslands; sometimes adjacent to woodlands.</p> <p><u>Features:</u> With loss of native grassland cover, species population has been greatly decreasing. Total population 36,000-43,000.</p> <p><u>Life history:</u> Nest on ground among grasses, weeds, low bushes. Natural cavity or hollow scraped by bird, concealed by heavy vegetation; sparsely lined with grass, sedges, small twigs, feathers. Female builds. Eggs (11-13) buff, dotted. Incubation by female; 23-24 days; 1 brood. Life span 5-6 yrs. No major migration, seasonal shifts due to weather and other environmental factors.</p> <p><u>Special notes:</u> Predators include snakes, ground squirrels, skunks, badgers, bobcats, coyotes, dogs, cats, magpies, crows, hawks, owls, eagles.</p> <p><u>Cover:</u> Sedges, goldenrod, dewberry, bluegrass, willow, sweet-fern, blueberry, aspen.</p> <p><u>Food:</u> Grasshoppers, beetles, bugs, caterpillars and ants. Plant food mainly seeds and fruits, browse buds and leaves.</p> <p>Northern prairies: Corn, oats, knotweed, wild rose, wheat, clover, bristleglass, oak, birch bud and flower, sorghum, roughleaf dogwood, barley, curley dock, snowberry, beaked hazelnut, greenbrier, buck-wheat, sumac.</p> <p><u>TX:</u> Ruellia, western ragweed, blue-eyed grass, blackberry, false garlic, buttonwood, corn, doveweed, gaura-grape.</p> <p><u>OK:</u> Oak, wheat, sumac, gromwell.</p> <p><u>References:</u> 93, 95, 124, 168, 174, 175, 182, 195, 215, 217.</p>
Ptarmigan, white-tailed <u>Lagopus leucurus</u>	<p><u>Provinces (Sections):</u> M2110, M2410 (M2415), M3110.</p> <p><u>Distribution:</u> Central AK, northern Yukon, southwestern Mackenzie, south to the Kenai Peninsula, Vancouver Island, Cascade Mountains of WA, and along the Rocky Mountains from British Columbia and Alberta to northern NM. Major population occurs in CO.</p> <p><u>Habitat:</u> Closely conforms to that of alpine tundra. Steep slopes, stony benches, where cliff ledges and outcrops commonly occur. Vegetation is generally sparse with shrubs nearly absent and dwarfed when present.</p> <p><u>AK:</u> 500-2,000 ft above timberline.</p> <p><u>MT:</u> Not present in timber or shrubby vegetation higher than 18 in.</p> <p><u>CO:</u> Alpine willow distribution is key factor in determining ptarmigan distribution.</p> <p><u>Features:</u> Gamebird, aesthetic. Endangered in NM.</p> <p><u>Life history:</u> In winter, birds descend to edge of tree line where food is readily available; in spring they move back up to breeding areas. Specific nesting sites are not as important as suitable brooding areas, which are located in short vegetation with many rocks. Territory size 16-17 acres. Nest is made of fine local grasses in snow-free areas, often in the lee of small rocks or bushes. Clutch size 6-8, incubation 22-23 days. Egg color buff, with brown spots.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
White-tailed ptarmigan (Continued)	<p><u>Life history (Continued)</u>: Male stays with female until hatching, but doesn't participate in incubation. Pair formation begins in Apr., egg laying mid-June. Nesting success 70-80%. When snow is deep and soft the ptarmigan burrows under snow to obtain protection and also feeds under snow. Life span 8 yrs.</p> <p><u>Special notes</u>: Hawks, eagles, martens prey on adults. Foxes, bobcats, weasels, bears prey on nest and young.</p> <p><u>Cover</u>: Preferred cover plants are also most important food plants: Willow, heath, mosses, and rocks for escape cover.</p> <p><u>Winter requirements</u>: In CO, winter areas must contain alpine willows. Alpine areas lacking this species cannot support ptarmigan for prolonged periods.</p> <p><u>Spring requirements</u>: In CO, willow is essential in territories of males. Breeding areas are adjacent to the spruce-willow alpine timberline zone and also include small windblown areas.</p> <p><u>Nesting vegetation</u>: Hedges, forbs (vegetation lacking).</p> <p><u>Food</u>: During the first two weeks, young feed on invertebrates, then bulbils, gradually moving to willow until it becomes the principal food source.</p> <p><u>AK</u>: Alder, catkins, willows, birch.</p> <p><u>CO</u>: Winter foods include buds, woody twigs of alpine willow, and pines. Spring foods are willow, Potentilla, Ranunculus, Saxifraga, Dryas leaves and flowers. Summer foods: Bulbils of <u>Polygonum viviparum</u>, blueberry, alpine flowers.</p> <p><u>References</u>: 15, 93, 157, 182, 226.</p>
Quail, bobwhite <u>Colinus virginianus</u>	<p><u>Provinces (Sections)</u>: East: 2110 (2113, 2114), 2210, 2310, 2320, 2510, 2520, 2530, 4110.</p> <p>West: 2410, 3110 (3113), 3130 (3131), M2110, M2410 (M2411, M2413, M2415).</p> <p><u>Distribution</u>: East of Rockies from southern WY through eastern CO, eastern NM; introduced in HI, southern British Columbia, WA, OR, ID, western TX; Gulf of Mexico north to SD, southern MN, southern Ontario and ME.</p> <p><u>Habitat</u>: Farm country, open meadows, weedy pastures, open woodlands. In one report of 602 nests, 97 were in woodlands, 336 in brown-sedge fields, 88 in fallow fields and 4% cultivated fields (217-Harrison, 1975).</p> <p><u>Features</u>: Very popular gamebird. Hard winters cause widespread mortality. Loss of habitat is quail's greatest enemy--tearing out of hedgerows deprives quail of nesting habitat. This species has prospered with growth and development of U.S. Farming areas produce ideal habitat.</p> <p><u>Life history</u>: Nests in hollow in tussock of dead grass or among growing grasses; weeds often woven in arch over nest, completely concealing it; lined with dead or growing grass or other fibrous material; built by both sexes, mostly female. Eggs (12-20, typically 14-16, as many as 30, 32, 37) short-pyriform, sometimes quite pointed. Shell smooth, slightly glossy; dull or creamy-white, never spotted. Incubated by both sexes, 23-24 days. At least two broods, especially in South. Most sedentary of quails; no major seasonal movements. Potential life span 4-5 yrs.; life expectancy less than a yr. Annual mortality of about 70-75%. Relatively few birds survive to breed more than once.</p> <p><u>Special notes</u>: Predators are snakes, skunks, opossum, cats, dogs, rats, box, bobcat, raccoon, weasel, hawks, owls. Under normal circumstances predation is not important factor for quail population.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Bobwhite quail (Continued)	<p><u>Cover:</u> Alder, beautyberry, blueberry, blackberry, cedar, ceanothus, dogwood, elderberry, holly-gallberry, huckleberry, hawthorn, osage orange, palmetto, prickly pear, rose, sassafras, sumac, snowberry, viburnum, willow, wild black cherry, wild plum, wild grape.</p> <p><u>Food:</u> Beetles 1/2 of animal foods, particularly ground beetles, leaf beetles, weevils. Grasshoppers, crickets, various bugs, caterpillars, other insects consumed in large quantities. Spiders, snails, centipedes, sowbugs. Young birds almost exclusively feed on the above diet. Seeds, leaves, fleshy fruits also eaten.</p> <p><u>Northeast:</u> Ragweed, corn, smartweed, bristlegrass, wheat, grape, hog-peanut, blackberry, ash, poison ivy, sumac, oak, panic-grass, dock, jewelweed, black locust, spicebush, partridge-pea, lespedeza, flowering dogwood, crabgrass, sassafras, paspalum.</p> <p><u>Southeast:</u> Lespedeza, beggarweed, oak, partridge-pea, cow-pea, ragweed, pine, milkpea, paspalum, soybean, flowering dogwood, corn, wheat, native lespedeza, wild bean, sweet gum, panic-grass, vetch, sorghum, Japanese honeysuckle, violet, blackberry, doveweed, hickory, black locust, ash, blackgum nutrush, sumac, Carolina geranium, peanut.</p> <p><u>Northeastern prairies:</u> Ragweed, corn, bristlegrass, sunflower, wheat, sorghum, knotweed, sumac, panic-grass, poison ivy, doveweed, oak, snowberry, grape, ash, wild rose.</p> <p><u>TX and OK:</u> Sorghum, doveweed, oak, panic-grass, ragweed, corn, sunflower, milkpea, lespedeza, wild bean, sumac, ground-cherry, spurge, beggarweed, wheat, thistle, crown-beard, chervil, clover, stillingia, bidens.</p> <p><u>References:</u> 5, 53, 63, 76, 83, 85, 92, 93, 95, 100, 116, 124, 127, 136, 156, 161, 167, 168, 169, 174, 175, 182, 194, 215, 217, 224, 226, 248.</p>
Quail, masked bobwhite <u>Colinus virginianus</u> <u>ridgwayi</u>	<p><u>Provinces (Sections):</u> 3140.</p> <p><u>Distribution:</u> Resident in central interior Sonora and formerly northern to southern AZ. The fate or recent restocks in AZ near Arivaca and Altar valley is still uncertain.</p> <p><u>Habitat:</u> Grasslands in spring and summer, croplands in summer, and brushy and woodland areas yearly for cover and roosting. Ideal habitat: 30-40% grassland; 40-60% crop fields; 5-20% brushy cover; 5-40% woodland.</p> <p><u>Features:</u> U.S. endangered species. Possibly now extinct. Main reason for decline is destruction of habitat by cattle grazing. They were also hunted as a gamebird.</p> <p><u>Life history:</u> Nests in open grassland with bare ground. Nest building is performed by both parents, digging scrape lined leafy material. Clutch size 14. Incubation 23 days. Travels in covey of 15-20. Winter covey occupies a range which is large enough to fulfill roosting, foraging and cover requirements; rarely exceeds 50 acres. Eggs white.</p> <p><u>Food:</u> Seeds of cultivated grains, weedy herbaceous plants, doveweed, danglepod, panic-grass.</p> <p><u>References:</u> 48, 93, 113, 148, 229.</p>
Quail, California <u>Lophortyx californicus</u>	<p><u>Provinces (Distribution):</u> 2410, 2610, 3120, 3130, M2410, M2610, M2620.</p> <p><u>Distribution:</u> Southern OR, western NV, south to tip of Baja, CA. Introduced into southern British Columbia, WA, ID, northern OR, UT.</p> <p><u>Habitat:</u> Wide range of habitats. Hot scrub desert, chaparral, thickets, cool coastal forest, valleys, rain shadow areas, dominated by grasslands, or semidesert sagebrush shrub. Heavy forest avoided.</p> <p><u>Features:</u> Gamebird.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
California quail (Continued)	<p><u>Life history:</u> Covey size roughly matches home range size: 21-46 birds to 17-45 acres. In late Feb. covey breaks up as birds move to nesting sites. Egg laying mid-Apr., peak in May. Clutch size 14, incubation 22 days performed by female. Nest consists of slight hollow beneath a clumb of grass or under brush or logs, lined with dead grass or leaves. Egg color dull white, creamy, buff, spotted with brown. Life span 3-4 yrs.</p> <p><u>Special notes:</u> Ground squirrels are main cause of nest predation; in areas where squirrel population is controlled, number of quail rises. House cat, bobcat, coyote, skunk, fox, California jay, crow, raven, shrike, magpie, snakes, fire ants, hawks (Cooper's and sharp-shinned) prey on eggs, young and adults.</p> <p><u>Cover:</u> Nesting cover: Usually herbaceous, in moderately open areas. Roosting cover: Tall shrubs or trees; evergreen species preferred for winter cover. Escape cover: Dense growth of shrubs, vines, herbaceous growth. Loafing cover: Shady areas under shrubs, trees where grit is available.</p> <p><u>Water:</u> As long as insects and succulent vegetation are available, species can survive indefinitely without surface water; also moderately saline water sources can be utilized.</p> <p><u>Food:</u> CA: Animal (5%): Ants, grasshoppers, beetles, crickets. Plant (95%): Legumes 25-30%, annual weeds 20-60%, grasses 10-25%, fruits and leaves of woody plants 3-5%. Important legumes: Bur clover, lupines, deer vetch, clover, acacias, vetches. Other: filaree, turkey mullein.</p> <p>NV: Grain crops, wheat, barley, corn, legumes, alfalfa, sweet clover. WA: Wheat, pigweed, teasal, locust, sunflower, Russian thistle. Other: Bassia, poplar, oak, poison oak, rue grass, brome, buffalo-berry, goosefoot, violets.</p> <p><u>References:</u> 93, 111, 122, 152, 182, 226.</p>
Quail, Gambel's <u>Lophortyx gambelii</u>	<p><u>Provinces (Sections):</u> 3130 (3132, 3133), 3140, 3220, M3110 (M3112), M3120.</p> <p><u>Distribution:</u> Southern NV, western CO, south to northeastern Baja, CA, central Sonora, northwestern Chihuahua, western TX.</p> <p><u>Habitat:</u> Located in three major climatic and habitat types: 1) mesquite, saltbush, tamarisk and desert thorn shrub of desert valleys from TX to southern CA, NV, UT, northern Mexico; 2) western upland desert habitats, creosote bush, desert thorn, skunkbush, cat-claw, yuccas, burroweed, prickly pear. Mohave Desert areas of AZ, CA, NV; 3) Colorado River basin, greasewood, rabbit bush, skunkbush, saltbush, sagebrush. NM, CO, UT, ID.</p> <p><u>Life history:</u> Average covey size 12 but ranges from 3-40. Home range 19-95 acres, average 35 acres. Coveys break up and pair formation begins in mid-Mar., egg laying in late Apr. Nests consist of ground depression, scratched out, variable lines. Located under bushes to conceal and protect from the sun. Clutch size 12-14, off-white to buff, spotted brown and purple. Incubation 21-23 days, performed by female. Life span 4-5 yrs.</p> <p><u>Special notes:</u> Predators are Gila monster, road runner, ringtails, skunks, rats, rock and ground squirrels, snakes, coyotes, foxes, bobcats, hawks, owls.</p> <p><u>Cover:</u> Nesting cover: Desert shrubs or trees, primary requirement being a source of shade. Brooding requirements: Brushy escape cover, shade for resting, and foraging sites. Winter germination and growth of plants is vital to breeding success.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Gambel's quail (Continued)	<p><u>Cover (Continued)</u>: Other requirements: Lowland populations depend on subsurface moisture, upland populations require winter precipitation of more than 5 in for vegetation growth. Highest opoulations occur in areas where Jan. temperature does not drop below 40° F. Snow is a limiting factor in northern populations.</p> <p><u>Food</u>: Mainly Plant: Including mesquite, deer vetch, Russian thistle, lupine, alfalfa, tansy, mustard, spiderling, spurge, bassia, crown-beard, filaria, evolvulus, and other legumes.</p> <p>Animal: Including beetles, grasshoppers, crickets, leafhoppers, ants and spiders.</p> <p><u>References</u>: 14, 15, 93, 115, 152, 182, 223.</p>
Quail, Montezuma <u>Cyrtonyx montezumae</u>	<p><u>Provinces (Sections)</u>: 3140, 3210, M3120, P3130.</p> <p><u>Distribution</u>: Southwestern TX, NM, eastern AZ down through Mexico.</p> <p><u>Habitat</u>: Rocky, wooded mountain slopes, usually 4,000-9,000 ft elevation.</p> <p><u>Features</u>: Gamebird, but seldom hunted because of small size and inaccessibility. Smallest U.S. quail.</p> <p><u>Life history</u>: Monogamous, found in mated pairs. Nest a depression in ground, lined with grass. Clutch size 10-12; eggs are dull white, no splotches. Both parents incubate eggs which hatch in 18-21 days. Adults feign injury to draw predators away from nest.</p> <p><u>Special notes</u>: Predators include raccoons, coatis, ringtails, badgers, bobcats, foxes, raptors.</p> <p><u>Cover</u>: Dense underbrush. Avoids open areas. Must be near water.</p> <p><u>Food</u>: Lily and chufa tubers, pinyon nuts, acorns, insects, sunflower, brodiaea, wood-sorrel.</p> <p><u>References</u>: 14, 115, 124, 180, 182.</p>
Quail, mountain <u>Oreortyx pictus</u>	<p><u>Provinces (Sections)</u>: 3130 (3131, 3132, 3135), M2410, M2610, M2620, M3110 (M3111).</p> <p><u>Distribution</u>: Western U.S. from southern WA, southwestern ID, east to NV, and south to Baja, CA. Also introduced in WA, British Columbia and CO.</p> <p><u>Habitat</u>: Species occupied wide climatic zone, dense brush, coniferous forests, around edges of mountain meadows, sometimes fairly high crests.</p> <p>Sierra, Coast, and San Pedro Mountain Quails inhabit brushy mountain-sides, especially those covered with chaparral vegetation: Manzanita, snowbush, chinquapin. Also coniferous forest edges, open forests. Distribution follows logging or burns.</p> <p>Desert mountain quail extends its range into sage, pinyon, juniper vegetation where water is available.</p> <p>Introduced species habitat: WA: Brushy burns, clearings, brushy canyon thickets, areas near farms, woodland borders.</p> <p>OR: Cutover lands, edges of clearings, humid forest zone.</p> <p>ID: River systems: Snake, Boise, Clearwater and Salmon Rivers.</p> <p><u>Features</u>: Gamebird.</p> <p><u>Life history</u>: Average covey size 11. Breeds at higher elevations, winters at lower elevations. Mating begins in Apr., nesting in late Apr., May. Nests are well concealed, located under fallen trees, branches, in weeds, shrubs, at base of large trees, or beside rocks. Usually located near roads or pahts within a few feet of water. Incubation 24-25 days, performed by female. Life span 4-5 yrs.</p> <p><u>Special notes</u>: Predators include gray fox, bobcat, coyotes, skunks, snakes, hawks, owls.</p> <p><u>Cover</u>: Winter habitat: Mixed brush and herbs; chamise, fremont, silk-tassel, manzanita, scrub oak.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Mountain quail (Continued)	<p><u>Cover (Continued):</u> Spring habitat: Return to breeding habitat to seek suitable nesting sites in open brush or tree cover on slopes. Woody cover shading from .25 to .5 ground is best for nesting and roosting. Where species nests in desert, vegetation consists of juniper, thornbush, blackbrush, desert apricot.</p> <p><u>Nesting cover:</u> Varies greatly with species, but contains large shrubs, trees, usually in dense growth formation. A mixture of shrubs and trees is important.</p> <p><u>Roosting trees:</u> Ponderosa pine, firs, oaks. Water is a limiting factor in desert; species is restricted to areas no more than one mi from water.</p> <p><u>Food:</u> Mainly plant: Smooth sumac, hackberry, serviceberry, grape, gooseberry, manzanita, nightshade, elder, Christmasberry, snowberry. Seeds of trees: Douglas-fir, black locust, acorns. Seeds of grasses, sweet clover, thistles, ragweed, teasel, bulbils of fringe-cup is an important food source in fall. Staple winter food source consists of acorns, other seeds. Young feed for the first week on chickweed, miner's lettuce, then fringe-cup bulbils and woody plants.</p> <p><u>Animal:</u> Grasshoppers, beetles, ants, spiders, centipedes.</p> <p><u>References:</u> 15, 93, 122, 152, 182.</p>
Quail, scaled <u>Callipepla squamata</u>	<p><u>Provinces (Sections):</u> 3110 (3113), 3140, 3210, P3130.</p> <p><u>Distribution:</u> Eastern AZ, central CO, south to central Mexico, eastern to southwestern KS, western OK, western TX. Introduced in eastern WA.</p> <p><u>Habitat:</u> Grassland, brush, arid country, sagebrush, dense cholla cactus and/or yucca grassland. Arizona scaled quail prefers barren habitat in rocky areas where cactus or thorny brush prevail. Chestnut-bellied thrives in areas where prickly pear cactus is found.</p> <p><u>Features:</u> Gamebird. Range extended further southward to Valley of Mexico with clearing of pine-oak forest, overgrazing and agriculture resulting in secondary desert habitat.</p> <p><u>Life history:</u> Nest a hollow under bush, in sand or dust; also in washes, brush-covered plateaus, arroyos. Eggs (9-16) speckled, off-white, speckled with cinnamon brown. Young hatch in June usually. Incubation 21 days or more, by female. Does not migrate. Life span 5 yrs.</p> <p><u>Special notes:</u> Predators include snakes, skunks, Gila monster, coyote, fox, bobcat.</p> <p><u>Cover:</u> Cholla cactus, pinyon pine, juniper, soapweed, sand sage, dead Russian thistle, Johnson grass, skunkbush.</p> <p><u>Food:</u> Arizona quail eats beetles, grasshoppers, ants, true bugs, leafhoppers, spiders.</p> <p><u>Southwest:</u> Sorghum, tansy mustard, snakeweed, deer vetch, pigweed, wheat, sunflower, morning-glory, evolvulus, prickly pear, mesquite, filaree, oats, sage, nightshade, doveweed.</p> <p><u>Southwest TX:</u> Wild privet, cat-claw acacia, lupine, chervil, bean, doveweed, clover, neptunia, capul, hackberry, prickly pear, locoweed, sorghum, mesquite, grape spurge.</p> <p><u>References:</u> 14, 93, 124, 174, 175, 182, 217.</p>
Rail, California clapper <u>Rallus longirostris</u> <u>obsoletus</u>	<p><u>Provinces (Sections):</u> M2410 (M2412, M2414), M2620.</p> <p><u>Distribution:</u> Non-migratory species located on CA coast from Humboldt Bay south to Monterey Bay. At present is restricted to the region of San Francisco Bay and Monterey Bay.</p> <p><u>Habitat:</u> Salt marshes and high marsh land.</p> <p><u>Features:</u> U.S. endangered species. Decline due to the reclaiming of much of the breeding grounds; also was hunted in the early 1900s as a gamebird.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
California clapper rail (Continued)	<p><u>Life history:</u> Nests on high marsh land, usually on banks. Nest is a platform built up to 3-6 in above ground. Nesting season reaches peak in Apr.; both parents incubate. Clutch size 8-10; eggs buff, spotted. Shy birds which stay fairly concealed in vegetation.</p> <p><u>Special notes:</u> High tides, storms, raccoons, crows, gulls, and Norway rats pose threat to nests in marshes.</p> <p><u>Cover:</u> Pickle weed, evergreen shrub (<i>Grindelia caneifolia</i>), saltgrass.</p> <p><u>Food:</u> Mostly animal; worms, crustaceans. Also seeds.</p> <p><u>References:</u> 9, 10, 19, 38, 70, 229.</p>
Rail, light-footed clapper <i>Rallus longirostris</i> <i>levipes</i>	<p><u>Provinces (Sections):</u> M2620.</p> <p><u>Distribution:</u> Non-migratory species located in coastal marshes of southern CA, north to Santa Barbara, south to Gilimington, San Pedro Bay, Long Beach, San Diego.</p> <p><u>Habitat:</u> Salt marshes and high marsh ground.</p> <p><u>Features:</u> U.S. endangered species. Decline due to reduction of habitat, reclamation of marshes; was also hunted as gamebird. 12 CA marsh areas are presently believed to be inhabited by the light-footed rail, 8 of these appear to support only 5-15 individuals. Counties: Santa Barbara, Ventura, Orage, San Diego.</p> <p><u>Life history:</u> Nesting sites located on high ground near water, usually not more than 100 ft away. Nests have been found at the base of power line poles. Clutch size is assumed same as California clapper rail, 8-10 eggs. Both sexes incubate. Very secretive birds that remain concealed in vegetation. Eggs buff, spotted.</p> <p><u>Cover:</u> Nesting cover: Salicornia, saltgrass, pickle weed.</p> <p><u>Food:</u> Same as California clapper rail: Worms and crustaceans.</p> <p><u>References:</u> 9, 10, 19, 38, 70, 229, 250.</p>
Rail, Yuma clapper <i>Rallus longirostris</i> <i>yumanensis</i>	<p><u>Provinces (Sections):</u> 3220.</p> <p><u>Distribution:</u> Fresh water riparian strip along the Colorado River above Yuma, and along irrigation canals in the vicinity of Laguna Dam.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Similar to light-footed and California clapper rails. Little is known about habitat requirements.</p> <p><u>Cover:</u> Similar to light-footed and California clapper rails.</p> <p><u>Food:</u> Similar to light-footed and California clapper rails.</p> <p><u>References:</u> 10, 19, 38, 70, 229, 250.</p>
Shearwater, Newall's (Ao) <i>Puffinus puffinus</i> <i>newelli</i>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to Hawaiian Islands. Now found only on Kauai. Once considered possibly extinct, has been reported recently from Niihau, Oahu and Hawaii.</p> <p><u>Habitat:</u> Mountains, cliff regions.</p> <p><u>Features:</u> U.S. endangered species. HI's only endemic seabird.</p> <p><u>Life history:</u> Nests in burrows at the foot of cliffs near the sea at 500 to 1,000 ft. Nests covered with uluhe fern. Breeds Apr. through Nov. Eggs brown in color, laid in June and thereafter. Adults leave nesting grounds for unknown winter feeding areas by early Oct.</p> <p><u>Special notes:</u> Mongoose is primary predator.</p> <p><u>Food:</u> Fish, insects.</p> <p><u>References:</u> 9, 25, 77, 229, 230.</p>
Snipe, common (Wilson's snipe) <i>Capella gallinago</i>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110. West: 1210, 1220, 1310, 1320, 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M1210, M1310, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Common snipe (Continued)	<p><u>Distribution:</u> Throughout U.S. Wintering range lies roughly below a line drawn from VA, across to CA and runs south to South America. Breeding range extends north of the same line including AK, and most of Canada except for Arctic regions north of Hudson Bay.</p> <p><u>Habitat:</u> Open meadows, fresh water marshes, bogs, fens, where ground is wet and soft and enough grass grows to conceal it. Sometimes in low woody growth with open terrain nearby.</p> <p><u>Features:</u> Gamebird.</p> <p><u>Life history:</u> Prefers wet swamps, bogs, fens for breeding. Its nest is usually built in a tangle of grass, well concealed; usually surrounded by deep water, thus protected from predators. Clutch size 4; eggs buff in color heavily spotted with dark brown. Incubation 18-20 days performed by both parents as well as caring for brood. Life span 4 yrs. Long migration of 12,000 to 15,000 mi per yr. Spring migration underway early Mar.; depart in fall in Sept.</p> <p><u>Special notes:</u> Raccoons, crows, ravens prey on eggs. Northern gulls, jaegers, hawks, falcons prey on chicks and adults.</p> <p><u>Cover:</u> Breeding habitat restricted to organic soils, peatlands within northern forest region.</p> <p><u>Species:</u> Spruce, fir, larch.</p> <p><u>Sedge bogs:</u> Sedges, goldthread, goldenrod, false Solomon's-seal, bogbean, bog aster, Canadian burnet, bog myrtle, Labrador-tea.</p> <p><u>Fens:</u> Tamarack, black spruce, balsam fir, white spruce, bog-alder, willows, shadbush, birch, sweet gale, sphagnum moss, sedges, reed bentgrass.</p> <p><u>Swamps:</u> Alder, willow, march marigold, mosses.</p> <p><u>Food:</u> Animal (80%): Earthworms, snails, fly larvae, aquatic beetles, dragonfly nymphs, crustaceans, grasshoppers, locusts, mosquito larvae.</p> <p>Plant (20%): Seeds of smartweed, bulrush, panic-grass, bur-reed, bristlegrass, ragweed, pondweed.</p> <p><u>References:</u> 124, 148, 182, 221.</p>
Sparrow, Santa Barbara song <u>Melospiza melodia</u> <u>graminea</u>	<p><u>Provinces (Sections):</u> M2620.</p> <p><u>Distribution:</u> Formerly Santa Barbara and Santa Cruz Islands, Los Angeles County, CA.</p> <p><u>Habitat:</u> Brushy fields usually adjoining woodlands.</p> <p><u>Features:</u> U.S. endangered species. Probably now extinct. Last alleged sighting was in 1967.</p> <p><u>Life history:</u> Nests in bushes, small trees, or also on ground in fields. Clutch size 4-5. Shelter in the form of overhanging grass or brush. Geographic form of song sparrow.</p> <p><u>Cover:</u> Brush, bushes, small trees, long grasses.</p> <p><u>Food:</u> 3/4 of diet consists of seeds of various grasses and weeds; 1/4 consists of insects, beetles, weevils.</p> <p><u>References:</u> 9, 24, 148, 229.</p>
Stilt, Hawaiian (Aeo, kukuluao) <u>Himantopus himantopus</u> <u>knudseni</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to islands of Niihau, Kauai, Oahu, Molokai, Maui and Hawaii. Population 1,215 in 1974.</p> <p><u>Habitat:</u> Abundant where receding tide leaves extensive flats of black mud exposed. Also brackish or fresh water ponds found on the lowland short distances from the sea.</p> <p><u>Features:</u> U.S. endangered species. Considered a gamebird until 1941, still sometimes shot illegally. Loss of habitat through drainage of marshes and other wetland areas.</p> <p><u>Life history:</u> Breeding length unknown. Nest a simple scrape on ground in sparsely vegetated areas. Stones, wood, etc., added to form partial lining. Eggs (clutch 3-5) smoke-gray ground color heavily</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Hawaiian stilt (Continued)	<p><u>Life history (Continued):</u> marked with brown spots, splotched and lines scattered irregularly. Incubation 24 days. Precocial young.</p> <p><u>Special notes:</u> Predators include mongoose, feral dogs and cats.</p> <p><u>Food:</u> Worms, marine creatures.</p> <p><u>References:</u> 9, 25, 147, 175, 229.</p>
Teal, Laysan (Laysan duck) <u>Anas laysanensis</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Once inhabited both Laysan Islands and Lisianski Island. Entire population (69 birds in 1974) is now on Laysan Island.</p> <p><u>Habitat:</u> Dense vegetation near fresh or brackish ponds.</p> <p><u>Features:</u> U.S. endangered species. Japanese plume hunters killed duck for food. Hunted for sport and food.</p> <p><u>Life history:</u> Nest a shallow bowl under bush. Eggs (4-6) pale green. Extended breeding season from at least late Feb. into July. Little is known of this species breeding biology. Because of the dense vegetation inhabited by the chicks and their nocturnal habits, no accurate account of the birds has been made.</p> <p><u>Food:</u> Lepidopterous insects; cutworm larvae of noctuid moths, fly and beetle larvae; Neoscatella flies and crustaceans. Adapted to drink sea water.</p> <p><u>References:</u> 9, 25, 77, 147, 175, 229.</p>
Tern, California least <u>Sterna albifrons browni</u>	<p><u>Provinces (Sections):</u> M2620.</p> <p><u>Distribution:</u> Breeds from Mexican border to Monterey. Specific habitats located at Seal Beach Naval Weapons Station, U.S. Marine Base at Camp Pendleton, near Oceanside, and Least Tern Sanctuary, Long Beach.</p> <p><u>Habitat:</u> Sea beaches, reefs, coastal waters, specifically a narrow strip of sparsely vegetated sand, interspersed with sea cliffs, and rocky beaches.</p> <p><u>Features:</u> U.S. endangered species. Decline due to development of beaches. The U.S. Marine Base has created a sanctuary and preserved the habitat.</p> <p><u>Life history:</u> Little is known about the nesting of this species. It nests in colonies. No real nest, but a scrape in the sand. Very timid birds and are easily disrupted. Eggs (2-3) buff, spotted.</p> <p><u>Cover:</u> Sand verbena, sand strawberry.</p> <p><u>Food:</u> Sand crabs, marine worms, crustaceans.</p> <p><u>References:</u> 10, 19, 175, 229.</p>
Thrush, large Kauai (Amaui, kamao, kamau, olomau) <u>Phaeornis obscurus myadestina</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Developed races on all of the main islands except Maui. Now considered to be subspecies or races of one species. Found only within the depth of the Alakai Swamp region. Very rare; perhaps no more than a few hundred birds exist. Endemic to Kauai.</p> <p><u>Habitat:</u> Mountains, forests, alpine scrub (Mauna Loa).</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Unknown</p> <p><u>Food:</u> Lapalapa berries, seeds, insects.</p> <p><u>References:</u> 9, 25, 147, 175, 229, 230.</p>
Thrush, small Kauai (Puaiohi) <u>Phaeornis palmeri</u>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Found only in the ohia forests in the Alakai Swamp region of Kauai. Few in number, localized in distribution. Remaining population probably less than 100. Nearly extinct.</p> <p><u>Habitat:</u> Frequents underbrush and smaller sized forest trees.</p> <p><u>Features:</u> U.S. endangered species.</p>

continued

Table 65.6 (Continued)

Species	Ecological characteristics
Small Kauai thrush (Continued)	<p><u>Life history:</u> Nesting habits unknown. Eggs vary from pale greenish blue to pale grayish green with large reddish brown splotches and smaller spots scattered irregularly over the entire surface of the shells.</p> <p><u>Food:</u> Weevils, spiders, caterpillars; berries.</p> <p><u>References:</u> 9, 25, 147, 175, 229.</p>
Thrush, Molokai (Amaui, olomau) <i>Phaeornis obscurus rutha</i>	<p><u>Provinces (Sections):</u> M4210.</p> <p><u>Distribution:</u> Endemic to Molokai, in small numbers.</p> <p><u>Habitat:</u> Frequents low trees of the Molokai forests.</p> <p><u>Features:</u> U.S. endangered species; last sighting was in 1967.</p> <p><u>Life history:</u> No active nest with eggs or young has ever been described for the Molokai race.</p> <p><u>Food:</u> Insects, berries.</p> <p><u>References:</u> 9, 25, 147, 175, 229.</p>
Turkey, wild <i>Meleagris gallopavo</i>	<p><u>Provinces (Sections):</u> East: 2210 (2211, 2214, 2215), 2310, 2320, 2510. West: 2410, 3110, 3120, 3130, M2410, M2620, M3110, M3120, A3140.</p> <p><u>Distribution:</u> Central CO, south locally through eastern AZ, NM, western TX; introduced in HI, southeastern WA, central CA, southern UT, MT, WY, northern CO, Black Hills; southern woodlands north to PA, eastern KY, southeastern MO.</p> <p><u>Habitat:</u> Mountain forests, broken woodlands, mostly in hilly or mountainous regions. Distribution depends largely upon food supply from oak, nut-bearing trees.</p> <p><u>Features:</u> Gamebird; aesthetic. Propagation by state conservation agencies has done much to stabilize turkey population.</p> <p><u>Life history:</u> Nest in dry ground, a simple depression in dead leaves in forested area, often under a log or concealing bush or at base of tree; lining almost entirely of leaves gathered nearby. Eggs (8-15, sometimes 18, 20 or more) short-oval to long-oval; shell smooth, little or no gloss; pale buff or buffy-white, evenly marked by female, 28 days. One brood. Male polygamous. Does not migrate. Subject to seasonal shifts, according to food availability and snow depth. Life span 8-12 yrs.</p> <p><u>Special notes:</u> Predators include skunk, crow, raccoon, opossum, ring-tails, fox, snakes, bobcat, great horned owl, eagle. Cold rains are worst enemy because of the mortality they cause among the ponets.</p> <p><u>Cover:</u> VA, southeast: Persimmon, dogwood, sumac, hawthorn, sassafras, huckleberry, blueberry, wild grape, viburnum, poison ivy, Japanese honeysuckle, greenbrier, <i>Rubus</i> spp., crabgrass, panic-grass, holly, wax-myrtle, hawkweed, club mosses, smilax, bullgrass, Solomon's-seal.</p> <p>GA, AL: Ironwood, holly, persimmon, gallberry, myrtle, gooseberry, sparkleberry, wild grapes, Virginia willow.</p> <p><u>Food:</u> Beetles, grasshoppers, crickets, walking sticks, ants, wasps, bees, flies, crayfish, spiders, snails, millipedes, centipedes, caterpillars, true bugs, salamanders. Seeds and wild fruits, particularly fond of nuts, acorns and beech nuts.</p> <p>PA: Oak, grass leaf, wild grape, huckleberry, flowering dogwood, wheat, corn, grape fern, crabgrass, viburnum, blueberry, bristle-grass, sedge, sassafras, sheep-sorrel.</p> <p>Allegheny Mountains: Grape, oak, crabgrass, blackberry, dogwood, bluegrass, buttercup, bristlegrass, corn, wheat, ash, greenbrier, eupatorium, poison ivy, blackgum, nimblewill, muhly, blueberry, persimmon, vetch.</p> <p>VA: Oak, dogwood, corn, grape, beech, blackgum, poison ivy, green-brier fruit and leaf, Korean lespedeza, panic-grass, ash, Japanese honeysuckle, peanut, eupatorium, goldaster, partridge-berry, sedge, persimmon, blueberry, grape fern.</p>

continued

Table 65.6 (Concluded)

Species	Ecological characteristics
Wild turkey (Continued)	<p><u>Food (Continued):</u> Southeast: Oak, dogwood, greenbrier seed and leaf, blackgum, beech, oats, chufa tuber, hickory, holly, pine, poison ivy, jack-in-the-pulpit, goldaster, partridge-berry, rice, bayberry, grape, corn.</p> <p>MO: Crabgrass seed and leaf, oak, paspalum, panic-grass, dogwood, chufa, clover, buttercup, lespedeza, bristlegrass, blackberry, hackberry, blueberry, pine, cherry, beggarweed.</p> <p>TX: Oak, sorghum, sumac, elm, oats, cedar, hackberry, triodia, dropseed, zexmenia, prickly pear, Ozarkgrass, blue-eyed grass, panic-grass, bristlegrass, corn, locoweed, nimblewill, muhly, wheat, broomsedge.</p> <p>AZ and NM: Pine, oak, ragweed, goldeneye, muhly, dropseed, grama grass, fescue grass, filaree leaf, eriogonum, peavine, brome, dandelion, barley, oats, cedar, silk-tassel, lupine.</p> <p><u>References:</u> 14, 15, 38, 63, 81, 92, 100, 116, 122, 124, 127, 142, 149, 151, 152, 156, 161, 164, 167, 168, 174, 175, 182, 194, 215, 217, 224, 226, 254.</p>
Vulture, turkey <u>Cathartes aura</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510, 2520, 2530, 4110.</p> <p>West: 2410, 2610, 3110, 3120, 3130, 3140, 3210, 3220, M2110, M2410, M2610, M2620, M3110, M3120, P3130, A3140.</p> <p><u>Distribution:</u> Southern British Columbia, Alberta, Saskatchewan to Mexico; Gulf of Mexico north to western CT, western NY, and northern MN.</p> <p><u>Habitat:</u> Remote areas generally inaccessible to predators, precipitous cliffs, caves, hollow stumps or logs, dense shrubbery; saw palmetto (<i>Serenoa repens</i>) thickets favored in FL.</p> <p><u>Features:</u> Beneficial species; health protector in warm latitudes where it exists on carrion.</p> <p><u>Life history:</u> Nests in caves, a cavity between rocks, in hollow logs, or on the ground. Eggs (2, rarely 1 or 3) white or creamy, spotted with lavender or purplish brown blotches. Eggs laid Feb. to June. Incubation by both sexes, 38-41 days.</p> <p><u>Food:</u> 99% carrion, 1% miscellaneous snakes, toads, rats, mice and occasionally young birds.</p> <p><u>References:</u> 23, 76, 80, 148, 175.</p>
Woodpecker, pileated <u>Dryocopus pileatus</u>	<p><u>Provinces (Sections):</u> East: 2110, 2210, 2310, 2320, 2510.</p> <p>West: M2110, M2410.</p> <p><u>Distribution:</u> Resident from northern British Columbia through Pacific States to central CA; on coast; south in northern Rockies to ID, western MT, also east of Rockies across wooded Canada; FL and Gulf of Mexico to DE, Lake Erie, southeastern MN and southeastern SD.</p> <p><u>Habitat:</u> Mature coniferous, deciduous forests, large tracts of mixed woodlands.</p> <p><u>Features:</u> Uncommon, unique, aesthetic; endangered in ND.</p> <p><u>Life history:</u> A new hole excavated annually for each brood; in same nest area, often in dead stub. Both sexes build; no nest material brought in. Entrance hole sometimes circular, but tends to be oval or triangular, peaked above, level below. Eggs (3-4) oval to elliptical, some quite pointed. Shell smooth, glossy, china-white. Incubation by both sexes, 18 days. One brood.</p> <p><u>Food:</u> Ants 50% of animal diet; also beetles, particularly the larvae of woodboring species.</p> <p>East: (vegetable matter): Grape, black gum, Virginia creeper, sassafras, holly, dogwood, greenbrier, viburnum, poison ivy, palmetto.</p> <p>OR (vegetable matter): Elderberry, cascara buckthorn, western choke-cherry.</p> <p><u>References:</u> 76, 124, 174, 227.</p>

Table 65.7 Ecological Characteristics of Selected Amphibians and Reptiles of the Western United States

Species	Ecological characteristics
Lizard, blunt-nosed leopard <u>Crotaphytus silus</u>	<p>Provinces (Sections): M2620.</p> <p><u>Distribution:</u> Scattered in San Joaquin Valley and south in CA.</p> <p><u>Habitat:</u> Sparsely vegetated plains, flats, foothills, grasslands. Avoids tall grass.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Mate Apr.-May. Eggs (2-5) laid in June-July. Incubation about 60 days.</p> <p><u>Special notes:</u> Preservation of present habitat essential.</p> <p><u>Cover:</u> Cacti, thorny shrubs.</p> <p><u>Food:</u> Insects.</p> <p><u>References:</u> 1, 11, 58, 92, 152.</p>
Salamander, Santa Cruz long-toed <u>Ambystoma macrodactylum croceum</u>	<p>Provinces (Sections): M2620.</p> <p><u>Distribution:</u> Only three known locations: Near Aptos and near Watsonville in Santa Cruz County, CA and in Monterey County.</p> <p><u>Habitat:</u> Shallow ponds. Stay in animal burrows in wooded areas in dry months.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Breeds in winter. Eggs laid in shallow bottom of pond or in grass at edge. Eggs hatch in larvae in 5-15 days.</p> <p><u>Special notes:</u> Two of the locations are threatened with loss of habitat. Watsonville location is presently undisturbed.</p> <p><u>Cover:</u> Near water; moist animal burrows and under rocks in wooded areas of oak, redwood, madrone, Douglas-fir, <u>Corylus</u> and <u>Rhamnus</u>.</p> <p><u>Food:</u> Insects, aquatic invertebrates.</p> <p><u>References:</u> 11, 58, 92, 153, 157.</p>
Salamander, desert slender <u>Batrachoseps aridus</u>	<p>Provinces (Sections): 3220 (3222).</p> <p><u>Distribution:</u> Known only from 10 mi south of Palm Desert, Riverside County, CA.</p> <p><u>Habitat:</u> Crevices between limestone sheets along the base of cliffs where continuous water seepage occurs.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Eggs develop in female in spring. Egg laying keyed to rainy season (fall).</p> <p><u>Special notes:</u> Its habitat has been set aside as Hidden Palm Ecological Reserve by California Fish and Game Commission.</p> <p><u>Cover:</u> Crevices in limestone cliffs; sometimes under rocks.</p> <p><u>Food:</u> Insects, earthworms.</p> <p><u>References:</u> 1, 11, 58, 92.</p>
Snake, San Francisco garter <u>Thamnophis sirtalis tetrataenia</u>	<p>Provinces (Sections): M2410 (M2412, M2414).</p> <p><u>Distribution:</u> South of San Francisco Bay in San Mateo County.</p> <p><u>Habitat:</u> Vegetation around ponds, lakes, marshes.</p> <p><u>Features:</u> U.S. endangered species.</p> <p><u>Life history:</u> Live-bearers. Young (3-85) usually 12-24.</p> <p><u>Special notes:</u> Preserve habitat.</p> <p><u>Cover:</u> Marsh vegetation. Will try to dive underwater when threatened. Away from water they attempt to hide in holes among shrub roots.</p> <p><u>Food:</u> Earthworms, frogs, insects, spiders.</p> <p><u>References:</u> 1, 11, 58, 92, 151.</p>

BIRD NESTING HABITAT TABLE

Species omitted from the Bird Nesting Table (65.8) are those with unusual breeding habitats not usually encountered or easily managed on transmission line ROWs (i.e., cliffs, open water, ocean coasts, manmade

structures, etc.). Because of the large number of birds covered and their migratory nature, the species were categorized according to nesting habits. The Nesting Habitat Table gives the common name, scientific name, primary breeding range, and general habitat and nest descriptions.

Table 65.8 Nesting Habitats and Ranges of Selected Bird Species

Species	Primary breeding range	Habitat description
Nesting type: Ground nesting birds/fields, grasslands, pastures, tundra		
Bobolink <u>Dolichonyx oryzivorus</u>	Southern Canada, eastern WA; eastern OR to northeastern CA; northern NV, northern UT, central CO, central NE, northeastern KS, northern MO, central IL, south-central ID, southwestern and central OH, northern WV, western MD, PA and central NJ.	Open fields, meadows; nest: Hollow in grasses, weeds.
Bunting, lark <u>Calamospiza melanocorys</u>	Southern AB, southern SK, southwestern MB; southeastern ND, southwestern MN; south to south-central MT, and east of the Rocky Mountains to southeastern NM, northern TX, western OK, and south-central and central KS; also locally in UT and CO.	Plains, prairies; nest: Loose cup on ground.
Bunting, McKay's <u>Plectrophenax hyperboreus</u>	AK.	Tundra, shores; nest: On ground under logs, hollows.
Bunting, snow <u>Plectrophenax nivalis</u>	AK.	Tundra, prairies, fields; nest: Hollow on ground.
Curlew, long-billed <u>Numenius americanus</u>	Southern BC, AB, SK, and MB, south to UT, NM, and TX.	High plains, rangeland; nest: Hollow on open prairie.
Dickcissel <u>Spiza americana</u>	Southern MB, eastern MT, southeastern ND, northwestern and central MN, northern WI, southern MI; southern ON, central NY and MA; south to central CO, western OK, TX, southern LA, central MS, central AL, central GA, and SC; east to central MD.	Meadows, hayfields, prairies; nest: Ground.
Killdeer <u>Charadrius vociferus</u>	Northwestern BC, southern Mac., northeastern MB, western ON, southern PQ, and NB south to southeastern Mexico, southern TX; Gulf Coast of U.S. to central FL.	Fields, lawns, shores; nest: Bare ground, gravel, shores, roadways, bald spots in pastures, fields.
Lark, horned <u>Eremophila alpestris</u>	Breeds from Arctic south to NC, WV; MD, KS; also coast of TX, and throughout West.	Grasslands, meadows, prairies, parklands; nest: On ground in grass hollow.
Longspur, chestnut-collared <u>Calcarius ornatus</u>	Southern AB, southern SK, and southern MB, south to northeastern CO, central NE, and southwestern MN.	Plains, prairies; nest: Depression in ground.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/fields, grasslands, pastures, tundra (Continued)</u>		
Longspur, Lapland <u>Calcarius lapponicus</u>	From southwestern, western and northern AK to northern YT northwestern Mac.	Tundra, fields, prairies; nest: Depression in ground.
Longspur, McCown's <u>Rhynchophanes</u> <u>mccownii</u>	Southern AB, southern SK, southwestern MB and western ND, south to south central WY, northeastern CO, northwestern NE and central SD.	Plains, prairies; nest: Grassy hollow.
Longspur, Smith's <u>Calcarius pictus</u>	Western AK, northern YT, northern Mac., northern MB and northern ON.	Tundra, prairies; nest: Grassy hollow.
Meadowlark, eastern <u>Sturnella magna</u>	NB, southern PQ through eastern MN; south to FL and southern TX; west to NE, KS, SD, AZ, and central NM.	Prairies; nest: Depression in ground.
Meadowlark, western <u>Sturnella neglecta</u>	Central BC, central AB, central SK, southern MB, south throughout West to central TX; east to WI, IL.	Prairies; nest: Depression in ground.
Nighthawk, common <u>Chordeiles minor</u>	NF, southern PQ, and northern MB south to Florida Keys and Gulf of Mexico; breeds in West from southern YT, south to mountains of southern CA, southern AZ, southern NM and western TX.	Sparsely vegetated areas; no nest, bare ground or gravel.
Nighthawk, lesser <u>Chordeiles acutipennis</u>	From central CA, southern NV, southwestern UT, western and central AZ, southern NM, southwestern and southern TX; south to Baja CA and Mexico.	Dry grassland, fields, prairie, desert; nest: None, bare ground.
Pipit, Sprague's <u>Anthus spragueii</u>	Northern AB, central SK, central MB, south to MT, ND, northwestern MN.	Plains, short-grass prairies; nest: Grass.
Pipit, water <u>Anthus spinoletta</u>	Northern AK, northern Mac., south to northern OR, northern AZ, and NM.	Tundra, bare fields, shores; nest: Grass.
Sandpiper, spotted <u>Actitis macularia</u>	Northwestern AK, south to mountains of southern CA, southern NV, central AZ, northern NM, central TX, central MS, northern AL, western NC, VA, and eastern MD.	Open terrain, prairies, fields, pastures, edges of ponds, lakes; nest: Depression under weeds, grass, brush.
Sandpiper, upland <u>Bartramia longicauda</u>	From southern AK to central MN, central WI, central MI, central ME; south to eastern WA, northeastern OR, ID, southern MT, northern UT, southwestern WY, central CO, northwestern OK, north-central TX, central MO, southern IL, southern IN, southern OH, central TN, northeastern WV, central VA, MD.	Inland pastures, hayfields, open territory; nest: Depression in thick grass.
Skylark <u>Alauda arvensis</u>	Vancouver and HI islands.	Farm fields, pastures; nest: Grass hollow.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/fields, grasslands, pastures, tundra (Continued)</u>		
Sparrow, Baird's <u>Ammodramus bairdii</u>	Southern AB, southern SK, southern MB, south to MT, northwestern and central SD, eastern ND and central-western MN.	Prairies; nest: On ground in grass.
Sparrow, field <u>Spizella pusilla</u>	Northwestern MT, northern ND, central MN, northern WI, north-central MI, southern ON, southwestern PQ, and southern ME, south to central TX, LA, southern MS, and southern GA.	Brushy pastures, clearings, meadows, woodland edge, brair thickets; nest: On ground.
Sparrow, grasshopper <u>Ammodramus savannarum</u>	Southern BC, southern AB, southern SK, south, locally to southern CA, southeastern AZ, CO, northern TX. In East breeds from southern NH through southern ON, MN and ND; South to northern GA, southern LA, and TX; also central FL prairies.	Grasslands, meadows, prairies, hay-fields, no shrubby fields; nest: Depression in ground.
Sparrow, Henslow's <u>Ammodramus henslowii</u>	Southern NH, NY; southern ON, south to northern NC, WV, and northern TX.	Weedy fields, wet meadows, grassland, salt marsh, borders; nest: On ground.
Sparrow, lark <u>Chondestes grammacus</u>	Southern ON, MN, and southern SK, south to TX and LA. East to OH. Northwestern WV; in west from southern edge of Canada, throughout Western U.S.	Prairies, weedy fields, pastures; nest: Depression in ground, eroded areas.
Sparrow, LeConte's <u>Ammodramus lecontei</u>	Breeds east of Rockies from north-eastern BC, southern Mac., south to northern MT, ND, southern MN; casual in UT, CO, NM, TX Panhandle.	Grassy meadows, prairies, marsh borders; nest: Beneath tangle of rushes, grass, slightly above ground.
Sparrow, savannah <u>Passerculus sandwichensis</u>	From LB and Hudson Bay south to northern IA, northern IN, PA, IL, and NJ coast. Breeds in West from Arctic south along coast to San Diego; in interior to eastern CA, southern AZ, NM, western NE.	Meadows, prairies, hayfields, bays, shores, salt marshes, barrier beaches.
Sparrow, vesper <u>Poocetes gramineus</u>	Southern SK, central ON, Gulf of St. Lawrence south to NC, KY, MO and NE. Breeds in West from central BC, southwestern Mac., south to OR, central-eastern CA, central AZ, central NM, western NE.	Open dry uplands, short-grass pastures, meadows, prairies; nest: Depression on ground.
<u>Nesting type: Ground nesting birds/late succession types</u>		
Bluethroat <u>Luscinia svecica</u>	Coast of northern AK.	Dwarf willow, thick brush; nest: Ground.
Oriole, hooded <u>Icterus cucullatus</u>	Central CA, southern NV, central-southeastern AZ, southern NM, southwestern TX; south to Baja, CA.	Open woodlands, thickets, palms, shade trees; nest: Under trees, Spanish moss.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/late succession types (Continued)</u>		
Paurague <u>Nyctidromus albigollis</u>	From lower Rio Grande Valley to southern Gulf Coast of TX.	Woodland, brush, river thickets, prairies; nest: Bare ground.
Poor-will <u>Phalaenoptilus nuttallii</u>	From southern BC, southeastern MT, northwestern SD, NE, and southwestern IA; south on Pacific Coast from central CA to southern Baja and through eastern KS and central TX to central Mexico.	Brush, open pinyon, juniper hills; nest: Bare ground.
Sparrow, Botteri's <u>Aimophila botterii</u>	Southeastern AZ, and southern TX. South through Mexico.	Brushy coastal prairie, desert grass; nest: On ground.
Sparrow, Brewer's <u>Spizella breweri</u>	Southwestern YT, northwestern BC, central-western AB, southwestern SK, and southwestern ND. South to southern CA, central AZ, northwestern NM.	Sagebrush, brushy plains; nest: On ground in sagebrush.
Sparrow, Cassin's <u>Aimophila cassinii</u>	Southeastern AZ, southwestern NM, central CO, central-western KS, western OK, and central and western TX. South to Mexico.	Arid grassy bushes; nest: Cup on ground.
Sparrow, clay-colored <u>Spizella pallida</u>	Northeastern BC, central-southern Mac., central SK, central MB, western ON, and northern MI; south to southwestern AB, south-central MT, southeastern WY, southeastern CO, southern NE, northern IA, southern WI, central MI, southern ON. Sparsely western-central BC and southern-northern TX.	Prairies, woodland openings, brushy fields, pasture lands.
Sparrow, field <u>Spizella pusilla</u>	Northwestern MT, northern ND, central MN, northern WI, north-central MI, southern ON, southwestern PQ, and southern ME, south to central TX, LA, southern MS, and southern GA.	Brushy pastures, clearings, meadows, woodland edge, briar thickets; nest: On ground.
Sparrow, fox <u>Passerella iliaca</u>	Northern AK, northwestern and eastern-central Mac., northern MB, northern ON, northern PQ and northern LB; south on the Pacific Coast to northwestern WA; in the mountains to southern CA, central WV, central MT, and central CO. and to central AB, central SK, southern MB, central ON, southern PQ, and NF.	Stunted boreal woodlands, chaparral, forest underground; nest: On ground, bush.
Sparrow, golden-crowned <u>Zonotrichia atricapilla</u>	Western coastal AK, south-central YT, south to southeastern AK, southern BC, southwestern AB, and in the Cascade Mountains to extreme northern WA.	Boreal scrub, spruce; nest: In bush, ground.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/late succession types (Continued)</u>		
Sparrow, rufous-crowned <u>Aimophila ruficeps</u>	Central CA, central AZ, southwestern NM, southeastern CO and northwestern and central OK; South discontinuously to southern Baja and Mexico.	Grassy slopes, low bushes; nest: Ground.
Sparrow, song <u>Melospiza melodia</u>	Southern AK, southern YT, southern Mac., northern SK, northern MB, northern ON, central PQ, and NF; south to south-central Baja and Mexico and to northern NM, north-eastern KS, northern AR, south-eastern TN, northern GA, and northwestern SC.	Roadsides, brushy fields, thickets, swamps, woodland edges; nest: Ground in grass, brush pile, or in bush low trees.
Sparrow, white-crowned <u>Zonotrichia leucophrys</u>	Northern AK, northern YT, north-western and east-central Mac., central Kee., north-central MN, northern ON, north-southeastern PQ, LB, and northern NF; south to south-central CA, NV, central AZ, northern NM.	Low brush, mountain thickets, boreal scrub; nest: In bush, ground.
Thrasher, brown <u>Toxostoma rufum</u>	Southeastern AB, southern SK, southern MB, western ON, northern MN, northern MI, southern ON, southwestern PQ, northern UT, central NH, and southwestern ME; south through central MT, eastern WY, eastern CO, and northern and eastern TX to the Gulf Coast and southern FL.	Thickets, brushfields, hedgerows, woodland borders; nest: Up to 15 ft in tree, shrub, vine.
Wagtail, yellow <u>Motacilla flava</u>	Northern AK.	Willow scrub on tundra; nest: On ground, base of shrub.
Warbler, Arctic <u>Phylloscopus borealis</u>	AK.	Willow scrub; nest: Cup on ground, base of shrub.
Warbler, blue-winged <u>Vermivora pinus</u>	Central NE, central IA, south-eastern MN, southern WI, southern MI, northern OH, northwestern PA, western and southeastern NY, and southeastern MA; south to north-western AR, central MO, southern IL, central TN, northern AL, northern GA, NC, northern VA, central and northeastern MD and DE.	Overgrown pastures, woodland edges, swamps, stream edges.
Warbler, golden-winged <u>Vermivora chrysoptera</u>	From southeastern MN, central-eastern MN, north-central WI, northern MI, southern ON, western and central NY, southern CT, and eastern MA; south to southeastern IA, northern IL, northern ID, southern OH, eastern TN, northern GA, northwestern SC, central MD, and southeastern PA.	Brushy fields, overgrown pastures, woodland edges, hillside thickets.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/late succession types (Continued)</u>		
Warbler, MacGillivray's <u>Oporornis tolmiei</u>	Southern AK, southwestern YT, northeastern BC, central AB and southwestern SK south to central CA, central AZ, and central NM.	Low dense undergrowth, thickets; nest: Low bush or weeds.
Warbler, mourning <u>Oporornis philadelphia</u>	Central AB, central SK, central MB, northern ON, southern PQ and NF south to northeastern ND, northwestern and central MN, central WI, northeastern IL, southern MI, northern OH, northeastern PA, southeastern NY, northwestern and central MA, central NH, southern ME, and central NS, and through the higher Appalachian Mountains to eastern WV, and northwestern VA.	Slashings, brushy clearings, tangles, swampy thickets.
Warbler, orange-crowned <u>Vermivora celata</u>	Central AK, northwestern and central Mac., northern MB, northern ON, and northwestern PQ, south to northwestern BAja, southeastern AZ, western TX; also southeastern SK, southern MB, and western and central ON.	Brushy clearings, undergrowth, chaparral; nest: On ground or low shrub.
Warbler, Virginia's <u>Vermivora virginiae</u>	Central NV, southeastern ID, northeastern UT, central-northern CO south to southeastern CA, southern NV, central and southern AZ and central NM.	Oak canyons, brushy slopes, pinyons; nest: Ground under grass, brush.
<u>Nesting type: Ground nesting birds/woodland edge</u>		
Chuck-will's-widow <u>Caprimulgus carolinensis</u>	Eastern KS, MI, southern IL, southern ID, southern OH, southern MD, and southern NJ. South to central TX, southern LA, southern MS, southern AL, southern FL; casual north of breeding range to IA, IN, ON, CT, MA, NB and NS.	Oak pine woods, edges, clearings, roadsides; nest: No nest, bare ground.
Flycatcher, yellow-bellied <u>Empidonax flaviventris</u>	Northern BC, northern AB, southern Mac., central SK, central MB, northern ON, central PQ, southern LB and NF south to northern ND, northern MN, northern WI, southern ON, northeastern PA and NY.	Coniferous forests, forest bogs, muskeg, alder swamps; nest: In moss, cavity in roots or at base of tree.
Junco, dark-eyed <u>Junco hyemalis</u>	Transcontinental boreal forests from northwestern AK to LB, south to northern and northeastern BC, central MN, WI, central MI, southern ON, NY and CT and through the Appalachian Mountains to western GA.	Coniferous and mixed forests, edges; nest: Slopes, roadsides, tree roots, fallen trees; sometimes in trees up to 8 ft above ground.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/woodland edge (Continued)</u>		
Junco, Oregon (now the same as dark-eyed junco)	Southeastern AK, central BC, WC and southern AB, southwestern SK, south-central coastal CA and the mountains of northern Baja, CA, western NV, northeastern OR, southern ID and northwestern WY.	Coniferous and mixed forests, roadsides, brush; nest: On ground in woods.
Junco, white-winged (now the same as dark-eyed junco)	Southeastern MT, western SD south to northeastern WY and northwestern NE.	Open pine forests.
Junco, gray-headed <u>Junco caniceps</u>	Northeastern NV, northern VT and southern WY, south to central AZ, southern NM and western TX.	Mountain forests; nest: Grassy clump on ground.
Junco, yellow-eyed (formerly Mexican Junco) <u>Junco phaeonotus</u>	Southeastern AZ, southwestern NM.	Coniferous forests, tall pine-oak woods; nest: On ground under log, stumps.
Oriole, hooded <u>Icterus cucullatus</u>	Central CA, southern NV, central- southeastern AZ, southern NM, southwestern TX; south to Baja, CA.	Open woodlands, thickets, palms, shade trees; nest: Under trees, Spanish moss.
Ovenbird <u>Seiurus aurocapillus</u>	Northeastern BC, south-central Mac., central SK, central MB, northern ON, southern PQ and NF, south to southern AB, eastern CO, southeastern OK, northern AR, northern AL, and northern GA.	Deciduous forest floors, low underbrush; nest: Depression in leaves.
Redstart, painted <u>Myioborus pictus</u>	Northwestern-north-central AZ, southwestern NM, western TX, south through highlands of Mexico.	Oak canyons, pine-oak forests in mountains; nest: In grassy clumps on ground, steep banks.
Sparrow, song <u>Melospiza melodia</u>	Southern AK, southern YT, southern Mac., northern SK, northern MB, northern ON, central PQ, and NF; south to south-central Baja and Mexico and to northern NM, north- eastern KS, northern AR, south- eastern TN, northern GA, and northwestern SC.	Roadsides, brushy fields, thickets, swamps, woodland edges; nest: Ground in grass, brush pile, or in bush low trees.
Sparrow, white-throated <u>Zonotrichia albicollis</u>	Southern YT, central Mac., north- ern MB, northern ON, west-central and southeastern PQ, southern LB, northern NF, south to central BC, central AB, southern SK, north- central ND, central MN, northern WI, central MI, northern OH, north- ern WV, northeastern PA, south- eastern NY, northwestern CT, south- ern NH and MA.	Edges of coniferous, deciduous forests, undergrowth; nest: On ground brush pile, under dead trees; thick cover.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/woodland edge (Continued)</u>		
Thrush, hermit <u>Catharus guttatus</u>	Central AK, southern YT, southern Mac., northwestern SK, southern MB, northern ON, central PQ, southern LB and NF; south to southern CA, northern NM, central WI, and MD.	Coniferous or mixed forests; nest: On ground hidden by small trees, brush.
Warbler, black-and-white <u>Mniotilta varia</u>	Southwestern Mac., central SK, central MB, southern ON, southern PQ and northern NF; south to north-eastern BC, central AB, eastern MT, southwestern SD, central TX, south-eastern LA, northern MS, central AL, central GA, central SC, southeastern NC.	Deciduous woods, prefers hillsides, ravines.
Warbler, Canada <u>Wilsonia canadensis</u>	North-central Ab, central SK, central MB, northern ON, and southern PQ; south to southern MB, central MN, northern WI, central MI, northern OH, through the Appalachian Mountains to eastern TN, northwestern GA, western NC, western VA, western MD, and central PA and to northern NJ, southeastern NY, CT, RI, MA, ME, and NB.	Woodland undergrowth, swamps, brushland, ravines, thickets; nest: Uprturned tree, rotted log, or on moss.
Warbler, Colima <u>Vermivora crissalis</u>	Southwestern TX, south through the Sierra Madre in Mexico.	Small oaks, maples, and pines in canyons; nest: Dead leaves on ground.
Warbler, Kentucky <u>Oporornis formosus</u>	Southeastern NE, central IA, southwestern WI, northeastern IL, central IN, central and eastern OH, southern PA, northern NJ, southeastern NY, and southwestern CT; south to central TX, southern LA, southern MS, southern AL, north-western FL, central GA, and SC.	Deciduous woodlands, thickets, moist shady ravines; nest: Near shrubs, on ground, well concealed.
Warbler, Nashville <u>Vermivora ruficapilla</u>	Southern BC, in West south to central CA and northern UT; in East southern SK, southern MB, central ON, southern PQ, and NS; south to southern MN, northern IL, southern MI, northern OH, north-eastern WV, western MD, and PA.	Slashings, swales, edges of bogs, mixed forest, undergrowth of forest edge.
Warbler, tropical parula <u>Parula pitiayumi</u>	Southern TX.	Woodlands with Spanish moss; nest: In Spanish moss.
Warbler, red-faced <u>Cardellina rubrifrons</u>	Central AZ (Oak Creek Canyon), southwestern NM (Mogallan and Magdalena Mountains), south in mountains at least to Mexico.	Open forests, mountains; nest: On ground under trees, in grass clumps.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Ground nesting birds/woodland edge (Continued)</u>		
Warbler, worm-eating <u>Helminthos vermivorus</u>	Northeastern KS, southeastern IA, northern IL, southern IN, south-central OH, southwestern-central PA, central and southeastern NY, southern CT and western MA; south to northeastern TX, central AR, south-central LA, western TN, northern AL, northern GA, northwestern, south-central, and northeastern NC.	Deciduous forests, brushy hillsides.
Whip-poor-will <u>Caprimulgus vociferus</u>	Central AZ, southern NM, southwestern TX; from central SK, southern MB, western-southern ON, southern PQ, NB and NS south through Mexico and Central America.	Open woods, mixed growth, prefers young hardwoods, rather than mature; nest: No nest, bare ground.
<u>Nesting type: Shrub, small tree nesting birds</u>		
Ani, smooth-billed <u>Crotophaga ani</u>	FL; (casual in LA; accidental in NJ and NC).	Roadsides, thickets, low overgrown marshes, pastures; nest: Trees or dense shrub.
Blackbird, rusty <u>Euphagus carolinus</u>	Northern AK, northern YT, northwestern-central Mac., northern MB, northern ON, northern PQ, central LB and NF; south to central AK, central BC, south-central AB, central SK, central MB, southern ON, northeastern NY, northern VT, northern NH, central ME, southern NB and NS.	Tree bordered marshes, swampy woodlands, muskegs, thick growth of spruce, balsam; also in deciduous bushes in marshes along stream borders.
Bunting, indigo <u>Passerina cyanea</u>	Southwestern SD, southern MB, northern NM, western-southern ON, southern PQ, southern ME, southern NB, south to western KS, western OK, south-central and southeastern TX, southern LA, southern AL, northern FL; sporadically in CO and AZ.	Old fields, brush edges, clearing, scrubby thickets; nest: Low bush, tree, brambles.
Bunting, lazuli <u>Passerina amoena</u>	Southern BC, northwestern-central MT, southern SK, central ND, northeastern SD, south to northwestern Baja CA, southeastern CA, southern NV, southwestern UT, central AZ, northern NM, western OK, east to east-central NE and western KS.	Sage, broken brushy slopes, briars, burns, streamsides.
Bunting, painted <u>Passerina ciris</u>	Southern NM, central OK, central KS, southern MO, southwestern TN, southeastern NC; south to southern Mexico, southern TX; the Gulf Coast to central FL.	Towns, thickets, bushy fields, roadsides, bushes, trees 3-6 ft.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Bunting, varied <u>Passerina versicolor</u>	Southern Baja, CA, central-southern AZ, southern Chihuahua and south-western TX south to Guerrero to Daxaca.	Streamsides, thickets, brush.
Bushtit <u>Psaltiriparus minimus</u>	Southwestern BC south along Coast ranges to southern Baja, CA, in the interior from southern and southeastern OR, southwestern ID, north-central UT, western CO, southern NM, western OK, western TX south to Guatemala.	Oaks, junipers, pines. Oak scrub, chaparral, broad-leaved and mixed woods; nest: Pinyon, junipers.
Cardinal <u>Cardinalis cardinalis</u>	Southeastern SD, central MN, western-southern ON, western NY, southwestern CT; south through central and eastern U.S. to the Gulf Coast to southern FL, and from southeastern CA, central AZ, southern NM, and northern TX south through Mexico to southern Baja, CA, and Mexico.	Thickets, forest edges, groves, gardens; nest: In bush or thicket.
Catbird, gray <u>Dumetella carolinensis</u>	Southern BC, central AB, central SK, southern MB, western ON, northern WI, southern ON, southern PQ, NB, and NS, south through northeastern WA, eastern OR, to north-central UT, central-eastern AZ, central-northern NM, western OK, TX, central LA, central MS, central AL, southern GA; rarely to southern FL.	Woodland undergrowth, brush; nest: Bush, tangle.
Chat, yellow-breasted <u>Icteria virens</u>	Southern BC, southern AB, southern SK, ND, southern MN, southern WI, southern MI, southern ON, central NY, southern VT, southern NH, south to south-central Baja, CA, Mexico, the Gulf Coast to northern FL.	Woodland edges, pastures, thick shrubbery, briar thickets.
Cowbird, brown-headed <u>Molothrus ater</u>	Central-northeastern BC, central-southern Mac., central SK, southern MB, central ON, southwestern-central PQ, NB, southern NS; south to northern Baja, Ca, Mexico, LA, southern MS, to SC.	Farmlands, open deciduous forest, edges. Builds no nest.
Cuckoo, black-billed <u>Coccyzus erythrophthalmus</u>	Southern SK, southern MB, northern MN, southern ON, southern PQ, NB, PE, and NS; south to south-eastern WY, NE, northwestern AR, eastern KS, east-central TN, NC, and SC. Possibly west to AB, western SK, western ID and CO.	Forest edges, thickets; nest: Trees 2-20 ft.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Cuckoo, yellow-billed <u>Coccyzus americanus</u>	Southern BC, ND, MN, southern ON, PQ to NB; south through Mexico and Central America to Baja, CA.	Dense thickets, open woods, roadsides, streambanks, orchards, fields; nest: Trees, shrubs.
Dove, ground <u>Columbina passerina</u>	Southern CA, central AZ, southern TX, Gulf Coast and FL north to SC and southern NC.	Open woods, farms, beaches, grasslands, brushy fields; nest: Bush, stump, on ground.
Dove, white-fronted <u>Leptotila verreauxi</u>	Western Mexico to lower Rio Grande Valley, TX, south through the tropical lowlands of Mexico.	Shady woodlands, river thickets, low brush, twigs.
Dove, white-winged <u>Zenaida asiatica</u>	From southern NV, southeastern CA, central AZ, southern NM, lower Rio Grande Valley in TX, south to Cape region of Baja, CA and through Mexico and Central America.	Rivers, woods, mesquite, groves, saquaros, desert oases, towns.
Finch, house <u>Carpodacus mexicanus</u>	Southwestern to south-central BC, central-western and southern ID, north-central and southeastern WY, and western NE south to southern Baja, CA.	Towns, open woods, ranches, coastal scrub, canyons, deserts; nest: In bush, tree, cactus, buildings.
Flycatcher, alder <u>Empidonax alnorum</u>	Central AK, central YT, northwestern Mac., northeastern AB, northern SK, northern MB, northern ON, PQ, NF and NS.	Alder thickets and low valleys or swamps; nest: Loose cuplike structure in the fork of an alder.
Flycatcher, dusky <u>Empidonax oberholseri</u>	Southern YT, northwestern and central BC, southwestern AB, southwestern SK; WY south to southern CA, southern NV, southwestern UT, central CO, central AZ, northern NM.	Mountain chaparral (Canadian zone brush) with scattered trees, in southern CA, also conifer forest; nest: Bush, low sapling.
Flycatcher, gray <u>Empidonax wrightii</u>	Central OR, southwestern ID, southwestern WY, northeastern UT, central CO, south to eastern CA, southern NV, central AZ, and west-central NM.	Sagebrush, pinyon, junipers; nest: Sagebrush, small trees.
Flycatcher, least <u>Empidonax minimus</u>	Breeds from southwestern YT, central Mac., northeastern AB, northern SK, central MB, northern ON, central PQ, PE, south to northeastern BC, MT, northeastern WY, southwestern SD, northeastern KS, southwestern MO, central IL, south-central ID, northern OH, western PA, WV, central TN, northwestern GA, western NC, western VA, western MD, southeastern PA, central NJ.	Open woodlands, old orchards, city parks, suburban gardens, shade trees.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Flycatcher, willow <u>Empidonax traillii</u>	Northern Baja, CA through MO and VA.	Willow, alder thickets, in low valleys, swamps, canyons, or high mountains meadows; brushy bogs, muskegs.
Gnatcatcher, black-tailed <u>Polioptila melanura</u>	southern CA, southern NV, central AZ, southern NM, and lower Rio Grande Valley in TX, south to Baja, CA.	Desert brush, ravines, dry washes, mesquite, sage.
Goldfinch, American <u>Carduelis tristis</u>	Southern BC, central AB, central SK, southern MB, central ON, southern PQ, PE, northern NS; south to northern Baja, CA, central UT, southern CO, central OK, northeastern TX, northern LA, northern MS, central AL, central GA, and SC.	Rivers groves, willows, poplars, orchards, roadsides, overgrown fields; nest: Bush, tree 1-33 ft above ground.
Goldfinch, Lawrence's <u>Carduelis lawrencei</u>	CA, west of Sierra NV, and in northern Baja, CA.	Open oak, oak-pine woods, dry chaparral, edges.
Grosbeak, black-headed <u>Pheucticus melanocephalus</u>	Southern BC, southern AB, southern SK, and central NE, south to Baja, CA.	Pine-oak woods, mixed forests, tall chaparral, pinyon, streamside groves, orchards.
Grosbeak, blue <u>Guiraca caerulea</u>	Central CA, southern NV, southern and eastern UT, southern CO, central SD, central MO, southern IL, southwestern KY, northern GA; east of Appalachians, southeastern PA, and southern NJ; south through Mexico and Central America to Costa Rica.	Old fields, brush edges, scrubby thickets.
Hummingbird, Allen's <u>Selasphorus sasin</u>	Southwestern OR, south along a narrow coastal strip in CA to Ventura County, east to Trinity County.	Wooded or brushy canyons, parks, gardens, mountain meadows.
Hummingbird, Anna's <u>Calypte anna</u>	CA, west of Sierra NV and southern coastal mountains from Humboldt Shasta and Tehoma Counties, south to the Sierra San Pedro Maitre and San Quinten in northwestern Baja.	Chaparrals, broken woodland gardens; nest: Bush, tree.
Hummingbird, black-chinned <u>Archilochus alexandri</u>	Southwestern BC and northwestern MT, south through western MT, central ID, western CO, NM, and south-central and southwestern TX to northern Baja.	Semi-arid country near water, semi-wooded canyons and slopes, chaparral, river groves, foothill suburbs; nest: Shrub or tree.
Hummingbird, blue-throated <u>Lampornis clemenciae</u>	Mountains of southern AZ, southwestern TX, southwestern NM south to Mexico.	Wooded streams in lower canyons of mountains.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Hummingbird, broad-billed <u>Cynanthus latirostris</u>	Western Mexico, south-central AZ, southwestern NM, southwestern TX, to southern Mexico.	Desert canyons, mountain slopes.
Hummingbird, broad-tailed <u>Selasphorus platycercus</u>	Eastern-central CA, northern NV, northern WY, eastern CO, NM, and southwestern TX to southern Mexico.	Mountain glades, high meadows, willow thickets, open undergrowth; nest: Bush, tree.
Hummingbird, buff-bellied <u>Amazilia yucatanensis</u>	Lower Rio Grande Valley in TX. South through Mexico.	Woods, thickets, flowering shrubs, citrus groves, sycamores, agaves.
Hummingbird, calliope <u>Stellula calliope</u>	Mountainous areas from central BC and southwestern AB, south through WA, OR, NV, and CA to northern Baja; east to UT and western CO.	High mountain canyons, forest glades.
Hummingbird, Costa's <u>Calypte costae</u>	Breeds from central CA, southern NV, and southwestern UT. South to the Santa Barbara, southern Baja, CA, southern AZ, southwestern NM, to Mexico.	Deserts, washes, mesas, sage scrub, arid hillsides; nest: Bush, tree.
Hummingbird, lucifer <u>Calothorax lucifer</u>	Mountain areas in eastern and central Mexico.	Arid slopes, agaves.
Hummingbird, Rivoli's <u>Eugenes fulgens</u>	Mountains of southern AZ and southern NM; south into Mexico.	High mountain glades, pine-oak woods, canyons.
Hummingbird, ruby-throated <u>Archilochus colubris</u>	Central AB, central SK, southern MB, southern ON, southern PQ, NB, PE, NS; south to southern LA, southern MS, southern AL, southern FL; west to eastern ND, eastern SD, central NE, central KS, central OK, east-central TX.	Mixed woodlands, orchards, shade trees; nest: Above ground attached to twig or small branch.
Hummingbird, rufous <u>Selasphorus rufus</u>	Southeastern AK, southern YT, east-central BC, southwestern AB, western MT, south through WA, OR, northwestern CA, southern ID.	Forest edges, flowering plants, streamsides, lowlands, forest openings, meadows.
Hummingbird, violet-crowned <u>Amazilia verticalis</u>	Mexico; casual in AZ.	Riparian groves in canyons; nest: Sycamores.
Hummingbird, white-eared <u>Hylocharis leucotis</u>	Mountains of southern AZ, south over highlands of Mexico and CA.	Pine-oak woods, near streams, agaves, mesquite.
Jay, green <u>Cyanocorax yncas</u>	West-central Mexico, extreme southern TX, south through Central America and South America.	Brush, woodlands; nest: Thicket small tree.
Jay, scrub <u>Aphelocoma coerulescens</u>	Southwestern WA, western and southern OR, extreme southern ID, southern WY; south locally throughout western U.S. west of Plains; also found locally in scrub oak communities in Florida Peninsula.	Foothills, oaks, oak-chaparral, brush, river woods, pinyon, junipers.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Junco, dark-eyed <u>Junco hyemalis</u>	Transcontinental boreal forests from northwestern AK to LB, south to northern and northeastern BC, central MN, WI, central MI, southern ON, NY and CT and through the Appalachian Mountains to western GA.	Coniferous and mixed forests, edges nest: Slopes, roadsides, tree roots, fallen trees; sometimes in trees up to 8 ft above ground.
Magpie, black-billed <u>Pica pica</u>	Southern AK, central coastal AK, southern YT, interior BC, central AB, northwestern and east-central SK; and western MB, south to east-central CA, western NV, southern ID, central and north-central UT, northern AZ, northern NM, western KS, and western OK.	Foothills, ranches, sagebrush, river thickets, shelter belts, prairie brush; in AK, coastal country; nest: Tree or bush.
Magpie, yellow-billed <u>Pica nuttalli</u>	CA west of the Sierra NV.	Stream groves, scattered oaks, ranches, farms; nest: Like black-billed magpie.
Mockingbird <u>Mimus polyglottos</u>	Regularly from northern CA, central NV, northern UT, southeastern WY, southern SD, central IA, central IL, central ID, north-central OH, southeastern and eastern WV, MD and central NJ; south to Baja, CA and southern U.S. Found casually to southwestern BC, southern AB, southern SK, southern MB, southern ON, southern PQ, NS.	Farmlands, open woods, cities, roadsides, mesquite, brush, desert streamsides.
Oriole, Scott's <u>Icterus parisorum</u>	Southern NV, southwestern UT, northeastern AZ, north-central NM, and western TX, south through southeastern CA to southern Baja, CA and Mexico. Has nested also in west-central NV, northeastern UT.	Dry woods, scrub in desert mountains, yucca forests, pinyons.
Pyrrhuloxia <u>Cardinalis sinuata</u>	Resident Baja, CA, south-central and southeastern AZ, southern NM, western, central and southeastern TX, south to southern Baja, CA and Mexico.	Mesquite, thorn scrub, deserts; nest: Thorny bush.
Redpoll, common <u>Carduelis flammea</u>	Circumpolar arctic and subarctic areas, extending south to southern AK, northern BC, northern AB, northern SK, northern MB, northern ON, central and southeastern PQ and NF.	Birches, tundra scrub; nest: On ground or low bush.
Seedeater, white-collared <u>Sporophila torqueola</u>	Resident southern TX to Mexico.	Weedy places, tall grass, brush.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
Shrub, small tree nesting birds (Continued)		
Shrike, loggerhead <u>Lanius ludovicianus</u>	Southern BC, central AB, central SK, southern MB, southern ON, southern PQ, south-central ME, western NB south to southern Baja, Gulf Coast, southern FL.	Open country with scattered trees, shrubs, hedgerows; nest: 5-30 ft above ground.
Sparrow, black-chinned <u>Spizella atrogularis</u>	Central CA, southern NV, southwestern UT, central AZ, central NM, western TX, south to Baja, CA and Mexico.	Brushy mountains, slopes, open chaparral, sagebrush.
Sparrow, black-throated <u>Amphispiza bilineata</u>	Northeastern CA, northern NV, northern UT, southwestern WY, western and southern CO, northwestern OK and north-central TX, south to Baja, CA and Mexico.	Arid brush, creosote-bush deserts, cholla, gardens; nest: In bush, cactus.
Sparrow, chipping <u>Spizella passerina</u>	Central YT, southern Mac., northern SK, northern MB, northern ON, southern PQ and southwestern NF south to northern Baja, northern Nicaragua, the Gulf Coast of U.S., northern FL.	Orchards, garden shrubbery, open woodlands, conifers; nest: In tree, shrub 1-25 ft above ground.
Sparrow, clay-colored <u>Spizella pallida</u>	Breeds from northeastern BC, south-central Mac., central SK, central MB, western ON, northern MI; south to southwestern AB, south-central MT, southeastern WY, southeastern CO, southern NE, northern IA, southern WI, central MI, and southern ON; sparsely west to central BC and south to northern TX; IN; IL.	Prairies, pine barrens, conifer plantings, woodland openings, brushy fields.
Sparrow, field <u>Spizella pusilla</u>	Northwestern MT, northern ND, central MN, northern WI, north-central MI, southern ON, southwestern PQ, and southern ME; south to central TX, LA, southern MS and southern GA.	Brush pastures, clearings, meadows, woodland edges, hayfields, briar thickets; on or near ground, or as high as 4 ft above ground.
Sparrow, fox <u>Passerella iliaca</u>	Northern AK, northwestern and east-central Mac., northern MB, northern ON, northern PQ, and northern LB; south on the Pacific Coast to northwestern WA; in the mountains to southern CA, central WY, central MT, and central CO. and to central AB, central SK, southern MB, central ON, southern PQ, and NF.	Stunted boreal woodlands, chaparral, forest underground; nest: On ground, bush.
Sparrow, golden-crowned <u>Zonotrichia atricapilla</u>	Western coastal AK, south-central YT, south to southeastern AK, southern BC, southwestern AB, and in the Cascade Mountains to extreme northern WA.	Boreal scrub, spruce; nest: In bush, ground.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Sparrow, olive <u>Arremonops rufivirgata</u>	Southern TX, Mexico and Central America.	Undergrowth, weedy thickets; nest: Bush, cactus.
Sparrow, rufus-winged <u>Aimophila carpalis</u>	Central-southern AZ, Mexico.	Tall desert grass, desert thorn brush.
Sparrow, sage <u>Amphispiza belli</u>	Central interior of WA, southern ID, southwestern WY, and northwestern CO, south to central Baja, southern NV, northern AZ, and northwestern NM.	Dry brushy foothills, open chaparral, sagebrush, plains deserts.
Sparrow, song <u>Melospiza melodia</u>	Aleutian Islands, southern AK, southern YT, southern Mac., northern SK, northern MB, northern ON, central PQ, and NF; south to southeastern Baja, northern Mexico, northern NM, northeastern KS, northern AR, southeastern TN, northern GA, northwestern SC.	Farms, cities, suburbs, gardens, brush fields, thickets, swamps, hedgerows on ground or in low bush, tree, as high as 15 ft.
Sparrow, white-crowned <u>Zonotrichia leucophrys</u>	Northern AK, northern YT, northwestern and east-central Mac., central Kee., north-central MB, northern ON, northern-southeastern PQ, LB and northern NF; south to south-central CA, NV, central AZ, northern NM.	Low brush, mountain thickets, boreal scrub; nest: In bush, ground.
Sparrow, white-throated <u>Zonotrichia albicollis</u>	Southern YT, central Mac., northern MB, northern ON, west-central and southeastern PQ, southern LB, northern NF; south to central BC, central AB, southern SK, north-central ND, central MN, northern OH, northern WV, northeastern PA, southern NY, northwestern CT, southern NH, and MA.	Edges of coniferous, deciduous forests, undergrowth; nest: On ground brush pile, under dead trees; thick cover.
Thrasher, Bendire's <u>Toxostoma bendirei</u>	Southeastern CA, northwestern AZ, southern NV, southern UT and southwestern NM south to Mexico.	Deserts, farmland, cholla, thorny bushes. Nests in thorny bush, cholla.
Thrasher, brown <u>Toxostoma rufum</u>	Southeastern AB, southern SK, southern MB, western ON, northern MN, northern MI, southern ON, southwestern PQ, northern UT, central NH, and southwestern ME; south through central MT, eastern WY, eastern CO, and northern and eastern TX to the Gulf Coast and southern FL.	Thickets, brushfields, hedgerows, woodland borders; nest: Up to 15 ft in tree, shrub, vine.
Thrasher, California <u>Toxostoma redivivum</u>	Northern CA to northern Baja, CA.	Chaparral, foothills, valley thickets, parks, gardens.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Thrasher, crissal <u>Toxostoma dorsale</u>	Southeastern CA, southern NV, southwestern UT, northern AZ, southern NM, and west-central TX; south to northeastern Baja, CA, and northwestern-south-central Mexico.	Dense brush along desert streams, mesquite thickets.
Thrasher, curve-billed <u>Toxostoma curvirostre</u>	Northwestern and central AZ; NM; and western and southern TX; south to Mexico.	Desert, arid brush.
Thrasher, LeConte's <u>Toxostoma lecontei</u>	Semi-arid desert areas of central CA, southern NV; southwestern UT, and western and central AZ; south to central Baja and northwestern Sonora.	Desert flats with sparse bushes; nest: In cholla, thorny bush.
Thrasher, long-billed <u>Toxostoma longirostre</u>	South-central TX south to Mexico.	Woodland undergrowth, mesquite; nest: Thorny bush, cactus, undergrowth.
Thrasher, sage <u>Oreoscoptes montanus</u>	South-central BC, central ID, south-central MT, and northern-southeastern WY; isolated colony southwestern SK, south through eastern WA, eastern OR, and eastern CA, southern NV, UT, north-central NM, northwestern TX, and western OK.	Sagebrush, brush slopes, mesas in winter, deserts.
Thrush, Swainson's <u>Catharus ustulatus</u>	Central AK, northern YT, Mac., northern NB, northern ON, central PQ, southern LB, and NF, south to the AK peninsula and southern AK, CA, CO, the Great Lakes and WV.	Spruce, birch forests, small trees 2-20 ft above ground.
Thrush, varied <u>Ixoreus naevius</u>	North-central AK, central YT, northwestern Mac., south to northwestern CA, northern ID, and northwestern MT.	Thick, wet forests, conifers; nests in small trees.
Towhee, Abert's <u>Pipilo aberti</u>	Southeastern NV, southwestern UT, central AZ, and southwestern NM, south in CO to southeastern CA, northeastern Baja, northwestern Mexico and southeastern AZ.	Desert streams, brush, mesquite.
Towhee, brown <u>Pipilo fuscus</u>	Southwestern OR, western and central AZ, northern NM, southeastern CO, extreme western OK and western and central TX, south to Baja and Mexico.	Brushy, stony areas, open chaparral, open woods canyons, pinyon, juniper, gardens.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Towhee, green-tailed <u>Pipilo chlorurus</u>	Southwestern and central OR, southeastern WA, southern ID, southwestern MT, and northwestern, central and southeastern WY, south through the interior mountains to southern CA, southern NV, central AZ, and southern NM.	Dry brush, mountain slopes, low chaparral, open pines; nest: In sage, manzanita/low bush; also on ground.
Towhee, rufus-sided <u>Pipilo erythrophthalmus</u>	Southern BC, central AB, central SK, southern MB, northern MN, northern MI, southern ON, northern NY, northern VT, central NH, and southwestern ME, south to southern Baja, CA, through Mexico and western TX, northern OK, northern AR, southern LA, the eastern Gulf Coast, southern FL.	Brush fields, thickets, slashings, woodland edges; nest: On or near ground or small bush, tree.
Veery <u>Catharus fuscescens</u>	Eastern BC, north-central AB, southern SK, southern MB, southern ON, southern PQ, central NF; south through the Rockies and north-eastern AZ and to northeastern SD and southeastern MN; in the eastern U.S. south along Alleghenies and northern GA.	Moist deciduous woods, bottomland, forests, damp ravines; nest: Low shrub, brush pile low to ground.
Vireo, Bell's <u>Vireo bellii</u>	Great Valley in CA, southern NV, central AZ, southwestern NM, western TX, eastern CO, central NE, southeastern SD, IA, southwestern WI, and northeastern IL, south to southern TX, northwestern LA.	Thickets, forest edges, bottomlands.
Vireo, black-capped <u>Vireo atricapilla</u>	Central-southern KS south through southern OK to western and central TX and Mexico.	Oak shrub, brush, hillsides.
Vireo, Hutton's <u>Vireo huttoni</u>	Southwestern BC, western WA, and western OR, to the Great Valley and coast of CA and northwestern Baja; from central AZ, southwestern NM, and TX south to Central America.	Woods, adjacent brush; prefers oaks.
Vireo, white-eyed <u>Vireo griseus</u>	Central NE, southern IN, IA, southern WI, and NY. South to Mexico, southern FL and Bermuda.	Dense shrubby regions, deciduous forests, undergrowth, briar thickets, old fields along stream-banks.
Warbler, black-throated blue <u>Dendroica caerulescens</u>	Central SK, southern MB, central ON, southern PQ, and NS, south to central MN, northern MI, southern ON, northern CT, along the Appalachians to northeastern GA.	Mixed conifers, hardwood forests with heavy undergrowth; cutover areas, laurel hemlock.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Warbler, black-throated gray <u>Dendroica nigrescens</u>	Southwestern BC (coastal), western WA, central OR, southwestern ID, northern UT, southwestern WY, and northwestern and central CO, south in mountains to northern Baja, northwestern, central and southeastern AZ, and eastern and southern NM.	Dry oak slopes, pinyons, junipers, open mixed woods; nest: In bush, tree (oaks, especially).
Warbler, chestnut-sided <u>Dendroica penslyvanica</u>	Eastern SK, central-western MB, central ON, southern PQ, central NB, and northern NS south to central-northern ND, central NE, northwestern and southeastern NM, southern WI, southern MI, northern OH, central and western MD, southeastern PA, central NJ, NY, MA, ME, through Appalachians from western PA to southeastern TN, central-northern GA and northwestern SC.	Shrubby, rural areas, roadside shrubs, briar tangles, hedgerows, undergrowth in cutover timber; nest: At low elevation 1-4 ft above ground.
Warbler, hooded <u>Wilsonia citrina</u>	Southeastern NE, central IA, northern IL, southern MI, southern ON, northwestern PA, central and southeastern NY, southern CT, and RI. South to southeastern TX, Gulf Coast, northern peninsular FL.	Undergrowth of deciduous woodlands, thickets, wooded swamps; nest: Low elevation 1-6 ft.
Warbler, Kentucky <u>Oporonis formosus</u>	Southeastern NE; central IA, southwestern WI, northeastern IL, central IN, central and eastern OH, southern PA, northern NJ, southeastern NY, and southwestern CT. South to central-eastern TX, southern LA, southern MS, southern AL, northwestern FL, central GA, SC.	Deciduous woodland thickets, conifers, moist shady ravines.
Warbler, magnolia <u>Dendroica magnolia</u>	Southwestern and central-southern Mac., northeastern AB, northern SK, central MB, northern ON, central and eastern PQ, and southwestern NF. South to central and central-eastern BC, south-central AB, south-central SK, southern MB, northeastern MN, central WI, central MI, southern ON; locally south to northeastern OH, eastern and central WV, western VA, central and northeastern PA, northwestern NJ and northern MA.	Coniferous forests; nest: In bushy top of small conifer 1-15 ft above ground.
Warbler, orange-crowned <u>Vermivora celata</u>	From central AK, northwestern and central Mac., northern MB, northern ON, and northwestern PQ. South to northwestern Baja, CA, southeastern AZ, western TX, southeastern SK, southern MB, western and central ON.	Brush, woodland clearings, hill-sides, aspens, undergrowth, chaparral.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Shrub, small tree nesting birds (Continued)</u>		
Warbler, palm <u>Dendroica palmarum</u>	Southwestern Mac., northern AB, northern SK, MB, northern ON, southern PQ and southern NF. South to northeastern BC, central AB, central SK, southeastern MB, northeastern MN, central MI, southern ON, southern PQ, ME, NS.	Two types: Wet, muskeg and sphagnum bogs; open barrens, dry forests of spruce and jack pine.
Warbler, prairie <u>Dendroica discolor</u>	Southeastern SD, IA, southern WI, northern MI, southern ON, southeastern NY, southern VT, and southern NH. South to eastern OK, southern LA, northern MS, southern AL, central GA, FL, and Florida Keys.	Brush clearings, burned-over areas; nest: In bushes, brairs 1-10 ft.
Warbler, Swainson's <u>Lymothlypis swainsonii</u>	Breeds locally from northeastern OK, southeastern MS, southern IL, southwestern IN, southern OH, western WV, southern VA and southeastern MD. South to southeastern LA, MS, southern AL, northern FL.	Wooded canebrake swamps, mountains, wooded ravines, laurel thickets, shrubs, cane or palmetto highlands, lowlands.
Warbler, yellow <u>Dendroica petechia</u>	From north-central AK, northern YT, northwestern and central Mac., northern MB, northern ON, north-central PQ, central LB, and NF. South to Alaskan Peninsula, southern Baja, CA.	Along waterways, edges of swamps, marshes, brushy bottomlands, small trees, orchards.
Waxwing, cedar <u>Bombycilla cedrorum</u>	Southeastern AK, north-central BC, northern AB, northwestern SK, central MB, northern ON, central and southeastern PQ and NF. South to northern CA, northern UT, CO, OK, central MO, southern IL, southern IN, central KY, eastern TN, northern AL, northern GA.	Open woods, orchards, shade trees; nest: In small tree 4-50 ft above ground.
Wren, cactus <u>Campylorhynchus brunneicapillus</u>	Southern CA, southern NV, southwestern UT, western and south-central AZ, southern NM, and central TX. South to southern Baja and Mexico.	Cactus, yucca, mesquite, arid brush, deserts.
Wrentit <u>Chamaea fasciata</u>	Western OR to northern Baja, CA, east to the middle Umpqua, Rogue and Klamath river valleys, OR, and to the Great Valley of central CA.	Chaparral, brush, parks, garden shrubs; nest: In low bush.
Yellowthroat, common <u>Geothlypis trichas</u>	Southeastern AK, southern YT, northern AB, central SK, central MB, central and northeastern ON, central PQ and southwestern NF. South to northern Baja, CA, Mexico, Gulf Coast of U.S., and southern FL.	Wet or dry areas with dense low cover, marshes, swamps, brush thickets.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Nesting type: Large tree nesting birds</u>		
Blackbird, Brewer's <u>Euphagus cyanocephalus</u>	Breeds from southwestern, central and southeastern BC, central AB, central SK, southern MB, northern MN, western ON and northern WI. South to northwestern Baja, central-southern and central-eastern CA, southern NV, southwestern and central UT, central AZ, western and central-southern NM, northern TX, OK, northern IA, southern WI, northeastern IL, northwestern IN and southwestern MI.	Open farmlands, roadsides, towns, gardens, groves, marsh edges; nest: 150 ft above ground.
Cowbird, bronzed <u>Molothrus aeneus</u>	Central and southern AZ, southwestern NM, south-central TX, Mexico, and Central America.	Croplands, brush, semi-open country.
Creeper, brown <u>Certhia familiaris</u>	Southeastern AK, BC, central AB, central SK, southern MB, northern ON, southern PQ, NF, south through Mexico and to the southern Appalachian Mountains.	Coniferous, deciduous, or mixed forests, timbered swamps; nest: In living or dead tree 5-15 ft.
Crossbill, red <u>Loxia curvirostra</u>	Southeastern AK, southern YT, SK, MB, central ON, southern PQ, and NF. South to northern Baja, CA and Central America; Eastern U.S. to northern WI, TN, NC, throughout West.	Coniferous forests; nest: In branch of conifer 5-80 ft above ground.
Crossbill, white-winged <u>Loxia leucoptera</u>	North-central AK, central YT, central Mac., central MB, northern ON, northern PQ, central LB, and NF south to south-central AK, northern BC, central AB, northern MN, northern WI, northern MI, southern ON, southern PQ, southern NB and NS. Breeding sporadically south to WA, northeastern OR, MT, northeastern WY, northern VT, NH, ME.	Spruce forests; nest: In spruce limb 5-70 ft above ground.
Crow, common <u>Corvus brachyrhynchos</u>	BC, southwestern Mac., northern SK, northern MB, northern ON, central PQ, southern NF south to northern Baja, central AZ, north-central NM, CO, central TX, Gulf of Mexico, and southern FL.	Forests, farm woodlots, parks, wooded islands, deciduous/coniferous trees 10-70 ft above ground.
Crow, fish <u>Corvus ossifragus</u>	Resident on Atlantic and Gulf Coasts from RI, CT, and NY. South and from southeastern TX and LA eastward to FL; inland along major river systems to southwestern TN, northwestern LA, western AR, central GA, western SC, northwestern NC, central VA, central MD, central PA and central-eastern NY.	Wooded marine shorelines; edges of brackish seashores, bays; in FL, salt and freshwater environments.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Crow, northwestern <u>Corvus caurinus</u>	Resident on Coasts and Islands of southern AK, BC, and WA; wanders inland in WA and OR.	Near tidewater, shores.
Finch, Cassin's <u>Carpodacus cassinii</u>	Southern BC, southwestern AB, northwestern, central and southeastern MT, northern WY south through eastern WA and OR, to northwestern CA, interior southern CA, northern Baja, southern NV, northern AZ, and central-northern NM.	Open conifer forests of high mountains.
Finch, purple <u>Carpodacus purpureus</u>	Northern BC, northern AB, central SK, central MB, northern ON, central PQ and NF, south to northern Baja, central BC, central AB, southern SK, ND, central MN, central WI, central MI, northeastern OH, WV, northeastern PA, and southeastern NY.	Coniferous forests, roadsides, Christmas tree plantings; nest: 5-60 ft above ground.
Flycatcher, Acadian <u>Empidonax virescens</u>	Southeastern SD, northern IA, southern WI, southern MI, southern ON, southern WY, northeastern PA, and southwestern CT; casually from VT and MA. South through eastern NE, central KS and central OK to central and southeastern TX, the Gulf Coast and central FL.	Deciduous woodlands, ravines, bottomlands, river swamps, hammocks of cypress ponds; nest: On lower branches 8-20 ft above ground in tree.
Flycatcher, olive-sided <u>Nuttallornis borealis</u>	Northern AK, central-western and southern YT, central-western and southern Mac., northeastern AB, northern SK, north-central MB, northern ON, central PQ and central NF south to Baja, central NV, central AZ, northern NM, central SK, southern MB, northeastern ND, central MN, northern WI, northern MI, southern ON, northeastern OH and MA; mountains of NY, PA, eastern WV, southwestern VA, eastern TN and western NC.	Cool coniferous forests, open woodlands, forest burns, bogs; nest: In conifer branch 7-50 ft above ground.
Flycatcher, scissor-tailed <u>Muscivora forficata</u>	Eastern NM, western OK, southeastern CO, NE, central and southeastern KS, western AR, and western LA south to southern TX.	Roadsides, ranches, mesquite, semi-open areas; nest: In tree, bush.
Flycatcher, vermillion <u>Pyrocephalus rubinus</u>	Southwestern CA, southern NV, southwestern UT, central AZ, southwestern NM, and western and central TX south to southern South America.	Near water in desert country, mesquite, willows, cottonwoods.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Gnatcatcher, blue-gray <u>Polioptila caerulea</u>	CA, central NV, southern UT, CO, eastern NE, central MN, southern WI, southern MI, southern ON, OH, western NY, and northern NJ. South to Baja through Mexico to Central America, Gulf Coast of U.S. and Bahamas.	Oak woods, mixed forests, pine-lands, wooded swamps; nest: 4-70 ft above ground.
Grosbeak, evening <u>Hesperiphona vespertina</u>	North-central BC, northeastern AB, central SK, southern MB, western and central ON, central-western PA, and northern NB, south to central CA, northern NV, central AZ, and to northeastern MN, northern MI, southern ON, northern NY and MA.	Coniferous forests; nest: 20-60 ft above ground.
Grosbeak, pine <u>Pinicola enucleator</u>	Northern AK, northwestern and central Mac., northern MB, northern ON, northern PQ, northern LB, and NF south to southern AK, central CA, central-eastern AZ, central-northern NM, central MB, central ON, northern NH, central ME, and NS.	Cold spruce forests at high elevations; nest: In conifers or underbrush of coniferous forests.
Grosbeak, rose-breasted <u>Pheucticus ludovicianus</u>	Northeastern BC, northern AB, central SK, southern MB, western and southern ON, southwestern PQ, northern NB, PE and NS south to central and southeastern AB, southern SK, central and northern ND, eastern SD, eastern NE, eastern KS, southwestern and central MO, southern IL, central IN, northern OH, eastern KY, eastern TN, northern GA, western NC, western VA, southeastern PA, southwestern and central NJ, southeastern NY.	Moist deciduous second-growth woods, swamps, thickets, orchards, trees, shrubs; nest: 6-25 ft above ground.
Jay, blue <u>Cyanocitta cristata</u>	Central AB, central SK, southern MB, central ON, southern PQ, and NF, south through Dakotas, eastern WY, NE, central CO, TX Panhandle to southeastern TX, Gulf Coast and southern FL.	Forests, farms, parks, cities, suburbs; nest: In conifer/deciduous trees 5-50 ft above ground.
Jay, gray (Canada) <u>Perisoreus canadensis</u>	North-central AK, northern YT, western Mac., northern MB, northern ON, northern PQ, northern LB, and NF south to northern CA, central AZ, southwestern CO, northern NM, SD, northern MN, northern WI, northern MI, south-central ON, northeastern NY, northern New England, NB and NS.	Conifer forests.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Jay, Mexican <u>Aphelocoma ultramarina</u>	Resident of central AZ, southwestern NM, southwestern TX and central Mexico.	Open oak forests, oak pine; nest: In oaks, some pine.
Jay, pinyon <u>Gymnorhinus cyanocephalus</u>	Resident of central OR, east-central MT, western SD south through eastern CA to northern Baja, CA, central NV, central and central-eastern AZ, central NM, and western OK.	Pinyon pines, junipers, sage; nest: In pinyon, scrub oak.
Jay, Steller's <u>Cyanocitta stelleri</u>	Southern AK, western and southern BC, southwestern AB, western MT, WY, southwestern SD and western NE south through southern CA, and Mexico; east to east-central CO, eastern NM and southwestern TX.	Conifer, pine-oak forests; nest: In conifers.
Kingbird, Cassin's <u>Tyrannus vociferans</u>	Central CA and southern MT south to Mexico.	Semi-open high country, scattered trees, pine-oak, mountains, ranch groves.
Kingbird, eastern <u>Tyrannus tyrannus</u>	Northern BC, central-southern Mac., central SK, central MB, northern ON, southern PQ south to western WA, OR (east of coast ranges), northeastern CA, northern NV, southern ID, northern UT, CO, northeastern NM, central TX, the Gulf Coast, and southern FL.	Wood edges, parklands, river groves, farms, shelter belts, orchards, roadsides; nest: In trees, bushes.
Kingbird, thick-billed <u>Tyrannus crassirostris</u>	Western Mexico and Central America, extreme southeastern AZ, southwestern NM.	Semi-arid canyons, sycamores; nest: In sycamores.
Kingbird, western <u>Tyrannus verticalis</u>	Breeds from western OR, western WA (east of coast ranges), southern BC, southern AB, southern SK, southern MB, western MN, rarely to southern WI, southern MI, southern ON, northwestern OH, south to northern Baja, CA, Mexico, southern NM, central-western TX, northeastern OK, central-eastern KS, and north-central MO.	Open country with scattered trees, farms, roadsides.
Kinglet, golden-crowned <u>Regulus satrapa</u>	Southeastern AK, BC, northern MB, ON, PQ and NF, south to southern CA, Central America; in the Rocky Mountain region to eastern NV, UT and CO, AZ, NM, western NC.	Coniferous forests, prefers spruces; nest: 6-60 ft above ground.
Kinglet, ruby-crowned <u>Regulus calendula</u>	Northwestern AK, northwestern Mac., northern MB, ON, central PQ, southern LB, NF, south to Baja, CA, central AZ, central NM, northern MI, southern ON, northern ME, and NS.	Coniferous forests; nest: In conifers 2-10 ft above ground.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Nutcracker, Clark's <u>Nucifraga columbiana</u>	Resident from central BC (interior), southwestern AB, western and central MT, and western and south-eastern WY south through mountains of central WA, eastern OR, central and eastern CA and NV to northern Baja and south in Rocky Mountains to eastern AZ and western NM.	High mountains, conifers near treeline; nest: In conifers.
Oriole, black-headed <u>Icterus graduacauda</u>	Southern TX and Central America.	Woodlands, thickets.
Oriole, Northern <u>Icterus galbula</u>	Southern BC, southern and central AB, central and southwestern SK, southern MB, western and southern ON, northern MI, southern PQ, central ME, central NM and central NS, south to Baja, CA, west-central OK, northeastern TX, northwestern and central LA, central MS, northern AL, northeastern LA, western SC, western NC, central VA, northern MD, and DE. Has bred in north-eastern CO.	Shade trees, orchards, parks, roadsides; nest: In elms, maples, willows 6-60 ft above ground.
Oriole, orchard <u>Icterus spurius</u>	Southern MB, central and south-eastern MN, central WI, southern MI, southern ON, north-central PA, central and central-eastern NY, and central and northeastern MA south through central and central-southern ND, central SD, central NE, northeastern CO, central-northern, western and southern TX, the Gulf Coast and northern FL.	Farms, suburbs, roadsides, orchards, open woodlands; nest: Tree/shrub 10-20 ft above ground.
Parula, northern <u>Parula americana</u>	Southeastern MB, western and central ON, southern PQ, northern ME, northern NB, PE and northern NS south to eastern TX, southern LA, southern MS, southern AL, northwestern and central FL.	Coniferous/deciduous forests where moss-like lichens and bromeliads hang from tree branch; also coniferous/deciduous forests without lichens; nest: 6-100 ft above ground.
Pewee, eastern wood <u>Contopus virens</u>	Southern MB, western and central ON, southern PQ, northern ME, central NB, PE and northern NS south through eastern ND, eastern SD, eastern NE, eastern KS, central OK to central and south-eastern TX, the Gulf Coast, and central FL.	Mature forests, woodlots, roadsides, orchards, borders of fields, clearings; nest: 15-65 ft above ground; favors oaks, sassafras, beech.
Pewee, western wood <u>Contopus sordidulus</u>	Central-eastern AK, southern YT, southern Mac., central-eastern SK, and central MB south in the mountains to Central America and possibly South America.	Woodlands, pine-oak forests, open conifers, river groves.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Phainopepla <u>Phainopepla nitens</u>	Central CA, southern NV, southern UT, southwestern NM and western TX, south to Baja, CA, and Mexico.	Desert shrubs, mesquite, oak foothills, mistletoe, pepper trees.
Raven, common <u>Corvus corax</u>	Holarctic regions from subarctic AK, northern Canada, south through Western U.S. to Central America; in central and eastern North America to MN, WI, northern MI, central ON, southern PQ and ME, and south in the Appalachian Mountains to northwestern GA.	Forest wilderness, mountains, sea-coasts, wooded marine islands.
Raven, white-necked <u>Corvus cryptoleucus</u>	Southeastern AZ, southern NM, northeastern CO, south-central NE, and western KS south into Mexico.	Arid country, rangeland, plains, deserts; nest: In tree, mesquite, yucca.
Redstart, American <u>Setophaga ruticilla</u>	Southeastern AK, northern BC, central-southern Mac., central SK, central MB, northern ON, central PA, and NF south to eastern OR, northern UT, northern CO, south-eastern OK, southern LA, central AL, and central GA.	Young or second-growth deciduous or coniferous woods, roadside parks; nest: 4-30 ft above ground.
Robin, American <u>Turdus migratorius</u>	From the limit of trees in northern AK, northern Canada, and NF. South to southern Mexico and the shores of the Gulf of Mexico.	Cities, villages, farmlands, open woods; nest: In tree.
Siskin, pine <u>Carduelis pinus</u>	Southern AK, central YT, southern Mac., central SK, southern MB, northern ON, central and south-eastern PQ, southern LB, and NF south to northern Baja, CA and through Mexico to Central America; in the Central and Eastern U.S. south to KS, IA, northern WI, central MI, southern ON, northern PA, southeastern NY, and CT.	Coniferous forests; nest: 6-35 ft above ground.
Sparrow, chipping <u>Spizella pallida</u>	Central YT, southern Mac., northern SK, northern MB, northern ON, southern PQ and southwestern NF south to northern Baja, northern Nicaragua, the Gulf Coast of U.S., northern FL.	Orchards, garden shrubbery, open woodlands, conifers; nest: In tree, shrub 1-25 ft above ground.
Tanager, hepatic <u>Piranga flava</u>	Northern AZ, northern NM, and central-western and southern TX south through Mexico, Central America, and South America.	Pines, open mountain forests, oaks.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Tanager, scarlet <u>Piranga olivacea</u>	Central NE, eastern ND, southeastern MB, central-western ON, north-eastern MN, northern MI, southern ON, southern PQ, NB, and central and central-southern ME south to central-northern and southeastern OK, central AR, west-central TN, northwestern and central AL, north-western SC, western NC, central and western VA, and MD.	Deciduous, coniferous woodlands, groves, parks, orchards, roadsides; nest: 8-75 ft above ground.
Tanager, summer <u>Piranga rubra</u>	Southeastern CA, southernmost NV, central AZ, central NM, central TX, central OK, southeastern NE, southern IA, central IL, central IN, central OH, WV, MD, and DE south to Mexico, the Gulf Coast and southern FL.	Open, dry deciduous (mostly) coniferous woods, groves, orchards; nest: 10-35 ft above ground.
Tanager, western <u>Piranga ludoviciana</u>	Southern AK, northern BC, south-western and central-southern Mac., southeastern AB, and central SK, south to northern Baja, CA, south-ern NV, southwestern UT, central and southeastern AZ, southwestern NM, and western TX; east to west-ern SD, northwestern NE, and central CO.	Oak, pine, fir, open conifer or mixed forests.
Thrush, gray-cheeked <u>Catharus minimus</u>	Northern AK, northern Mac., northern MB, northern PQ, central LB, and NF south to southwestern AK, northeastern BC, eastern SK, southeastern NY, and northwestern MA.	Spruce, fir forests at high elevations, evergreens, birches, in wild, isolated regions of high mountains; nest: 3-15 ft above ground.
Thrush, wood <u>Hylocichla ustelina</u>	Breeds from southeastern SD, central MN, central WI, northern MI, southern ON, extreme southern PQ, northern VT, central NH, and southwestern ME south through NE, central KS, and eastern OK to southeastern TX, southern LA, southern MS, southern AL, and northern FL; casually north to southern NB and west to south-western ND and central SD.	Cool, humid forests, mainly deciduous, parks, gardens; nest: In tree 6-50 ft above ground.
Vireo, Philadelphia <u>Vireo philadelphicus</u>	Breeds from northeastern BC, central AB, southern SK, southern MB, northern ON, central PA, and southwestern NF south to central-northern ND, southern ON, northern NH, central ME, and northern NB; recorded in the breeding season in northern AB and northeastern NY.	Second-growth forests, roadside trees, deserted farms, occasion-ally shade trees; nest: 10-40 ft above ground.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Vireo, red-eyed <u>Vireo olivaceus</u>	Breeds from southwestern and northeastern BC, southwestern Mac., northeastern AB, central SK, central MB, northern ON, central PQ, PE and NS south, east of the coast ranges to northern OR, northern ID, southwestern and central MT, and through WY, eastern CO, KS, and western OK to central TX, the Gulf Coast and central FL.	Open deciduous woods with thick undergrowth of saplings; occasionally mixed woods; nest: 2-60 ft above ground.
Vireo, solitary <u>Vireo solitarius</u>	Central BC, southwestern Mac., central SK, central MB, northern ON, southern PQ, NF and NS south to southern Baja, CA, and Central America.	Mixed evergreen, deciduous woodlands.
Vireo, warbling <u>Vireo gilvus</u>	Northern BC, southern Mac., central SK, southern MB, western ON, northern MN, northern MI, southern ON, extreme southern PQ, southern ME, southern NB, and central NS south to Baja, CA, central-northern Mexico, central TX, southern LA, northern AL, western NC, and the coastal plain of VA.	Open, mixed or deciduous woods, orchards, roadside and village shade trees; nest: 20-60 ft above ground, often in poplar.
Vireo, yellow-green <u>Vireo flavoviridis</u>	Southern tip of TX to Central America.	Resaca woodlands, shade trees.
Vireo, yellow-throated <u>Vireo flavifrons</u>	Southern MB, northeastern MN, central WI, central MI, southern ON, southern PQ, northern NH, and locally in southwestern ME south through eastern ND, eastern SD, eastern NE, eastern KS, and eastern OK to central and eastern TX, the Gulf Coast and central FL.	Open woods of oak, maple, other hardwoods, roadside trees; nest: 3-60 ft above ground.
Warbler, bay-breasted <u>Dendroica castanea</u>	Central MB, northern ON, central PQ, NB, and central NS south to southern MB, northeastern MN, northern WI, southern ON, southern PQ, northeastern NY, central VT, NH, southern ME, and southern NS; recorded in summer in northern MI.	Coniferous forests; nest: In dense conifers 4-40 ft above ground.
Warbler, Blackburnian <u>Dendroica fusca</u>	South-central SK, southern MB, northern ON, northern ME, northern NS south to central MN, central WI, central MI, southern ON, northeastern OH, highlands of central and western PA, southeastern NY, MA; south in the Appalachians through eastern and central WV, western MD, eastern KY, western VA, to eastern TN, western NC, north-central GA, and northwestern SD.	Mostly coniferous, also deciduous forests; nest: High, approximately 84 ft above ground.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Warbler, blackpoll <u>Dendroica striata</u>	Breeds from north-central AK, northern YT, northwestern and central Mac., northeastern SK, northern MB, northern ON, northern PQ, northern LB, and NF south to southern AK, central BC, central AB, central MB, north-central ON, southern PQ, eastern NY, northwestern MA, eastern NH, southern ME, southern NB and southern NS.	Low coniferous forests, especially spruces; nest: 2-7 ft above ground in conifer.
Warbler, black-throated gray <u>Dendroica nigrescens</u>	Southwestern BC (coastal), western WA, central OR, southwestern ID, northern UT, southwestern WY, and northwestern and central CO, south in mountains to northern Baja, northwestern, central and southeastern AZ, and eastern and southern NM.	Dry oak slopes, pinyons, junipers, open mixed woods; nest: In bush, tree (oaks, especially).
Warbler, black-throated green <u>Dendroica virens</u>	Central-southern Mac., north-central SK, north-central MB, central ON, southern PQ, southern LB, southern NF, and southern NS, south to central AB, southern MB, central-eastern MN, central WI, central MI, eastern and southeastern OH, PA, and northern NJ, southward in the mountains and neighboring areas to AL, and northern GA.	Coniferous, mixed woods, in thick foliage; nest: 3-80 ft above ground.
Warbler, Cape May <u>Dendroica tigrina</u>	Southwestern and central-southern Mac., north-central BC, northern AB, central SK, MB, northern ON, and southern PQ south to northeastern ND, northwestern and central-eastern MN, northern WI, northern MI, southern ON, northeastern NY, southern and eastern ME, southern NB and central NS.	Open stands of coniferous trees, dense forests shunned; nest: In uppermost clump of needles in spruce, fir 3-60 ft above ground.
Warbler, cerulean <u>Dendroica cerulea</u>	Breeds from NE, southeastern MB, northern IA, southeastern MN, southern WI, southern MI, southern ON, western NY, eastern PA, southeastern NY and northern NJ south through southeastern KS, eastern OK, eastern TX, and southeastern LA, central AL, central NC to central VA, southern MD, and DE.	Upper branches of tallest trees in deciduous forests with little undergrowth; nest: 20-60 ft above ground.
Warbler, golden-cheeked <u>Dendroica chrysoparia</u>	South-central TX.	Juniper, oaks, trees along stream-sides; nest: In junipers.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Large tree nesting birds (Continued)</u>		
Warbler, Grace's <u>Dendroica graciae</u>	Breeds in mountains from southern UT, southwestern CO, and central-northern NM south to central-western, central and southeastern AZ, Mexico, southern NM and western TX.	Pine-oak forests of mountains.
Warbler, hermit <u>Dendroica occidentalis</u>	Breeds from southwestern WA south, through the coast ranges and the Sierra NV, to northwestern and central-eastern CA, with isolated colonies in central-western CA.	Conifer forests.
Warbler, olive <u>Peucedramus taeniatus</u>	Central and southeastern AZ, southwestern NM and Mexico.	Pine and fir forests of high mountains; nest: In conifer.
Warbler, pine <u>Dendroica pinus</u>	Breeds in pine forests from southern MB, western ON, northeastern MN, northern WI, northern MI, central ON, southern PQ, and central ME south to southeastern TX, south-central LA, southern MS, and northern FL; local and rare from southern MN, southern MI, OH, and western PA south to southern MO, KY, and WV.	Open pine woods; nest: 8-80 ft above ground.
Warbler, yellow-rumped <u>Dendroica coronata</u>	Northern AK, northern YT, western and central Mac., northern MB, northern ON, central PQ, north-eastern LB, and NF south to northern BC, southern AB, northern MN, northern MI, central ON, north-eastern NY, MA, and ME.	Mixed and coniferous forests; nest: In branch of cedar, spruce, hemlock 4-50 ft above ground.
Warbler, yellow-throated <u>Dendroica dominica</u>	NE, northern IA, southern WI, southern MI, northern OH, southern PA, southeastern NY, and southwestern CT, south to eastern TX, the Gulf Coast, central FL and the northern Bahamas.	Cypress swamps, pine woods festooned with Spanish moss (in south); west and north partial to sycamores.
Waxwing, Bohemian <u>Bombycilla garrula</u>	Western AK, northern Mac., and MB south to central WA, northern ID, northwestern MT, southern AB.	Boreal forests, muskeg; nest: In conifers.
<u>Nesting type: Cavity nesting birds/earth burrows</u>		
Kingfisher, belted <u>Megasceryle alcyon</u>	Northwestern AK, southern YT, southwestern MB, southwestern Mac., central AB, central SK, central MB, ON, central PQ, and central LB to Central America, southern CA, southern NM, the Gulf Coast and FL.	Freshwater, saltwater banks, river bluffs, road and railroad cuts, gravelpits, near water; nest: Burrow in bank.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Cavity nesting birds/earth burrows (Continued)</u>		
Kingfisher, green <u>Chloroceryle americana</u>	From south-central AZ and southern TX south through tropical Mexico, CA, and South America.	Rivers, streams; nest: Burrow in bank.
Solitaire, Townsend's <u>Myadestes townsendi</u>	Breeds from central-eastern and southeastern AK, southern YT, southwestern Mac., mountains of southwestern AB, western and southern MT, northeastern NY, southwestern SD, and northwestern NE south through central and southern BC, WA, OR, mountains of northern and interior CA to north-eastern AZ and northeastern NM.	Canyons, brushy slopes, junipers; nest: In banks, cliffs, rocks, stumps.
Swallow, bank <u>Riparia riparia</u>	Northeastern AK, northwestern Canada, southern LB, and NF; south to Southern U.S.	Sand banks, gravel pits, road cuts, streambanks; nests in colonies.
Swallow, cave <u>Petrochelidon fulva</u>	From southeastern NM and south-central TX through Mexico.	Limestone caves; nest: Open cup of mud in cave.
Swallow, rough-winged <u>Stelgidopteryx ruficollis</u>	BC, southern AB, southwestern SK, southeastern MB, western and southern ON, southwestern PQ, central VT, NH south to South America.	Open areas, streambanks, ditches; nest: Burrow in exposed bank.
Waterthrush, Louisiana <u>Seiurus motacilla</u>	Breeds from eastern NE, central-northern IA, east-central MN, central WI, southern MI, southern ON, central NY, central VT, southwestern NH and RI south to eastern OK, eastern TX, central LA, southern MS, southern AL, southwestern and central GA, central SC, and central and northeastern NC.	Ravines, small streams, mountain brooks; nest: Burrow in steep bank of streams or in root cavity.
Wren, canyon <u>Catherpes mexicanus</u>	Northern interior CA up through OR, eastern WA, south-central BC to west-central ID, southeastern MT, southwestern SD, western OK, to eastern TX south into Mexico.	Nest: Cavity in rocks; made of twigs and moss.
Wren, rock <u>Salpinctes obsoletus</u>	Breeds from south-central BC, southern AB, southwestern SK, western ND, southern SD, south-east of the coast ranges in WA, OR, and northern CA to Baja.	Nest: In cleft of rocks made of twigs, moss, etc.
<u>Nesting type: Cavity nesting birds/tree cavities</u>		
Bluebird, eastern <u>Sialia sialia</u>	Southeastern AB, southern SK, southern MB, southern ON, southern PQ, NB, southern NS south through Mexico, Gulf of Mexico, southern FL and Bermuda.	Farmland, open woods, swamps, roadsides; nest: Fence posts, abandoned cavities, bird houses.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Cavity nesting birds/tree cavities (Continued)</u>		
Bluebird, mountain <u>Sialia currucoides</u>	Breeds from central AK, southern YT, southern Mac., southern SK, and southwestern MB, south along the eastern slopes of the coast ranges, and in the Sierra NV and the Rocky Mountains to northwestern and central-southern CA, central and southeastern NV, northern AZ.	Open terrain with scattered trees; nest: Tree, stub, cliff or bird box.
Bluebird, western <u>Sialia mexicana</u>	Breeds from southern BC, western and southern MT, south to eastern OR, northern ID, northwestern WY, to southern CA, western and southern NV, central UT, and CO, south to southeastern AZ, and western TX.	Nest: Holes of dead trees between trunk and loose bark.
Chickadee, black-capped <u>Parus atricapillus</u>	Central AK, southern YT, southwestern Mac., central SK, central MB, central ON, southern PQ, and NF south to northwestern CA, northeastern NV, central UT, northern NM, northeastern OK, central MO, south-central IL, central IN, southern OH, WV, western VA, eastern TN, western NC, western MD, PA and northern NJ.	Deciduous or coniferous woods; nest: Tree or stub 4-10 ft.
Chickadee, boreal <u>Parus hudsonicus</u>	Northern North America from northern limit of wooded country through continental AK south to central-northern WA, northwestern MT, central SK, central MB, northeastern MN, northern MI, central ON, northeastern NY, northern VT, northern NH, ME and NS.	Muskeg bogs, coniferous forests; nest: Tree stub 1-2 ft.
Chickadee, Carolina <u>Parus carolinensis</u>	From southeastern KS, southwestern and east-central MO, central IL, central IN, central OH, southwestern and southeastern PA, and central NJ south through east-central TX to the Gulf Coast and central FL.	Deciduous or coniferous woodlands; nest: Stumps or abandoned woodpecker holes-live or dead, 5-6 ft.
Chickadee, chestnut-backed <u>Parus rufescens</u>	Along the coast and islands from central-southern AK to south-central CA, inland along the coast ranges, and to southeastern WA, northern ID, and northwestern MT.	Conifers, oaks, shade trees; nest: Tree stub.
Chickadee, gray-headed <u>Parus cinctus</u>	Resident from northern and central AL, northern YT, and northwestern Mac.	Spruce, birch, willow thickets; nest: Tree or stub.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Cavity nesting birds/tree cavities (Continued)</u>		
Chickadee, Mexican <u>Parus sclateri</u>	From southeastern AZ and southwestern NM south to Mexico.	Conifers, pine-oak woods, tree cavities.
Chickadee, mountain <u>Parus gambeli</u>	Resident in Rocky Mountains, the Sierra NV, and the inner coast ranges from northwestern BC and southwestern AB, to northern Baja CA, central to southeastern AZ, central and southeastern NM, and southwestern TX.	Mountain forests, conifers, tree cavities.
Flicker, common <u>Colaptes auratus</u>	North America from limit of trees in central AK, southeastern AK, northwestern MB, central BC, west-central AB, James Bay, central PQ, southern LB and NF south to northern Baja, CA, Mexico and to southern TX, the Gulf Coast, the FL Keys, Cuba and Grand Cayman.	Deciduous and coniferous forests, orchards, mixed woods, roadsides, farms, live or dead trees 2-60 ft.
Flycatcher, ash-throated <u>Myiarchus cinerascens</u>	Breeds from southwestern OR, eastern WA, southern ID, southwestern WY, CO, NM, and northern and central TX south to Baja, CA and Mexico.	Desert brush, pinyon-juniper-open woods; nest: In tree cavities, mesquite, yucca.
Flycatcher, great-crested <u>Myiarchus crinitus</u>	Southeastern SK, southern MB, central ON, southwestern PQ, northern ME, and central NB. South to western OK, central TX, the Gulf of Mexico and southern FL.	Woodlands, orchards, swamps, edges, clearings; nest: In live or dead trees, 3-75 ft.
Flycatcher, Wied's crested <u>Myiarchus tyrannulus</u>	Southern NV, central AZ, southwestern NM, Mexico, and southern TX south to Central America.	Woodlands, river groves, nest in live or dead trees; nest: AZ-sagueros; TX-sycamore canyons.
Nuthatch, brown-headed <u>Sitta pusilla</u>	Southeastern OK, central AR, LA, MS, AL, northern GA, southwestern NC, southern VA, southern MD, and southern DE south to Gulf Coast, southern FL and Grand Bahama Island.	Open pine woods; nest: Abandoned cavities in stubs, trees, 2-50 ft.
Nuthatch, pygmy <u>Sitta pygmaea</u>	Mountainous areas from southern BC, northern ID, western MT, central WY, and southwestern SD south to northern Baja, CA, AZ, and through Mexican highlands.	Yellow pines, Douglas-fir; nest: conifer stub, also in a ball of thorny twigs.
Nuthatch, red-breasted <u>Sitta canadensis</u>	Breeds principally in Canadian zone from southeastern AK, southern YT, southwestern Mac., central SK, southern MB, James Bay, western and northern ON, southern and eastern PQ, NF, and St. Pierre and Miquelon Islands south to central	Coniferous woods; nest: Rotted stub, or abandoned cavity, 5-40 ft.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Cavity nesting birds/tree cavities (Continued)</u>		
Red-breasted nuthatch (Continued)	coastal and southern CA, AZ, NM, central-western and south-central CO, WY, southwestern SD, MT, south-eastern MB, central MN, WI, northern MI, southern ON, through the Appalachians to eastern TN and western NC, southern NY, western CT and MA.	
Nuthatch, white-breasted <u>Sitta carolinensis</u>	Southern BC, southeastern AB, northwestern and central MT, southern MB, southern ON, southern PQ, northern ME, north-central NB, PE, Cape Breton Island and central NS south to southern Baja, CA and Mexico; not in Rocky Mountain region.	Woodlands, orchards; nest: Natural or abandoned cavities, 15-20 ft.
Sapsucker, Williamson's <u>Sphyrapicus thyroideus</u>	Southern BC, south in mountains through central and eastern WA, OR, western MT, WY, and CO to southern CA, southern NV, central AZ, to northern NM.	Conifers, forest burns; nest: Tree or stub.
Sapsucker, yellow-bellied <u>Sphyrapicus varius</u>	From southeastern AK, southern Mac., northern MB, northern ON, southern PQ, southern LB, Anticosti Island, and NF to the mountains of southern CA, central AZ, northern NM, southeastern SD, eastern MO, central IL, northwestern IN, northern OH, western PA, northern NY, and central New England southward in the Alleghenies to TN, NC and northern GA.	Woodlands, aspen groves, orchards; nest: Live or dead trees, 8-40 ft above ground.
Starling <u>Sturnus vulgaris</u>	Southern Canada and through much of the U.S.	Nest: Any cavity or hole, prefers natural cavity in trees, 10-25 ft. above ground.
Swallow, tree <u>Iridoprocne bicolor</u>	North-central AK, southwestern YT, central-western and southern Mac., northern AB, northern SK, northern MB, northern ON, northern PQ, southern LB, and NF south to southeastern AK, along the Pacific Coast to southern CA, west-central NV, east-central OR, southeastern WA, ID, west-central UT, western CO, southeastern WY, southern ND, southern SD, eastern NE,	Wooded swamps, open woods, fields near water; nest: Live or dead trees or nest box.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Cavity nesting birds/tree cavities (Continued)</u>		
Tree swallow (Continued)	northeastern KS, south-central MO, northwestern TN, southern IL, south-central IN, central OH, northern WV, VA, central MD, northeastern PA, eastern NY, northern CT, central MD, northeastern PA, central NY, northern CT, RI, and MA; casually south to northeastern AR, northeastern LA, central-western MS, and NJ.	
Swallow, violet-green <u>Tachycineta thalassina</u>	Western North America from Yukon River Valley through southern AK, western and southern BC, southwestern AB, MT, southwestern SD, and northwestern NE south to southern Baja, CA, and through CO, NM, and western TX to central Mexico.	Open forests, foothills, wooded mountains; nest: Tree, cliff, building.
Swift, Vaux's <u>Chaetura vauxi</u>	Breeds from southeastern AK, northern BC, and western MT south through WA and OR, chiefly west of Cascades and Sierra NV, to central CA.	Forest burns, openings, redwood and Douglas-fir stands; nest: Bracket of twigs glued to inside of hollow tree.
Titmouse, plain <u>Parus inornatus</u>	Resident in southern OR, NV, southeastern ID, southwestern WY, and south-central CO, south to northern Baja, CA, central and southeastern AZ, southwestern and central NM, to western TX; also resident in extreme southern Baja, CA.	Oak woods, pinyon-juniper, river woods, shade trees; nest: Tree cavities.
Titmouse, tufted <u>Parus bicolor</u>	Central and southeastern AZ and southwestern NM, south through Mexico; southeastern NE, central and eastern IA, southeastern MN, southern WI, southern MI, southern ON, northern OH, northwestern PA, extreme southern NY and southwestern CT south through eastern KS and eastern OK, to eastern TX, southern LA, southern MS, southern AL, central FL, and southern GA.	Deciduous, coniferous woods, swamps, orchards; nest: Natural or abandoned cavities 2-87 ft.
Verdin <u>Auriparus flaviceps</u>	Southeastern CA, southern NV, southwestern UT, western and southern AZ, southern NM, and southwestern and south-central TX south to southern Baja, CA, Jalisco and San Luis Potosi.	Desert, brush valleys, savannahs; nest: Bush or tree.
Warbler, Lucy's <u>Vermivora luciae</u>	Breeds from southern NV, UT, and southwestern CO, south to northeastern Baja, CA, northwestern Mexico, and southwestern NM; casual in breeding season in the Colorado Desert of CA.	Along desert streams, willows, cottonwoods, mesquite; nest: Tree cavity or under loose bark.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
Cavity nesting birds/tree cavities (Continued)		
Warbler, prothonotary <u>Protonotaria citrea</u>	Breeds from central-eastern MN, south-central WI, southern MI, southern ON, central NY, and NJ. South through eastern NE, eastern KS, central OK, and eastern TX to the Gulf Coast and central FL.	Forested bottomland, flooded river valleys, swamps; nest: Natural cavity, abandoned cavity, box, 5-10 ft.
Woodpecker, acorn <u>Melanerpes formicivorus</u>	Southwestern OR, CA west of the Sierra NV, AZ and west-central TX to southern Baja, CA, and through the highlands of Mexico and CA to Central America.	Oak woods, groves, mixed woods, oak-pine canyons, foothills.
Woodpecker, Arizona <u>Picoides arizonae</u>	From the mountains of south-central and southeastern AZ and extreme southwestern NM to Mexico.	Oaks in mountains, pine-oak canyons; nest: Dead trees.
Woodpecker, downy <u>Picoides pubescens</u>	From southeastern AZ, southwestern Mac., northern AB, central SK, northern MB, James Bay, southern PQ, Anticosti Island, and NF south to southern CA, central AZ, northern NM, south-central TX, and the Gulf Coast from LA to FL.	Mixed forests, river groves, edges, swamps, orchards; nest: Live or dead trees 3-50 ft.
Woodpecker, Gila <u>Melanerpes uropygialis</u>	Resident from southeastern CA, southwestern NV, southern AZ, and southwestern NM to southern Baja, CA, and western Mexico.	Streams, washes; nest: Saguaro, cottonwood.
Woodpecker, golden-fronted <u>Melanerpes aurifrons</u>	Central Mexico, southwestern OK, and TX south to Central America.	Mesquite, stream woodlands, groves; nest: Post, pole, tree cavities.
Woodpecker, hairy <u>Picoides villosus</u>	Central AK, middle YT, central Mac., northern MB, James Bay, south-central PQ, and NF south to northern Baja, CA, Mexico, central TX, the Gulf Coast, southern FL, the Bahama Islands and through the mountains of CA to Central America.	Coniferous or deciduous woods, swamps, orchards; nest: Live or dead trees 5-30 ft.
Woodpecker, ladder-backed <u>Picoides scalaris</u>	Southeastern CA, southern NV, southwestern UT, and southern CA, south through Mexico.	Deserts, canyons, cottonwoods, prairie groves; nest: Post, tree cavities.
Woodpecker, Lewis' <u>Melanerpes lewis</u>	Breeds from southern BC, including Vancouver Island, western AB, MT, and southwestern SD to southern CA, central AZ, and southern NM, east to northwestern NE and eastern CO.	Scattered or logged forests, burns, river groves.
Woodpecker, Nuttall's <u>Picoides nuttallii</u>	Resident in CA west of the deserts and the Sierra divide from southern Humboldt and Sonoma Counties and the head of the Sacramento Valley south to northwestern Baja, CA.	Wooded canyons, foothills, river woods, groves, orchards.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Cavity nesting birds/Tree cavities (Continued)</u>		
Woodpecker, red-bellied <u>Melanerpes carolinus</u>	Southeastern MN, southern WI, southern MI, extreme southern ON, western NY, and DE south to southern TX, the Gulf Coast and the Florida Keys to Key West.	Woodlands, live or dead trees 5-40 ft above ground.
Woodpecker, red-headed <u>Melanerpes erythrocephalus</u>	From southern SK, southern MB, western and southern ON, southern PQ, NY, and southern NH to northern NM, central TX, the Gulf Coast and FL.	Woodlands, deciduous and coniferous forests, farm country, groves, scattered trees live or dead, 8-80 ft above ground.
Woodpecker, black-backed three-toed <u>Picoides arcticus</u>	Breeds from central AK, southern Mac., northern MB, northern ON, northern PQ, southern LB, Anticosti Island, and NF south in CA mountain ranges to latitude 37°, and to western NV, northwestern WY, southwestern SD, northern MN, northeastern WI, northern MI, southeastern ON, northern NY, VT, NH, and northern ME.	Coniferous forests, swamps, prefers fire-kill areas, dead or live trees 2-15 ft, coniferous forests; nest: Dead trees.
Woodpecker, white-headed <u>Picoides albolarvatus</u>	From south-central BC, north-central WA, and northern ID south to southern CA and western NV.	Pine forests, firs; nest: In stub.
Wren, Bewick's <u>Thryomanes bewickii</u>	Southwestern BC, central WA, NV, southern UT, southwestern WY, central CO, southeastern NE, southern IA, southern WI, southern MI, southern ON, OH, central PA, and VA south to Guadalupe Island, southern Baja, CA, NM and northern sections of the Gulf States.	Thicket, underbrush, pinyon-juniper canyons; nest: Tree, stub, crevice, box.
Wren, brown-throated <u>Troglodytes brunneicollis</u>	Southeastern AZ, south into Mexican mountains.	Thickets, open woods, brush; nest: Tree, stub, or bird box.
Wren, Carolina <u>Thryothorus ludovicianus</u>	Southeastern NE, southern IA, southern IL, central IN, southeastern MI, southern ON, southern PA, southeastern NY, southern CT, and southeastern MA south to Mexico, The Gulf Coast and southern FL; sporadically farther north to southeastern MN, southern WI, east-central MI, central NY, VT, southern NY and southwestern ME.	Brushy forests, thickets; nest: Natural cavityies, abandoned holes, upturned roots.
Wren, house <u>Troglodytes aedon</u>	Southern and central-eastern BC, central AB, southern SK, southern MB, central ON, southern PQ, ME, and NB south to northern Baja, CA, southeastern AZ, northern TX, AR, TN and northern GA.	Farmland, open forests; nest: Tree, stub, fence post, abandoned cavities.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Cavity nesting birds/tree cavities (Continued)</u>		
Wren, winter <u>Troglodytes troglodytes</u>	Holarctic region from Aleutians, AK, southern YT, south-central Mac., central SK, southern MB, northern ON, central PQ, NF, and Iceland. South to central CA, central ID, the Great Lakes area and northern GA.	Coniferous wooded swamps, bogs; nest: Mossy hammocks, rock crevices, abandoned holes, up-turned roots.
<u>Nesting type: Wetland nesting birds/saltwater - marsh, bay, tundra</u>		
Avocet, American <u>Recurvirostra americana</u>	Breeds east-central WA, south-central OR, southern ID, northern MT, central AB, southern SK, southern MB, south to southern CA, southern NV, northern UT, south-central CO, southern NM, and southern TX east to eastern ND, eastern SD, western NE, eastern CO, north-central OK.	Borders of alkaline lakes, open spaces of marshes near scanty vegetation. Nest: Hollow in mud scattered among tufts of grass.
Crane, sandhill <u>Grus canadensis</u>	Northern AK, Banks Island, Baffin Island south to the Aleutian Islands, southeastern AK, CA, Baja, CA, southern and eastern TX, and LA; also in AL, southern GA, and FL.	Marshes, prairies, mountain meadows, near water; nest: Haylike mound.
Grackle, boat-tailed <u>Cassidix major</u>	The Gulf Coast, northern FL, the Atlantic Coast from NJ south to southern FL.	Coastal areas, fresh and salt water marshes; nest: Near or over water, willows, cat-tails, bulrush.
Grackle, great-tailed <u>Cassidix mexicanus</u>	Southern AZ, central NM, west-central to southeastern TX through Mexico, CA, and coastal South America.	Coastal areas, fresh and salt water marshes; nest: Near or over water, willows, cat-tails, bulrush.
Phalarope, northern <u>Lobipes lobatus</u>	Breeds in Western Hemisphere from western and northern AK, northern Mac., central Kee., east-central Baffin Island, coasts of Greenland south to southern AK, southern YT, northwestern BC, southern Mac., northeastern MB, islands in southern James Bay, and locally along the LB coast.	Bays, lakes, ponds, tundra; nest: Marshy tundra.
Rail, black <u>Laterallus jamaicensis</u>	Central CA to northwestern Baja, CA, eastern KS, northern MO, southeastern IA, IL, IN, OH, PA, NY, CT and MA, south to Gulf Coast.	Saltwater marshes; nest: Salt-grass, meadows, sedges.
Sandpiper, least <u>Calidris minutilla</u>	Breeds from central-western AK, northern Mac., and possibly southern Victoria Island, southern Kee., central-eastern coast of Hudson Bay,	Tideflats, grassy marshes, shores; nest: Hollow in moss tundra.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Wetland nesting birds/saltwater - marsh, bay, tundra (Continued)</u>		
Least sandpiper (Continued)	and northern LB south to AK peninsula, southeastern AK, and southern YT; also south to north-eastern MB, the southern coast of Hudson Bay, western and eastern coasts of James Bay and eastern PQ, Sable Island off NS and NF.	
Sandpiper, solitary <u>Tringa solitaria</u>	Breeds from central AK, northern Mac., northern MB, northern ON, central PQ, and central LB south to central-eastern BC, southern AB, central SK, southern MB, central ON, central PQ, south-central LB.	Wooded swamps, ponds, freshwater marshes, streamsides; nest: Near water, in old nests of robin, rusty blackbird.
Sandpiper, western <u>Calidris mauri</u>	Breeds on coasts of western and northern AK from Nunivak Island and the Kashunuk River to the Seward Peninsula and less commonly to Point Barron and Camden Bay.	Shores, beaches, mudflats, open marshes; nest: Dry tundra.
Sparrow, seaside <u>Ammodramus maritima</u>	Salt marshes of Atlantic Coast from MA south to northern FL, and of the Gulf Coast from southern TX to central peninsular FL.	Salt marshes; nest: On ground, marsh grass, bushes, marsh elder, <u>Spartina</u> , <u>Juncus</u> .
Wren, long-billed marsh <u>Cistothorus palustris</u>	Central BC, northern AB, south-central SK, southern MB, southern ON, southwestern PQ, southern ME, and eastern NB south to northern Baja, CA, south-central Mexico, the Gulf Coast to southern FL.	Fresh and salt marshes, trace rivers, shores of inland pools; nest: Lashed to cat-tails, reeds, sedges, small bushes.
Yellowlegs, greater <u>Tringa melanoleucus</u>	Central-southern AK, central AB, east to north-central PQ and LB, and south to southeastern PQ and NF.	Open marshes, mudflats, streams, ponds; nest: Depression in muskeg.
Yellowlegs, lesser <u>Tringa flavipes</u>	North-central AK, northern YT, northwestern Mac., southern Kee., northeastern MB, and northwestern PQ south to east-central BC, central AB, central SK, southern MB, northern ON, west-central PQ.	Marshes, mudflats, shores, pond edges; nest: Depression in ground.
Yellowthroat, common <u>Geothlypis trichas</u>	Southeastern AK, southern YT, northern AB, central SK, central MB, central and northeastern ON, eastern PQ, and southwestern NF south to northern Baja, CA, the Gulf Coast of the U.S. and southern FL.	Freshwater or saltwater swamps, bottomlands, wet or dry thickets, hedgerows; nest: Dense low cover, on ground or lodged in surrounding vegetation.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
Nesting type: Wetland nesting birds/freshwater - marsh, bog, lake, pond		
Blackbird, red-winged <u>Agelaius phoeniceus</u>	Northwestern BC, southeastern YT, central Mac., northern SK, north-central MB, northern ON, southern PQ, PE, central NS south to southern Baja, CA, Central America, western Cuba, the Isle of Pines and the northern Bahamas.	Marshes, swamps, wet meadows, streamsides, dryfields, pastures, borders of ponds, lakes.
Blackbird, tri-colored <u>Agelaius tricolor</u>	Breeds east of the coast ranges in southern OR south through CA, to northwestern Baja, CA.	Cat-tail or tule marshes; nest: Attached to reeds, cat-tails, bushes.
Blackbird, yellow-headed <u>Xanthocephalus</u> <u>xanthocephalus</u>	Breeds from western OR, central WA, central BC, northeastern AB, north-central SK, central and southeastern MB, northern MN, north-central WI, northeastern IL, and northwestern OH south to southern CA, southwestern AZ, northeastern Baja, CA, south-central NV, southwestern UT, central and central-eastern AZ, southern NM, northern TX, northwestern OK, southern KS, northwestern AR, southwestern, central and northeastern MO, central IL, northwestern IN.	Freshwater sloughs, marsh borders of ponds, lakes.
Coot, American <u>Fulica americana</u>	BC, southern Mac., AB, SK, MB, ON, PQ, and NB south through Mexico and Central America to Panama, the Greater Antilles, and Bahama Islands, and the Hawaiian Islands.	Freshwater marshes, ponds, wet meadows; nest: Floating, attached to surrounding vegetation.
Gallinule, common <u>Gallinula chloropus</u>	Hawaiian Islands, from CA and AZ south through western Mexico, CO, NE, SD, MN, WI, MI, ON, and PQ south through eastern Mexico and Central America.	Freshwater marshes, canals, ponds; nest: Over water in vegetation clump.
Gallinule, purple <u>Porphyrula martinica</u>	Breeds from coastal region of LA, TN, western and southern MS, southern AL, and SD south through eastern GA, FL, the Bahama Islands and from southeastern TX through lowlands of Mexico; Central America south to South America.	Freshwater marshes, canals, ponds; nest: Over water in vegetation clump.
Godwit, marbled <u>Limosa fedoa</u>	Breeds from central AB, southern SK, and southern MB south to central MT, central ND, northeastern SD, and west-central MN.	Prairies, pools, shores; nest: Depression in grassy flat.
Grackle, boat-tailed <u>Cassidix major</u>	The Gulf Coast, northern FL, the Atlantic Coast from NJ south to southern FL.	Coastal areas, fresh and salt water marshes; nest: Near or over water, willows, cat-tails, bulrush.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Wetland nesting birds/freshwater - marsh, bog, lake, pond (Continued)</u>		
Grackle, great-tailed <u>Cassidix mexicanus</u>	Southern AZ, central NM, west-central to southeastern TX through Mexico, CA, and coastal South America.	Coastal areas, fresh and salt water marshes; nest: Near or over water, willows, cat-tails, bulrush.
Phalarope, northern <u>Lobipes lobatus</u>	Breeds in Western Hemisphere from western and northern AK, northern Mac., central Kee., east-central Baffin Island, coasts of Greenland south to southern AK, southern YT, northwestern BC, southern Mac., northeastern MB, islands in southern James Bay, and locally along the LB coast.	Bays, lakes, ponds, tundra; nest: Marshy tundra.
Phalarope, Wilson's <u>Steganopus tricolor</u>	Breeds from interior of BC, central AB, central SK, northeastern MB, eastern MN, southern WI, southern MI, and southern ON south through interior of WA and OR to south-central CA, central NV, western and northern UT, northeastern CO, central KS, western NE, eastern SK and northern IN.	Shallow lakes, freshwater marshes, pools, shores, mudflats; nest: Grass lined hollow in wet and dry meadows.
Rail, king <u>Rallus elegans</u>	Southeastern ND, central MN, central WI, southern MI, southern ON, NY, CT, and MA south to eastern TX, LA, MS, AL, and FL.	Freshwater marshes, edge of sluggish streams, roadside ditches; nest: Clump of cat-tails, marsh grass, rushes.
Rail, Virginia <u>Rallus limicola</u>	BC, AB, MT, SK, MB, MN, WI, MI, southern ON, southern PQ, NB, and NS south to southern AZ, central NM, northern TX, central OK, northern VA, northern AR, northern AL, eastern NC.	Freshwater marshes; nest: Marsh vegetation in dry area or above water.
Sandpiper, least <u>Calidris minutilla</u>	Breeds from central-western AK, northern Mac., and possibly southern Victoria Island, southern Kee., central-eastern coast of Hudson Bay, and northern LB south to AK peninsula, southeastern AK, and southern YT; also south to northeastern MB, the southern coast of Hudson Bay, western and eastern coasts of James Bay and eastern PQ, Sable Island off NS and NF.	Tideflats, grassy marshes, shores; nest: Hollow in moss tundra.
Sandpiper, solitary <u>Tringa solitaria</u>	Breeds from central AK, northern Mac., northern MB, northern ON, central PQ, and central LB south to central-eastern BC, southern AB, central SK, southern MB, central ON, central PQ, south-central LB.	Wooded swamps, ponds, freshwater marshes, streamsides; nest: Near water, in old nests of robin, rusty blackbird.

continued

Species	Primary breeding range	Habitat description
Wetland nesting birds/freshwater - marsh, bog, lake, pond (Continued)		
Sandpiper, western <u>Calidris mauri</u>	Breeds on coasts of western and northern AK from Nunivak Island and the Kashunuk River to the Seward Peninsula and less commonly to Point Barron and Camden Bay.	Shores, beaches, mudflats, open marshes; nest: Dry tundra.
Sora <u>Porzana carolina</u>	BC, Mac., SK, northern MB, northern ON, central and southern PQ, NB, and PE south to northwestern Baja, CA, NV, AZ, southern NM, CO, OK, LA, MS, AL, GA, and northern FL.	Marshes, swamps, bogs; shows preference for sedges or cat-tails, where mud and water are quite deep.
Sparrow, Lincoln's <u>Melospiza lincolni</u>	Northwestern AK, to central LB, south in mountains to southern CA, central AZ, and northern NM in west, and to southern MB, northern MN, northern WI, northern MI, southern ON, northern NY, central ME, and NS in the East.	Tamarack, sphagnum bogs, swamps, wet alders, thickets, brush openings; nest: On ground in grass, sedge, moss, lichens.
Sparrow, sharp-tailed <u>Ammodramus caudatus</u>	Northeastern BC, southern Mac., central SK and central MB south to southern AB and ND; James Bay; Atlantic Coast from lower St. Lawrence Valley south to NC.	Marshes, muskegs, in reedy margins; nest: Near ground in marsh.
Sparrow, swamp <u>Melospiza georgiana</u>	Mac., northern MB, northern ON, central PQ, and NF south to northeastern BC, central AB, southern SK, eastern NE, northern MO, northern IL, northern IN, central OH, south-central WV, MD, DE.	Freshwater marshes, wet brush fields, meadows, lake shores; nest: Grass sedge, low bushes, common over water.
Stilt, black-necked <u>Himantopus mexicanus</u>	Southern OR, ID, northern UT, southern CO, eastern NM, the Gulf Coast of TX and southern LA south to northeastern Baja, CA; also in DE, NC, SC, central and eastern FL.	Grassy marshes, mudflats, shallow lakes; nest: On mudflat, marsh hummock.
Tern, black <u>Chidonias niger</u>	Breeds from southeastern BC, AB, SK, MB, ON, NB, and ME south to CA, northern NV, northern UT, CO, NE, MO, KY, OH, PA and western NY.	Inland marshes, prairies, wet meadows; nest: On floating vegetation, islands in marshes.
Warbler, Connecticut <u>Oporornis agilis</u>	Breeds from central-eastern BC, central AB, central MB, northern ON, northwestern PQ, south to northern MN, northern WI, northern MI, and central ON.	Muskeg, tamarack, spruce bogs; nest: On or near ground, well concealed.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Wetland nesting birds/freshwater - marsh, bog, lake, pond (Continued)</u>		
Warbler, palm <u>Dendroica palmarum</u>	Southwestern Mac., northern AB, northern SK, MB, northern ON, southern PQ, and southern NF south to northeastern BC, central AB, central SK, southeastern MB, northeastern MN, central MI, southern ON, southern PQ, ME, and NS.	Wet muskeg, sphagnum bogs; nest: Buried in moss.
Warbler, Tennessee <u>Vermivora peregrina</u>	Breeds from southern YT, central Mac., northern MB, northern ON, northern PQ, central LB, and western NF south to south-central BC, northwestern MT, central AB, central SK, southern MB, northern MN, northern WI, northern MI, south-central ON, northeastern NY, southern VT, central NH, southern ME, southern NB, and central NS.	Open deciduous and coniferous woods, freshwater sloughs, swales, forest clearings; nest: On ground.
Warbler, Wilson's <u>Wilsonia pusilla</u>	Northern AK, northern YT, northwestern and central Mac., northeastern MB, northern ON, southern LB, and NF south to southern CA, central NE, northern UT, northern NM, central SK, southern MB, northern MN, southern ON, northern VT, central ME, and central NS.	Bogs, wooded swamps, alder swales; nest: On ground at base of tree, bush, well concealed.
Waterthrush, northern <u>Seiurus noveboracensis</u>	North-central AK, northern YT, northwestern and central-southern Mac., northern SK, northern MB, northern ON, north-central PQ, central LB, and NF south to southern continental AK, central BC, northern ID, western MT, central SK, northern ND, northern MN, northern WI, northern MI, north-eastern OH, northern PA and MA.	Wooded swamps, borders of streams, lakes.
Wren, long-billed marsh <u>Cistothorus palustris</u>	Central BC, northern AB, south-central SK, southern MB, southern ON, southwestern PQ, southern ME, and eastern NB south to northern Baja, CA, south-central Mexico, the Gulf Coast to southern FL.	Fresh and salt marshes, trace rivers, shores of inland pools; nest: Lashed to cat-tails, reeds, sedges, small bushes.
Wren, short-billed marsh <u>Cistothorus platensis</u>	Southeastern SK, southern MB, western and southern ON, southern PQ, southern ME, and eastern NB south through eastern SD, eastern NE, and eastern KS, to AR, WV, and VA.	Wet meadows, marshes, hayfields.
Yellowlegs, greater <u>Tringa melanoleucus</u>	Central-southern AK, central AB, east to north-central PQ and LB, and south to southeastern PQ and NF.	Open marshes, mudflats, streams, ponds; nest: Depression in muskeg.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Wetland nesting birds/freshwater - marsh, bog, lake, pond (Continued)</u>		
Yellowlegs, lesser <u>Tringa flavipes</u>	North-central AK, northern YT, northwestern Mac., southern Kee., northwestern MB, and northwestern PQ south to east-central BC, central AB, central SK, southern MB, northern ON, west-central PQ.	Marshes, mudflats, shores, pond edges; nest: Depression in ground.
Yellowthroat, common <u>Geothlypis trichas</u>	Southeastern AK, southern YT, northern AB, central SK, central MB, central and northeastern ON, eastern PQ, and southwestern NF south to northern Baja, CA, the Gulf Coast of the U.S. and southern FL.	Freshwater or saltwater swamps, bottomlands, wet or dry thickets, hedgerows; nest: Dense low cover, on ground or lodged in surrounding vegetation.
<u>Nesting type: Wetland nesting birds/freshwater - rivers, streams, creeks</u>		
Dipper <u>Cinclus mexicanus</u>	Alleetian Islands, north-central AK, central YT, northwestern and central AB, north-central MT, and SD south to southern CA and through highlands of Mexico and Central America.	Fast flowing streams in or near mountains.
Waterthrush, northern <u>Seiurus noveboracensis</u>	North-central AK, northern YT, northwestern and central-southern Mac., northern SK, northern MB, northern ON, north-central PQ, central LB, and NF south to southern continental AK, central BC, northern ID, western MT, central SK, northern ND, northern MN, northern WI, northern MI, north-eastern OH, northern PA and MA.	Wooded swamps, borders of streams, lakes.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Nesting type: Diving ducks - cavity nesters</u>		
Bufflehead <u>Bucephala</u> <u>albeola</u>	Southern coastal AK, upper Yukon Valley, northern Mac., and western and northwestern ON south to southern BC, northern MT, southern SK, and central MB; also in Cascade Mountains of OR and mountains of northeastern CA.	Tree cavities of aspen, Douglas-fir, balsam, poplar, Ponderosa pine.
Goldeneye, Barrow's <u>Bucephala</u> <u>islandica</u>	Breeds in widely separated areas from southern and southeastern AK and northern Mac., south to eastern WA, southwestern OR, and high central Sierra NV, CA; mountains in CO; and in northeastern PQ, northern LB, southwestern Greenland and Iceland.	Tree cavities, nest boxes, rarely in holes in ground; tree spp. quaking aspen, cottonwood, Douglas-fir, Ponderosa pine; most sites within 100 ft of water.
Goldeneye, common <u>Bucephala</u> <u>clangula</u>	AK, Mac., southwestern shore of Hudson Bay, southern LB, and NF south to BC, MT, MN, and NB.	Natural cavities, nest boxes; preferred trees silver maple, elm, butter-nut. Open woods, near edges of fields, marshes.
Merganser, common <u>Mergus</u> <u>merganser</u>	Southeastern AK, BC, central AB, MB, northern ON, central PQ, and NF to central CA, AZ, Mexico, SD, MI, NY, and NS.	Tree cavities, and will resort to ground nesting when suitable cavities are not available. Nests located close to water.
Merganser, hooded <u>Lophodytes</u> <u>cucullatus</u>	Southeastern AK, central AK (rarely), northern BC, southern Mac., central AB, MB, central ON, southern PQ, and NB south to southwestern OR, central ID, south-central WY, central NE, south-central IA, eastern MO, eastern AL and western TN, sporadically in LA, AL, FL and SC.	Tree cavities in swamps, bottomlands, wooded streams, beaver ponds; cavities selected are similar to wood duck.
<u>Nesting type: Diving ducks - ground nesters</u>		
Canvasback <u>Aythya</u> <u>valisineria</u>	Central AK, northern Mac., Great Slave Lake, southeastern MB, southwestern SK, south to southern and southeastern OR, northern CA, western NV, northern UT, northern CO, western NE.	Diverse habitats; marshes, ponds, sloughs, pot-holes; favored cover spp.: cat-tails, bulrushes, bur-reed, sedge; interspersed between emergent plants and water is most important factor.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Diving ducks - ground nesters (Continued)</u>		
Duck, harlequin <u>Histrionicus</u> <u>histrionicus</u>	Breeds from central-western AK, southeastern Baffin Island, northeastern PQ and Greenland south to the Aleutian Islands, the mountains of southeastern AK and BC, the western slopes of central Sierra NV in CA, the mountains of CO, eastern PA, and central LB.	Rocky shores adjacent to mountain streams; also on ground under bushes, shrubs.
Duck, ring-necked <u>Aythya</u> <u>collaris</u>	Breeds from southern AK, Mac., central BC, AB, SK, MB, western ON, central PQ, and NF south to eastern OR, eastern CA, White Mountains of AZ, central CO, northern NE, northern IA, northwestern PA, ME, NB, PE, and NS.	Favors marshes surrounded partially by wooded vegetation, located within a few ft from water opening; preferred cover spp.: Sedge, sweet gale, leather leaf.
Duck, ruddy <u>Oxyura</u> <u>jamaicensis</u>	From BC, Mac., AB, northern MB, Ungava and NS south through Mexico to Central America, the Gulf Coast, and FL, the Bahama Islands, Greater and Lesser Antilles.	Large and small marshes, nest in emergent vegetation; plants at desirable water depths are more important than individual species.
Merganser, red-breasted <u>Mergus</u> <u>serrator</u>	Greenland, southern AK, BC, AB, MN, MI, southern ON, NY, ME, and NF.	Diverse nesting sites: Marshes, rocky islets, islands, shores; dense cover vegetation includes spruce, gooseberry bushes, labrador tea; distance from water varies from few yds to 50 yds.
Scaup, lesser <u>Aythya</u> <u>affinis</u>	Breeds in interior of northwestern North America from central AK and the northern limit of trees in the Mac., and Anderson River regions east to the west shore of Hudson Bay; south to southern AK, central BC, northern ID, northeastern CO, NE, northeastern IA, formerly or sporadically to southern WI, southern ON, and OH.	Grassy areas near water or distant upland areas; also islands in lakes; favored cover spp.: Sedges, juncus, reed canary-grass.
Scoter, surf <u>Melanitta</u> <u>perspicillata</u>	Breeds from western AK, east in northwestern Canada from MacKenzie Delta to the Anderson River, south to northern BC, Great Bear to Great Slave Lakes,	Closed, open boreal forests, well-concealed nests under low branches of pine or spruce.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Diving ducks - ground nesters (Continued)</u>		
Surf scoter (Continued)	and Lake Athabaska, probably further east in NT; also in James Bay and central LB.	
Scoter, white-winged <u>Melanitta deglandi</u>	Northwestern AK, MacKenzie Delta, central MB, northern ON, and NF.	Nest considerable distance from water in woodland areas or in areas with dense cover; cover spp.: Rosebushes, raspberry, willows, nettles, gooseberry bushes.
<u>Nesting type: Surface (puddle) ducks - cavity nesters</u>		
Duck, wood <u>Aix sponsa</u>	Breeds from the Okanagan Valley and southwestern BC, WA, northern ID, and northwestern MT south through western and central OR to central CA; and from southern MB, northern MN, southern ON, southern PQ, NB, NS, and PE south to southeastern TX, the Gulf Coast and FL.	Tree cavities, woodland areas, adjacent or rarely a mi from water; favor tree spp. in floodplain forests: Bald-cypress, sycamore, silver maple, black ash, sourgum, black willow; upland areas: Black oak, bur oak, basswood, American elm, sweet gum.
<u>Nesting type: Surface (puddle) ducks - ground nesters</u>		
Duck, black <u>Anas rubripes</u>	Northern MB, northern ON, northern PQ, LB, and NF south to ND, northern MN, WI, northern IL, IN, OH, PA, MD, WV, and eastern VA, sparingly to eastern NC.	Variety of habitats, depending on available cover; Chesapeake Bay area; 65% in upland areas, 17% marshes, 19% in old duck blinds; most of the nests in upland areas were in wooded tracts; also nest in cavities, stumps.
Duck, mottled <u>Anas fulvigula</u>	The coastal region of southern TX and LA, and peninsular FL from Alachua County southward.	Prefer coastal marsh; nest in cordgrass; also prairie meadows, rice fields, within 500 ft of water; cover vegetation: Cordgrass, bucharis bush.
Gadwall <u>Anas strepera</u>	Breeds from southern AK, southern BC, AB, central MB, and rarely PQ south through CA, NV, northern AZ, southern CO, northwestern NM, northern TX, southwestern KS, northern IA, central MN, southern WI, OH, northwestern PA, NJ, DE, MD, NC.	Prefers meadow, upland areas, dikes in marshes, fields, meadows; most nest less than 100 yds from water; vegetation varies within range, general requirements tall, dense vegetation.

continued

Table 65.8 (Continued)

Species	Primary breeding range	Habitat description
<u>Surface (puddle) ducks - ground nesters (Continued)</u>		
Gadwall (Continued)		
Mallard <u>Anas platyrhynchos</u>	AK, northwestern and southeastern Canada to northern Baja, CA, southern TX, IL, OH, and VA.	Prefer upland areas to marsh; nests located within 100 yds of water; cover vegetation varies greatly in range, primary requirement is dense vegetation about 24 in high.
Pintail <u>Anas acuta</u>	Breeds from the tundra lakes of arctic AK east to northern Mac., Southampton Island, eastern PQ, southeastern NB, NF, western Greenland, south to southern CA, northwestern NV, northern AZ, southern CO, central NE, central IA, central IL, sparingly to southern MI, northern OH, and northwestern PA.	Open areas with low or sparse vegetation; nest 40 yds from water, frequently in farmland habitat, hayfields, pastures, roadsides.
Shoveler, northern <u>Anas clypeata</u>	Breeds from western AK, irregularly east to Mackenzie Bay, Great Slave Lake, central AB, central SK, the west coasts of Hudson and James Bays, southern ON, northwestern PA, and DE south through eastern WA, and OR to southern CA, central AZ, south-central NM, KS, NE, western IA; occasionally to IL, IN, WI, MI, southern ON, northern OH, western NY, NB, MO, and TX.	Tall-grass prairies, wetlands, marshes; cover vegetation tall-grasses, when sufficient grass cover is not available hayfields and meadows are utilized; nests average 75-200 ft from water.
Teal, blue-winged <u>Anas discors</u>	Breeds from BC, northern SK, southern PQ, and NS south to southern CA, southern NM, and central TX.	Hayfields are used extensively in midwest; also northern prairies, grasslands, sedge meadows; average distance from water 125 ft. Favored spp.: Grasses, buckbrush, bluegrass.

continued

Table 65.8 (Concluded)

Species	Primary breeding range	Habitat description
<u>Surface (puddle) ducks - ground nesters (Continued)</u>		
Teal, cinnamon <u>Anas</u> <u>cyanoptera</u>	Southwestern Canada, WY, south to CA, NM and Mexico.	Marsh areas within 75 yds of water; dense cover is more important than type of vegetation; favored spp. include saltgrass, hardstem, bulrush.
Teal, green-winged <u>Anas crecca</u>	North-central AK, northern Mac., northern MB, James Bay, south-eastern PQ, and NF south to southern CA, eastern AZ, northern NM, northern NE, southern MN, western ON, northern OH, northwestern PA, western NY, ME, NB, NS; casually to MA.	Upland areas, average of 95 ft from water; favors dense stands of grass, weeds, brush for cover.
Wigeon, American <u>Anas</u> <u>americana</u>	Breeds from the Bering Sea Coast of AK, the interior of AK, the YT and Mac. basins, Great Slave Lake, Lake Athabaska, southern MB, western MN, and WI south through interior of BC and Great Plains to north-eastern CA, northern NV, northern AZ, northern CO, and northern NE.	Upland nesting sites, ranging from a few yds to 400 yds from water; cover spp.: Buckbrush, juncus, greasewood.
<u>Nesting type: Tree (whistling-) ducks</u>		
Whistling-duck, black-bellied <u>Dendrocygna</u> <u>autumnalis</u>	Southern TX through Mexico and CA to South America.	Pastures; nest: Under brush, low shrubs. Prefers trees: Live oaks, ebony, willow, mesquite; most nests were between 500-1,000 yds from water. Also nests in nest houses.
Whistling-duck, fulvous <u>Dendrocygna</u> <u>bicolor</u>	Central CA, southeastern TX and southwestern LA south to south-central Mexico.	Ricefields; nest: Contour levees, dense vegetation over water; TX preferred spp.: <u>Paspalum</u> , cutgrass, cat-tails.

^aReferences used for this table are: 8, 18, 76, 124, 174, 175, 180.

U.S. ENDANGERED/THREATENED FISH

U.S. endangered/threatened fish are listed in alphabetical order according to common name along with the scientific name and range (table 65.9). Ecological characteristics of fish are not provided because of the impracticality of managing a fish species on a ROW.

Instead, critical areas and wetlands are discussed (volume 1, chapter 6), but suggest that management is a passive program—avoid wetlands when possible; if not, minimize disturbances and water and vegetation changes. Emphasis is placed on water quality control and management of bordering vegetation.

Table 65.9 U.S. Endangered/Threatened Fish

Common name	Scientific name	Range
<u>Endangered</u>		
Chub, humpback	<u>Gila cypha</u>	AZ, UT, WY
Chub, Mohave	<u>Gila mohavensis</u>	CA
Chub, roundtail	<u>Gila robusta</u>	NV
Cisco, longjaw	<u>Coregonus alpenae</u>	Lakes Michigan, Huron, and Erie
Cui-ui	<u>Chasmistes cujus</u>	NV
Dace, Speckled	<u>Rhinichthys osculus</u>	WY
Dace, Moapa	<u>Moapa coriacea</u>	NV
Darter, fountain	<u>Etheostoma fonticola</u>	TX
Darter, Maryland	<u>Etheostoma sellare</u>	MD
Darter, Okaloosa	<u>Etheostoma okaloosae</u>	FL
Darter, snail	<u>Percina tanasi</u>	TN
Darter, watercress	<u>Etheostoma nuchale</u>	AL
Gambusia, Big Bend	<u>Gambusia gaigei</u>	TX
Gambusia, Clear Creek	<u>Gambusia heterochir</u>	TX
Gambusia, Pecos	<u>Gambusia nobilis</u>	TX
Killifish, Pahrump	<u>Empetrichthys latos</u>	NV
Madtom, Scioto	<u>Noturus trautmani</u>	OH
Pike, blue	<u>Stizostedion glaucum</u>	Lakes Erie and Ontario
Pupfish, Comanche Springs	<u>Cyprinodon elegans</u>	TX
Pupfish, Devil's Hole	<u>Cyprinodon diabolis</u>	NV
Pupfish, Owens River	<u>Cyprinodon radiosus</u>	CA
Pupfish, Tecopa	<u>Cyprinodon nevadensis calidae</u>	CA
Pupfish, Warm Springs	<u>Cyprinodon nevadensis pectoralis</u>	NV
Squawfish, Colorado River	<u>Ptychocheilus lucius</u>	AZ, CA, CO, NM, UT, WY
Stickleback, unarmored three-spined	<u>Gasterosteus aculeatus williamsoni</u>	CA
Sturgeon, shortnose	<u>Acipenser brevirostrum</u>	Atlantic Coast
Topminnow, Gila	<u>Poeciliopsis occidentalis</u>	AZ
Trout, greenback cutthroat	<u>Salmo clarki stomias</u>	CO
Trout, Gila	<u>Salmo gilae</u>	NM
Woundfin	<u>Plagopterus argentissimus</u>	AZ, NV, UT
<u>Threatened</u>		
Cavefish, Alabama	<u>Speoplatyrhinus poulsani</u>	AL
Chub, slender	<u>Hybopsis cahni</u>	TN, VA

continued

Table 65.9 (Concluded)

Common name	Scientific name	Range
Chub, spotfin	<u>Hybopsis monacha</u>	VA, TN, NC
Darter, bayou	<u>Etheostoma rubrum</u>	MS
Darter, leopard	<u>Percina pantherina</u>	AR, OK
Darter, slackwater	<u>Etheostoma boschungii</u>	AL, TN
Madtom, yellowfin	<u>Noturus flavipinnis</u>	TN, VA
Trout, Arizona	<u>Salmo apache</u>	AZ
Trout, Lahontan cutthroat	<u>Salmo clarki henshawi</u>	CA, NV
Trout, Little kern golden	<u>Salmo aguabonita whitei</u>	CA
Trout, Paiute cutthroat	<u>Salmo clarki seleniris</u>	CA

STATE ENDANGERED/THREATENED FISH AND WILDLIFE

Listed by State (table 65.10) are the endangered/threatened faunal species (mammals, birds, amphibians and reptiles, and fish). No other information about the species is included, due to the number of species involved and, in many cases, their only local relevance. These lists, unless otherwise noted, are considered by the State's fish and game agency as the official list for that State, as of 1977. The reference cited for a particular State should be checked as indicated in parenthesis below the State name (see references at the end of this chapter). Omitted

from these State lists are any entirely oceanic species (e.g., whales).

Some states have no list of their own but have adopted the Federal listing of endangered species. Ecological characteristics of Federally listed wildlife species are listed in tables 65.5, 65.6, and 65.7.

The status of State endangered/threatened wildlife is constantly changing, so current information should be obtained from the State fish and game agency of interest. The status definitions for each State also vary; these should be verified in each case. Listed as a footnote to table 65.10 are general definitions of the symbols used.

Table 65.10 State Endangered/Threatened Fish and Wildlife (Western United States)

Group	Status ^a	Common name	Scientific name
<u>Alaska</u>			
(132)			
Birds	E	Aleutian Canada goose	<u>Branta canadensis leucopareia</u>
	E	Peregrine falcon	<u>Falco peregrinus</u>
	E	Eskimo curlew	<u>Numenius borealis</u>
	E	Short-tailed albatross	<u>Diomedea albatrus</u>
<u>Arizona</u>			
(12)			
Mammals	E	Yuma mountain lion	<u>Felis concolor browni</u>
	E	Sonoran pronghorn	<u>Antilocapra americana sonoriensis</u>
	T	River otter	<u>Lutra canadensis</u>
	T	Mexican pronghorn	<u>Antilocapra americana mexicana</u>
	T	Desert sheep	<u>Ovis canadensis mexicana</u>
Birds	E	Mississippi kite	<u>Ictinia mississippiensis</u>
	E	Gray hawk	<u>Buteo nitidus</u>
	E	Southern bald eagle	<u>Haliaeetus leucocephalus</u>
			<u>leucocephalus</u>
	E	Peregrine falcon	<u>Falco peregrinus anatum</u>
	E	Yuma clapper rail	<u>Rallus longirostris yumanensis</u>
	E	Black rail	<u>Laterallus jamaicensis</u>
	E	Rose-throated becard	<u>Platyparis aglaiae richmondi</u>
	E	Buff-breasted flycatcher	<u>Empidonax fulvifrons pygmaeus</u>
	T	Great egret	<u>Casmerodius albus egretta</u>
	T	Snowy egret	<u>Egretta thula brewsteri</u>
	T	Black-crowned night heron	<u>Nycticorax nycticorax hoactli</u>
	T	Black-bellied tree duck	<u>Dendrocygna autumnalis fulgens</u>
	T	Mexican duck	<u>Anas platyrhynchos diazi</u>
	T	Zone-tailed hawk	<u>Buteo albonotatus</u>
	T	Black hawk	<u>Buteogallus albonotatus anthracinus</u>
	T	Osprey	<u>Pandion haliaetus</u>
Amphibians and reptiles	T	Desert tortoise	<u>Gopherus agassizi</u>
	T	Gila monster	<u>Heloderma suspectum</u>
Fish	E	Humpback chub	<u>Gila cypha</u>
	E	Mexican stoneroller	<u>Campostoma ornatum pricei</u>
	E	Woundfin	<u>Plagopterus argentissimus</u>
	E	Colorado River squawfish	<u>Ptychocheilus lucius</u>
	E	Loach minnow	<u>Tiaroga cobitus</u>
	E	Yaqui topminnow	<u>Poeciliopsis occidentalis</u>
			<u>sonoriensis</u>
	T	Arizona trout	<u>Salmo apache</u>
	T	Gila chub	<u>Gila intermedia</u>
	T	Bonytail chub	<u>Gila elegans</u>
	T	Razorback sucker	<u>Xyrauchen texanus</u>
	T	Gila topminnow	<u>Poeciliopsis occidentalis</u>
			<u>occidentalis</u>

continued

Table 65.10 (Continued)

Group	Status ^a	Common name	Scientific name
<u>California</u> (39)			
Mammals	E	Salt marsh harvest mouse	<u>Reithrodontomys raviventris</u>
	E	Morro Bay kangaroo rat	<u>Dipodomys heermanni morroensis</u>
	R	Mohave ground squirrel	<u>Spermophilus mohavensis</u>
	R	Stephen's kangaroo rat	<u>Dipodomys stephensi</u>
	R	Fresno kangaroo rat	<u>Dipodomys nitratoideis exilis</u>
	R	San Joaquin kit fox	<u>Vulpes macrotis mutica</u>
	R	Island fox	<u>Urocyon littoralis</u>
	R	Wolverine	<u>Gulo luscus</u>
	R	Guadalupe fur seal	<u>Arctocephalus townsendi</u>
	R	California bighorn sheep	<u>Ovis canadensis californiana</u>
	R	Peninsular bighorn sheep	<u>Ovis canadensis cremnobates</u>
Birds	E	California brown pelican	<u>Pelecanus occidentalis</u>
	E	Southern bald eagle	<u>Haliaeetus leucocephalus</u>
			<u>leucocephalus</u>
	E	American peregrine falcon	<u>Falco peregrinus anatum</u>
	E	California condor	<u>Gymnogyps californianus</u>
	E	California clapper rail	<u>Rallus longirostris obsoletus</u>
	E	Yuma clapper rail	<u>Rallus longirostris yumanensis</u>
	E	Light-footed clapper rail	<u>Rallus longirostris levipes</u>
	E	California least tern	<u>Sterna albifrons browni</u>
	R	California black rail	<u>Laterallus jamaicensis coturniculus</u>
	R	California yellow-billed cuckoo	<u>Coccyzus americanus occidentalis</u>
Amphibians and reptiles	E	Blunt-nosed leopard lizard	<u>Crotaphytus silus</u>
	E	San Francisco garter snake	<u>Thamnophis sirtalis tetrataenis</u>
	E	Santa Cruz long-toed salamander	<u>Ambystoma macrodactylum croceum</u>
	E	Desert slender salamander	<u>Batrachoseps aridus</u>
	R	Southern rubber boa	<u>Charina bottae umbratica</u>
	R	Alameda striped racer	<u>Masticophis lateralis euryxanthus</u>
	R	Giant garter snake	<u>Thamnophis couchi gigas</u>
	R	Siskiyou mountain salamander	<u>Plethodon stormi</u>
	R	Kern Canyon slender salamander	<u>Batrachoseps simatus</u>
	R	Tehachapi slender salamander	<u>Batrachoseps stebbinsi</u>
	R	Limestone salamander	<u>Hydromantes brunus</u>
	R	Shasta salamander	<u>Hydromantes shastae</u>
Fish	E	Colorado River squafish	<u>Ptychocheilus lucius</u>
	E	Mohave chub	<u>Gila mohavensis</u>
	E	Owens River pupfish	<u>Cyprinodon radiosus</u>
	E	Tecopa pupfish	<u>Cyprinodon nevadensis calidae</u>
	E	Unarmored threespine stickleback	<u>Gasterosteus aculeatus</u>
			<u>williamsoni</u>
	E	Thicktail chub	<u>Gila crassicauda</u>
	E	Owens tui chub	<u>Gila bicolor</u>
	E	Bonytail chub	<u>Gila elegans</u>
	E	Humpback sucker	<u>Xyrauchen texanus</u>
	E	Shortnose sucker	<u>Chasmistes brevirostris</u>
	E	Lost River sucker	<u>Catostomus luxatus</u>
	R	Modoc sucker	<u>Catostomus microps</u>
	R	Rough sculpin	<u>Cottus asperimus</u>
	R	Cottonball marsh pupfish	<u>Cyprinodon milleri</u>

continued

Table 65.10 (Continued)

Group	Status ^a	Common name	Scientific name
<u>Colorado</u>			
(45)			
Mammals	E	Gray wolf	<u>Canis lupus</u>
	E	Grizzly bear	<u>Ursus arctos</u>
	E	Black-footed ferret	<u>Mustela nigripes</u>
	E	Wolverine	<u>Gulo gulo</u>
	E	River otter	<u>Lutra canadensis</u>
	E	Lynx	<u>Lynx canadensis</u>
Birds	E	Peregrine falcon	<u>Falco peregrinus</u>
	E	Greater prairie chicken	<u>Tympanuchus cupido</u>
	E	Prairie sharp-tailed grouse	<u>Pedioetes phasianellus jamesii</u>
	E	Whooping crane	<u>Grus americana</u>
	E	Greater sandhill crane	<u>Grus canadensis tabida</u>
	T	White pelican	<u>Pelecanus erythrorhynchos</u>
	T	Lesser prairie chicken	<u>Tympanuchus pallidicinctus</u>
Fish	E	Colorado River squawfish	<u>Ptychocheilus lucius</u>
	E	Humpback chub	<u>Gila cypha</u>
	E	Bonytail chub	<u>Gila elegans</u>
	T	Humpback sucker	<u>Xyrauchen texanus</u>
	T	Arkansas River speckled chub	<u>Hybopsis aestivalis tetranemus</u>
	T	Central Johnny darter	<u>Etheostoma nigrum nigrum</u>
	T	Plains orangethroat darter	<u>Etheostoma spectabile pulchellum</u>
	T	Colorado River cutthroat	<u>Salmo clarki pleuriticus</u>
	T	Rio Grande cutthroat	<u>Salmo clarki virginalis</u>
	T	Greenback cutthroat	<u>Salmo clarki stomias</u>
	T	Arkansas darter	<u>Etheostoma cragini</u>
<u>Hawaii</u>			
(77)			
Mammals	E	Hawaiian bat	<u>Lasiurus cinereus semotus</u>
	E	Hawaiian seal	<u>Monachus schauinslandi</u>
Birds	E	Newell's shearwater	<u>Puffinus puffinus newelli</u>
	E	Hawaiian dark-rumped petrel	<u>Pterodroma phaeopygia sandwichensis</u>
	E	Hawaiian storm petrel	<u>Oceanodroma castro cryptoleucura</u>
	E	Nene	<u>Branta sandvicensis</u>
	E	Laysan teal	<u>Anas wyvilliana laysanensis</u>
	E	Hawaiian duck	<u>Anas wyvilliana wyvilliana</u>
	E	Hawaiian hawk	<u>Buteo solitarius</u>
	E	Hawaiian gallinule	<u>Gallinula chloropus sandvicensis</u>
	E	Hawaiian coot	<u>Fulica americana alai</u>
	E	Hawaiian stilt	<u>Himantopus himantopus knudseni</u>
	E	Hawaiian owl	<u>Asio flammeus sandwichensis</u>
	E	White tern	<u>Gygis alba</u>
	E	Hawaiian crow	<u>Corvus tropicus</u>
	E	Puaiohi	<u>Phaeornis palmeri</u>
	E	Kauai thrush	<u>Phaeornis obscurus myadestina</u>
	E	Molokai thrush	<u>Phaeornis obscurus rutha</u>
	E	Nihoa millerbird	<u>Acrocephalus familiaris kingi</u>
	E	Kauai oo	<u>Moho braccatus</u>
	E	Maui amakihi	<u>Loxops virens wilsoni</u>
	E	Hawaii creeper	<u>Loxops maculata mana</u>
	E	Molokai creeper	<u>Loxops maculata flammea</u>
	E	Oahu creeper	<u>Loxops maculata maculata</u>

continued

Table 65.10 (Continued)

Group	Status ^a	Common name	Scientific name
<u>Hawaii (Continued)</u>			
	E	Hawaii akepa	<u>Loxops coccinea coccinea</u>
	E	Maui akepa	<u>Loxops coccinea ochracea</u>
	E	Poo uli	<u>Melamprosops phaeosoma</u>
	E	Kauai akialoa	<u>Hemignathus procerus</u>
	E	Maui nukupuu	<u>Hemignathus lucidus affinis</u>
	E	Kauai nukupuu	<u>Hemignathus lucidus hanapepe</u>
	E	Akiapolaau	<u>Hemignathus wilsoni</u>
	E	Maui parrotbill	<u>Pseudonestor xanthophrys</u>
	E	Ou	<u>Psittirostra psittacea</u>
	E	Laysan finch	<u>Psittirostra cantans cantans</u>
	E	Nihoa finch	<u>Psittirostra cantans ultima</u>
	E	Palila	<u>Psittirostra bairdii</u>
	E	Crested honeycreeper	<u>Palmeria dolei</u>
	E	I'iwi	<u>Vestiaria coccinea</u>
<u>Idaho</u>			
(84)			
Mammals	E/T	Grizzly bear	<u>Ursus horribilis</u>
	E/T	Wolf	<u>Canis lupus</u>
	E/T	Caribou	<u>Rangifer tarandus</u>
Birds	E/T	Peregrine falcon	<u>Falco peregrinus</u>
	E/T	Whooping crane	<u>Grus americana</u>
<u>Kansas</u>			
(94)			
Has not yet adopted State list--use Federal list.			
<u>Montana</u>			
(143)			
Mammals	E	Northern Rocky Mountain wolf	<u>Canis lupus irremotus</u>
	E	Black-footed ferret	<u>Mustela nigripes</u>
Birds	E	American peregrine falcon	<u>Falco peregrinus anatum</u>
	E	Whooping crane	<u>Grus americana</u>
<u>Nebraska</u>			
(150)			
Mammals	E	Black-footed ferret	<u>Mustela nigripes</u>
	E	Swift fox	<u>Vulpes velox</u>
	T	Southern flying squirrel	<u>Glaucomys volans</u>
Birds	E	American peregrine falcon	<u>Falco peregrinus anatum</u>
	E	Arctic peregrine falcon	<u>Falco peregrinus tundrius</u>
	E	Whooping crane	<u>Grus americana</u>
	E	Eskimo curlew	<u>Numenius borealis</u>
	T	Interior least tern	<u>Sterna albifrons athalassos</u>
	T	Mountain plover	<u>Charadrius montanus</u>

continued

Table 65.10 (Continued)

Group	Status ^a	Common name	Scientific name
<u>Nebraska (Continued)</u>			
Fish	T	Lake sturgeon	<u>Acipenser fulvescens</u>
	T	Pallid sturgeon	<u>Scaphirhynchus albus</u>
	T	Northern redbelly dace	<u>Phoxinus eos</u>
	T	Pearl dace	<u>Semotilus margarita</u>
	T	Finescale dace	<u>Phoxinus neogaeus</u>
	T	Brook stickleback	<u>Culaea inconstans</u>
<u>Nevada</u>			
(152)			
Birds	E	Southern bald eagle	<u>Haliaeetus leucocephalus</u>
Fish	E	Peregrine falcon	<u>leucocephalus</u> <u>Falco peregrinus</u>
	E	Pahrnagat bonytail	<u>Gila robusta jordani</u>
	E	Pahrump killifish	<u>Empetrichthys latos</u>
	E	Cui-ui	<u>Chasmistes cujus</u>
	E	Devil's Hole pupfish	<u>Cyprinodon diabolis</u>
	E	Colorado squawfish	<u>Ptychocheilus lucius</u>
	E	Utah cutthroat trout	<u>Salmo clarki utah</u>
<u>New Mexico</u>			
(157)			
Mammals	E	White-sided jackrabbit	<u>Lepus callotis gaillardi</u>
	E	Black-footed ferret	<u>Mustela nigripes</u>
	E	River otter	<u>Lutra canadensis</u>
	E	Jaguar	<u>Felis onca</u>
Birds	E	Mexican duck	<u>Anas diazi novimexicana</u>
	E	Bald eagle	<u>Haliaeetus leucocephalus</u>
	E	Caracara	<u>leucocephalus</u> <u>Caracara cheriway audubonii</u>
	E	Peregrine falcon	<u>Falco peregrinus anatum</u>
	E	Aplomado falcon	<u>Falco femoralis septentrionalis</u>
	E	White-tailed ptarmigan	<u>Lagopus leucurus altipetens</u>
	E	Sharp-tailed grouse	<u>Pediacetes phasianellus</u> <u>columbianus</u>
	E	Sage grouse	<u>Centrocercus urophasianus</u>
	E	Coppery-tailed trogon	<u>Trogon elegans canescens</u>
	E	Buff-breasted flycatcher	<u>Empidonax fulvifrons pygmaeus</u>
	E	Sulphur-bellied flycatcher	<u>Myiodynastes luteiventris swarthi</u>
Amphibians and reptiles	E	Gila monster	<u>Heloderma suspectum</u>
	E	Ridge-nosed rattlesnake	<u>Crotalus willardi silus</u>
Fish	E	Shovelnose sturgeon	<u>Scaphirhynchus platyrhynchus</u>
	E	American eel	<u>Anguilla rostrata</u>
	E	Gila trout	<u>Salmo gilae</u>
	E	Colorado River squawfish	<u>Ptychocheilus lucius</u>
	E	Bluntnose shiner	<u>Notropis simus</u>
	E	Beautiful shiner	<u>Notropis formosus</u>
	E	Prosperpine shiner	<u>Notropis proserpinus</u>
	E	Pecos gambusia	<u>Gambusia nobilis</u>
	E	Gila topminnow	<u>Poeciliopsis occidentalis</u> <u>occidentalis</u>

continued

Table 65.10 (Continued)

Group	Status ^a	Common name	Scientific name
<u>North Dakota</u> (162)			
Has not yet adopted State list--use Federal list.			
<u>Oklahoma</u> (168)			
Has not yet adopted State list-- use Federal list.			
<u>Oregon</u> (169)			
Mammals	E	Sea otter	<u>Enhydra lutris</u>
	E	Wolverine	<u>Gulo gulo</u>
	E	Kit fox	<u>Vulpes macrotis nevadensis</u>
	E	Columbian white-tailed deer	<u>Odocoileus virginianus leucurus</u>
Birds	E	California brown pelican	<u>Pelecanus occidentalis californicus</u>
	E	Aleutian Canada goose	<u>Branta canadensis leucopareia</u>
	E	American peregrine falcon	<u>Falco peregrinus anatum</u>
	E	Arctic peregrine falcon	<u>Falco peregrinus tundrius</u>
	E	Northern bald eagle	<u>Haliaeetus leucocephalus alascanus</u>
	T	Northern spotted owl	<u>Strix occidentalis caurina</u>
	T	Western snowy plover	<u>Charadrius alexandrinus nivosus</u>
Amphibians and reptiles	T	Western spotted frog	<u>Rana pretiosa</u>
<u>South Dakota</u> (196)			
Mammals	E	Black-footed ferret	<u>Mustela nigripes</u>
	T	Northern swift fox	<u>Vulpes velox hebes</u>
	T	River otter	<u>Lutra canadensis interior</u>
	T	Mountain lion	<u>Felix concolor</u>
	T	Black bear	<u>Ursus americanus</u>
Birds	E	Southern bald eagle	<u>Haliaeetus leucocephalus</u>
	E	Peregrine falcon	<u>Falco peregrinus anatum</u>
	E	Whooping crane	<u>Grus americana</u>
	E	Eskimo curlew	<u>Numenius borealis</u>
	E	Interior least tern	<u>Sterna albifrons athalassos</u>
	T	Osprey	<u>Pandion haliaetus</u>
	T	Buff-breasted sandpiper	<u>Tryngites subruficollis</u>
Amphibians and reptiles	T	Blanding's turtle	<u>Emydoidea blandingi</u>
	T	False map turtle	<u>Graptemys pseudogeographica</u>
	T	Spiny softshell turtle	<u>Trionyx spiniferus</u>
	T	Eastern hognose snake	<u>Heterodon platyrhinus</u>
	T	Lined snake	<u>Tropidoclonion lineatum</u>
	T	Brown snake	<u>Storeria dekayi</u>
	T	Northern red-bellied snake	<u>Storeria occipitomaculata</u>
Fish	E	Central mudminnow	<u>Umbra limi</u>
	E	Peari dace	<u>Semotilus margarita</u>
	E	Banded killifish	<u>Fundulus diaphanus</u>

continued

Table 65.10 (Continued)

Group	Status ^a	Common name	Scientific name
South Dakota (Continued)			
	T	Pallid sturgeon	<u>Scaphirhynchus albus</u>
	T	Sturgeon chub	<u>Hybopsis gelida</u>
	T	Sicklefin chub	<u>Hybopsis meeki</u>
	T	Northern redbelly dace	<u>Phoxinus eos</u>
	T	Finscale dace	<u>Phoxinus neogaeus</u>
	T	Longnose sucker	<u>Catostomus catostomus</u>
	T	Trout-perch	<u>Percopsis omiscomaycus</u>
	T	Plains topminnow	<u>Fundulus sciadicus</u>
Texas			
(216)			
Mammals	E	Federally listed whales	
	E	Black-footed ferret	<u>Mustela nigripes</u>
	E	Jaguar	<u>Panthera onca</u>
	E	Margay	<u>Felis wiedii</u>
	E	Ocelot	<u>Felis pardalis</u>
	E	Red wolf	<u>Canis rufus</u>
	E	West Indian manatee	<u>Trichechus manatus</u>
	E	Bighorn sheep	<u>Ovis canadensis</u>
Birds	E	Brown pelican	<u>Pelecanus occidentalis</u>
	E	Mexican duck	<u>Anas diazi</u>
	E	Southern bald eagle	<u>Haliaeetus leucocephalus</u>
	E	American peregrine falcon	<u>Falco peregrinus anatum</u>
	E	Arctic peregrine falcon	<u>Falco peregrinus tundrius</u>
	E	Attwater's greater prairie chicken	<u>Tympanuchus cupido attwateri</u>
	E	Whooping crane	<u>Grus americana</u>
	E	Eskimo curlew	<u>Numenius borealis</u>
	E	Ivory-billed woodpecker	<u>Campephilus principalis</u>
	E	Red-cockaded woodpecker	<u>Dendrocopos borealis</u>
	E	Bachman's warbler	<u>Vermivora bachmanii</u>
Amphibians and reptiles	E	Atlantic Ridley turtle	<u>Lepidochelys kempii</u>
	E	Hawksbill turtle	<u>Eretmochelys imbricata</u>
	E	Leatherback turtle	<u>Dermochelys coriacea</u>
	E	American alligator	<u>Alligator mississippiensis</u>
	E	Cascade Cavern salamander	<u>Eurycea latitans</u>
	E	San Marcos salamander	<u>Eurycea nana</u>
	E	Fern Bank salamander	<u>Eurycea pterophila</u>
	E	Texas blind salamander	<u>Typhlomolge rathbuni</u>
	E	Houston toad	<u>Bufo houstonensis</u>
Fish	E	Amistad gambusia	<u>Gambusia amistadensis</u>
	E	San Marcos gambusia	<u>Gambusia georgei</u>
	E	Big Bend gambusia	<u>Gambusia gaigei</u>
	E	Clear Creek gambusia	<u>Gambusia heterochir</u>
	E	Pecos gambusia	<u>Gambusia nobilis</u>
	E	Comanche Springs pupfish	<u>Cyprinodon elegans</u>
	E	Leon Springs pupfish	<u>Cyprinodon bovinus</u>
	E	Fountain darter	<u>Etheostoma fonticola</u>

continued

Table 65.10 (Concluded)

Group	Status ^a	Common name	Scientific name
<u>Utah</u> (238)			
Mammals	E	Black-footed ferret	<u>Mustela nigripes</u>
	E	Utah prairie dog	<u>Cynomys parvidens</u>
Birds	E	American peregrine falcon	<u>Falco peregrinus anatum</u>
Fish	E	Colorado squawfish	<u>Ptychocheilus lucius</u>
	E	Humpback chub	<u>Gila cypha</u>
	E	Woundfin	<u>Plagopterus argentissimus</u>
<u>Washington</u> (244)			
Has no State list--use Federal list.			
<u>Wyoming</u> (253)			
Has not yet adopted State list--use Federal list.			

^aStatus definitions for each State vary and should be verified in each instance. The following are general definitions for the symbols used in this table:

- E - Endangered An endangered species or subspecies is one whose prospects for survival within that State are in immediate danger.
- T - Threatened or
- R - Rare A threatened or rare species is one which is likely to become endangered within that State in the foreseeable future.
- E/T - Endangered/Threatened or
- R/E - Rare/Endangered These phrases have basically the same meaning. The State in this case has not differentiated between endangered, threatened, or rare, so the general term is used. This classification should be considered "endangered."

REFERENCES

- Alabama Department of Conservation and Natural Resources. n.d. Endangered and threatened animals of Alabama. Ala. Dep. Conserv. Nat. Resour., Montgomery, Ala. 9 pp.
- Alabama Museum of Natural History, and Alabama Department of Conservation and Natural Resources. 1976. Endangered and threatened plants and animals of Alabama. Ala. Mus. Nat. Hist. Bull. 2. 93 pp.
- Alaska Department of Fish and Game. 1973. Alaska's wildlife and habitat. Van Cleve Printing, Anchorage, Alaska. 144 pp. + maps.
- Allen, D.L. 1956. Pheasants in North America. The Stackpole Co., Harrisburg, Pa. 490 pp.
- Anonymous. 1970. Reprint from: Wildlife, people and the land. Source unknown.
- _____. 1975a. Panic in the pines. Audubon Mag. 77(3):88-117.
- _____. 1977b. Peregrine falcon. Audubon Mag. 77(66): 38.
- American Ornithologists' Union. 1957. Checklist of North American birds, 5th edition. Lord Baltimore Press, Baltimore, Md. 691 pp. (plus supplements).
- _____. 1975. Report of the committee on conservation. Auk 92 (4, Suppl.):1B-16B.
- _____. 1977. Report of the committee on conservation. Auk 94 (4, Suppl.):1DD-19DD.
- Arkansas Department of Planning. 1974. Arkansas natural area plan. Little Rock, Ark. 248 pp.

12. Arizona Game and Fish Department. 1959. Arizona wildlife—mammals. Phoenix, Ariz.
13. ———. 1976. Threatened wildlife in Arizona. Phoenix, Ariz. 8 pp. [Manuscript].
14. ———. 1977. Response to AES survey (and range maps) by Bob Barsch, Wildlife Planner. Phoenix, Ariz.
- Arnold, L.W. 1943. A study of the factors influencing the management of and a suggested management plan for the western winged dove in Arizona. Ariz. Game Fish Comm. 103 pp.
15. Armstrong, D.M., University of Colorado, Boulder. 1977. Personal communication.
16. Autenrieth, R.E., and E. Fichter. 1975. On the behavior and socialization of pronghorn fawns. Wildl. Monogr. 42. 111 pp.
- Bailey, R.G. 1978. Descriptions of the ecoregions of the United States. U.S. Dep. Agric. For. Serv. Intermtn. Reg., Ogden, Utah. 77 pp.
17. Barick, F., North Carolina Wildlife Resources Commission, Raleigh. 1978. Personal communication.
18. Bellrose, F. 1976. Ducks, geese and swans of North America. The Stackpole Co., Harrisburgh, Pa. 544 pp.
19. Bent, A.C. 1921. Life histories of North American gulls, terns and their allies. Dover Publications, New York, N.Y. 355 pp.
20. ———. 1923. Life histories of North American wild fowl. Parts 1&2. Dover Publications, New York, N.Y. 645 pp.
21. ———. 1939. Life histories of North American woodpeckers. Dover Publications, New York, N.Y. 342 pp.
22. ———. 1953. Life histories of North American wood warblers. Smithson. Inst., Washington, D.C. 745 pp.
23. ———. 1961. Life histories of North American birds of prey. Part 2. Dover Publications, New York, N.Y. 490 pp.
24. ———. 1968. Life histories of North American cardinals, grosbeaks, towhees, sparrows, and their allies. Dover Publications, New York, N.Y.
25. Berger, A.J. 1972. Hawaiian birdlife. University of Hawaii Press, Honolulu. 300 pp.
26. Blair, W.F. 1936. The Florida marsh rabbit. J. Mammal. 17(3):197-207.
- . 1940. A contribution to the ecology and faunal relationships of the mammals of the Davis Mountain Region, southwestern Texas. Misc. Publ. Mus. Zool. Univ. Mich. 46:1-39.
- . 1952. Mammals of the Tamaulipan biotic province in Texas. Tex. J. Sci. 4:230-250.
27. Bookhout, T.A. 1965. The snowshoe hare in upper Michigan: its biology and feeding co-actions with white-tailed deer. Mich. Dep. Conserv. Res. Dev. Rep. 38. 191 pp.
28. Borland, H. 1974. Take a last look at the condor. Natl. Wild. 12(3):35-36.
- Bradley, W.G., and J.E. Deacon. 1965. The biotic communities of southern Nevada. Univ. Nev., Desert Res. Inst. Preprint 9. 74 pp.
- Brandt, H. 1951. Arizona and its birdlife. Bird Research Found., Cleveland, Ohio. 723 pp.
29. Brown, L., and D. Amadon. 1968. Eagles, hawks, and falcons of the world. McGraw Hill Book Co., New York, N.Y. 945 pp. in 2 vol.
30. Brown, L.E. 1971. Natural hybridization and trend toward extinction in some relict Texas toad populations. Southwest. Nat. 16(2):185-199.
31. ———. 1973. Houston toad. Pages 1-133 in W.J. Rierner, ed. Catalogue of American amphibians and reptiles. Soc. Stud. Amphibian Reptiles, Oxford, Ohio.
32. Brown, L.N. 1975. Ecological relationships and breeding biology of the nutria (*Myocastor coypus*) in the Tampa, Florida area. J. Mammal. 56(4):928-930.
33. Buechner, H.K. 1960. The bighorn sheep in the United States; its past, present, and future. Wildl. Monogr. 4. 1974 pp.
34. ———. and D.B. Marshall. 1974. Threatened ungulates of North America. Pages 138-157 in Proceedings of the symposium on endangered and threatened species of North America. The Wild Canid Survival and Research Center, St. Louis, Mo.
35. Burt, W.H., and R.P. Grossenheider. 1964. A field guide to the mammals. Houghton Mifflin Co., Boston, Mass. 284 pp.
36. Cahalane, V.H. 1947. Mammals of North America. MacMillan Co., New York, N.Y. 682 pp.
37. ———. 1954. Status of the black-footed ferret. J. Mammal. 35(3):418-424.
38. California Department of Fish and Game. 1976. At the crossroads—a report on California's endangered and rare fish and wildlife. Sacramento, Calif. 101 pp.
39. ———. 1977. Status designations of California animals. Sacramento, Calif. 8 pp. [Manuscript.]
- Carothers, S.W., and R.R. Johnson. 1970. A summary of the Verde Valley breeding bird survey, 1970. Mus. Northern Ariz. 13 pp.

References

40. Carpenter, R.G., and H.R. Siegler. 1974. A list of New Hampshire mammals and their distribution. N.H. Fish Game Dep., Concord. 13 pp.
- Carr, J.N. 1960. Mourning dove-whitewinged dove nest surveys during the summer of 1960. Proj. W-53-R-11; WP3,J2. Ariz. Game Fish Dep. 6 pp.
41. Chapman, J.A. 1975. *Sylvilagus nuttallii*. Mammal Species 56. Am. Soc. Mammalogists, New York, N.Y. 3 pp.
42. Cockrum, E.L. 1962. Introduction to mammalogy. Ronald Press Co., New York, N.Y. 455 pp.
43. Colby, C.B. 1964. Wild cats. Duell, Sloan, & Pearce, New York, N.Y. 120 pp.
44. Collins, H.H. 1959. Complete field guide to American wildlife. Harper & Row, New York, N.Y. 683 pp.
45. Colorado Wildlife Commission. 1976. Regulations on protected animals. Denver, Colo. 6 pp.
46. Conant, R. 1965. A field guide to reptiles and amphibians. Houghton Mifflin Co., Boston, Mass. 429 pp.
47. Connecticut Department of Environmental Protection. 1976. Threatened and endangered wildlife. Hartford, Conn. 11 pp. [Typewritten.]
48. Cox, J. 1975. The endangered ones. Crowell Publications, Inc., New York, N.Y. 224 pp.
49. Cringan, A.T. 1957. History, food habits and range requirements of the woodland caribou of continental North America. Trans. N. Am. Wildl. Nat. Resour. Conf. 22:485-501.
50. Dalke, P.D., and P.R. Sime. 1941. Food habits of the eastern and New England cottontails. J. Wildl. Manage. 5(2):216-228.
51. Davis, R.B., and C.K. Winkler. 1968. Brush vs. cleared range as deer habitat in southern Texas. J. Wildl. Manage. 32(2):321-329.
52. Dasmann, W.P. 1975. Big game of California. Calif. Dep. Fish Game, Sacramento, Calif. 58 pp.
53. Delaware Division of Fish and Wildlife. 1977. Response to AES survey by Darrell E. Louder, Director. Dover, Del.
54. Dusek, G.L. 1975. Range relations of mule deer and cattle in prairie habitat. J. Wildl. Manage. 39(3):605-616.
55. Eddy, T.A. 1961. Foods and feeding patterns of the collared peccary in southern Arizona. J. Wildl. Manage. 25(3): 248-257.
56. Egoscue, H.J. 1962. Ecology and life history of the kit fox in Tooele County, Utah. Ecology 43(3):481-497.
57. Endangered-threatened species list for West Virginia. W. Va. Dep. Nat. Resour. [5 miscellaneous manuscripts.]
58. Errington, P.L. 1935. Food habits of midwest foxes. J. Mammal. 16(3):192-200.
59. Feist, J.D. 1971. Behavior of feral horses in the Pryor Mountain Wild Horse Range. M.S. Thesis. University of Michigan. 130 pp.
60. Flood, B.S., M.E. Sangster, R.D. Sparrowe, and T.S. Baskett. 1977. A handbook for habitat evaluation procedures. U.S. Fish Wildl. Serv. Resour. Publ. 132. 77 pp.
61. Florida Committee on Rare and Endangered Plants and Animals. 1974. Provisional lists of rare and endangered plants and animals of Florida. 17 pp. [Draft manuscript.]
62. Florida Game & Freshwater Fish Commission, Information Division. 1978. Personal communication.
63. Florida Wildlife Sanctuary. 1977. Response to AES survey by Carlton O. Teate, Director. Melbourne, Fla.
64. Fox, W. 1951. The status of the gartersnake, *Thamnophis sirtalis tetrataenia*. Copeia 1951(4):257-267.
65. Gabrielson, L., and F. Lincoln. 1959. Birds of Alaska. The Wildlife Management Institute, Washington, D.C. 933 pp.
- Gavin, T.A. 1972. Avian and mammalian species composition in a mesquite bosque. Proj. 73. University of Arizona. Quart. Rep. Ariz. Coop. Wildl. Res. Unit. [Unpubl.]
66. Georgia Department of Natural Resources, Game and Fish Division. 1976. Pages 1231-1240 in Protection of endangered, threatened, rare, or unusual species. Rules Chapter 391-413. Atlanta, Ga.
67. Gier, H.T. 1957. Coyotes in Kansas. Kans. State Coll. Agric. Exp. Stn. Bull. 393. 97 pp.
68. Giles, R.H., ed. 1971. Wildlife management techniques, 3rd edition, revised. The Wildlife Society, Washington, D.C. 633 pp.
69. Goldman, E.A. 1950. Raccoons of North and Middle America. N. Am. Fauna Ser. 60. U.S. Fish Wildl. Serv., Washington, D.C.
70. Greenway, J. 1967. Extinct and vanishing birds of the world. Dover Publications, New York, N.Y. 528 pp.
71. Grizzel, R.A., Jr. 1955. A study of the southern woodchuck (*Marmota monax monax*). Am. Midl. Nat. 53(2):257-293.
72. Hall, H.M. 1960. A gathering of shore birds. Devin-Adair Co., New York, N.Y. 242 pp.

73. Hall, E.R., and K.R. Kelson. 1959. The mammals of North America. Ronald Press Co., New York, N.Y. 1083 pp.
74. Hamilton, W.J., Jr. 1940. The summer food of minks and raccoons on the Montezuma Marsh, New York. *J. Wildl. Manage.* 4(1):80-84.
75. Hansen, R.M. 1976. Foods of free-roaming horses in southern New Mexico. *J. Range Manage.* 29(4):347.
76. Harrison, H.H. 1975. A field guide to birds' nests. Houghton Mifflin Co., Boston, Mass. 350 pp.
77. Hawaii Division of Fish and Game. 1973a. Exhibit I - Regulation 6 - Indigenous (including endangered) bird and mammal list. Honolulu, Hawaii. 7 pp.
78. _____. 1973b. Hunting in Hawaii. Honolulu, Hawaii. 20 pp.
79. _____. 1977. Response to AES survey (no name). Honolulu, Hawaii.
80. Heintzelman, D.S. 1970. The hawks of New Jersey. N.J. State Mus. Bull. 13. 50 pp.
81. Hewitt, O.H. 1967. The wild turkey and its management. The Wildlife Society, Washington, D.C. 589 pp.
82. Hooper, E.T. 1944. San Francisco Bay as a factor influencing speciation in rodents. Misc. Publ. Mus. Zool. Univ. Mich. 59. 89 pp.
- Hubbard, J.P. 1971. The summer birds of the Gila Valley, New Mexico. Occ. Pap. Del. Mus. Nat. Hist., Nemouria 2:1-35.
83. Idaho Department of Fish and Game. 1977. Response to AES survey by Joseph C. Greenley, Director. Boise, Idaho.
84. _____. 1978. Rare wildlife of Idaho. Idaho Fish Game Dep. Information Sheet 3/27/78. Boise, Idaho. 1 p.
85. Illinois Department of Conservation. 1976. Hunting and trapping regulations - 1976. Springfield, Ill.
86. _____. 1976. Endangered, vulnerable and rare vertebrates of Illinois; interim list of species. Springfield, Ill. 7 pp.
87. _____. 1978. Personal communication. Springfield, Ill.
88. Indiana Department of Natural Resources, Division of Fish and Wildlife. 1975. Non-game and endangered species conservation—a preliminary report. Indianapolis, Indiana. 5 pp.
- Ingles, L.G. 1950. Nesting birds of the willow—cottonwood community of California. *Auk* 67(3): 325-332.
89. International Union for Conservation of Nature and Natural Resources. 1969. Red Data Book; Vol. 1—Mammalia.
90. Iowa State Conservation Commission. 1977a. Endangered or threatened plants and animals. Iowa State Conserv. Comm., Div. Fish Game Code 290. chapter 19. Des Moines, Iowa. 9 pp.
91. _____. 1977b. Proposed endangered species lists. Des Moines, Iowa. [4 manuscripts.]
92. _____. 1977c. Response to AES survey by Allen L. Farris, Wildlife Research Supervisor. Des Moines, Iowa.
93. Johnsgard, P.A. 1973. Grouse and quail of North America. University of Nebraska Press, Lincoln, Neb. 400 pp.
- Jones, J.K., Jr., D.C. Carter, and H.H. Genoways. 1975. Revised checklist of North American mammals north of Mexico. Occ. Pap. 28. Tex. Tech. Univ. Mus. 14 pp.
94. Kansas Forestry, Fish and Game Commission. 1977a. Nongame, threatened, or endangered species. Pratt, Kans. 3 pp. [Proposed regulation.]
95. _____. 1977b. Response to AES survey by Fred Warders, Acting Director. Pratt, Kans.
96. _____. 1977c. Response to AES survey by James A. Norman. Pratt, Kans.
97. _____. 1978. Personal communication. Pratt, Kans.
98. Kentucky Department of Fish and Wildlife Resources. n.d. Kentucky's rare and endangered species. Frankfort, Ky. 16 pp. [Manuscript.]
99. _____. 1973. Protection of rare and endangered fish and wildlife species. KFWR-H&F-7. Frankfort, Ky. 2 pp. [Draft.]
100. _____. 1977. Response to AES survey by Arnold L. Mitchell, Commissioner. Frankfort, Ky.
101. Kerr, R.M., Leader, Wildlife Staff. Div. Stand. & Tech., Bur. Land Manage., Denver, Colo. 1978. Personal communication.
102. Klein, D.R. 1970. Food selection by North American deer and their response to over-utilization of preferred plant species. Pages 25-46 in A. Watson, ed., Animal populations in relation to their food resources. Blackwell Scientific Publishing Co., Oxford, England.
103. Koford, C.B. 1958. Prairie dogs, whitefaces, and blue grama. *Wildl. Monogr.* 3. 78 pp.
104. _____. 1966. California condor. Dover Publications, New York, N.Y.

References

105. Kozlik, F.M. 1974. Waterfowl of California. Calif. Dep. Fish Game, Sacramento, Calif. 39 pp.
106. Krefting, L.W. 1974. The ecology of the Isle Royale moose with special reference to the habitat. Univ. Minn. Agric. Exp. Stn. Tech. Bull. 297. For. Ser. 15. 75 pp.
107. Kufeld, R.C. 1973. Foods eaten by the Rocky Mountain elk. *J. Range Manage.* 26(2):106-113.
108. Lahart, D. 1973. Florida's endangered dozen. *In Florida Wildlife (1973)*:15-20.
109. Laws of Delaware, Chapter 65, Vol. 58. 1971.
110. Lay, D.W. 1969. Foods and feeding habits of white-tailed deer. Pages 8-13 *in* Proceedings on white-tailed deer in the southern forest habitat symposium. U.S. For. Serv. Southern For. Exp. Stn., Nacogdoches, Tex.
111. Lay, W.G. n.d. Pages 153-168 *in* Atlas of Oregon. Univ. Oreg., Corvallis, Oreg.
112. Laycock, G. 1966. The alien animals. Natural History Press, Garden City, N.Y. 240 pp.
113. Ligon, S.J. 1961. New Mexico birds. University of New Mexico Press, Albuquerque, N. Mex.
114. Linder, R.L., and C.N. Hillman, eds. 1973. Proceedings of the black-footed ferret and prairie dog workshop. S. Dak. State Univ., Brookings, S. Dak. 208 pp.
115. Lowe, C.H., ed. 1964. The vertebrates of Arizona. University of Arizona Press, Tucson, Ariz. 270 pp.
116. Lowery, G.H. 1974. The mammals of Louisiana and its adjacent waters. Louisiana State University Press, Baton Rouge, La. 565 pp.
117. Louisiana Cooperative Wildlife Research Unit. 1977. Endangered or threatened species list of Louisiana. Baton Rouge, La. 1 p. [Unofficial list; manuscript.]
118. Louisiana Department of Wildlife and Fisheries, New Orleans. 1978. Personal communication.
119. MacClintock, D. 1970. Squirrels of North America. Van Nostrand Reinhold Co., New York, N.Y. 184 pp.
120. Maine Department of Inland Fisheries and Game. 1975. Power line rights-of-way, and wildlife management. Augusta. 5 pp. [Departmental working papers, unpubl.]
121. Maine Department of Inland Fisheries and Wildlife. 1978. Personal communication. Augusta, Me.
122. Mallette, R.D. n.d. Upland game of California. Calif. Dep. Fish Game. Sacramento, Calif. 76 pp.
123. Manville, R.H., and S.P. Young. 1965. Distribution of Alaskan mammals. U.S. Bur. Sport Fish. Circ. 211.
124. Martin, C.A., H.S. Zim, and A.L. Nelson. 1951. American wildlife and plants: a guide to wildlife food habits. Dover Publications, New York, N.Y. 500 pp.
125. Martinka, C.J. 1968. Habitat relationships of white-tailed and mule deer in northern Montana. *J. Wildl. Manage.* 32(3):558-565.
126. Maryland Department of Natural Resources. 1972. Maryland endangered species list (Authority Title 10, Section 210C); Wildl. Conserv. Regulation 08.03.01. 1 p.
127. _____. 1976. Guide to hunting, trapping in Maryland 1976. Annapolis, Md. 40 pp.
128. Massachusetts Department of Fisheries, Wildlife and Recreational Vehicles, Boston. 1978. Personal communication.
129. Massachusetts Division of Fisheries and Game. 1973. List of rare and endangered animals of Massachusetts. Westboro (field headquarters). [Proposed list in memo form.]
130. Mathisen, J.E. 1974. The American bald eagle. *Am. For.* 80:44-45.
131. Mayfield, H. 1960. The Kirtland's warbler. Cranbrook Institute of Science, Bloomfield Hills, Mich. 242 pp.
132. McKnight, D.E., Alaska Department of Fish and Game, Juneau. 1977. Personal communication.
133. McKnight, T.L. 1958. The feral burro in the United States: distribution and problems. *J. Wildl. Manage.* 22(2): 163-179.
134. Mech, L.D. 1966. The wolves of Isle Royale. U.S. Natl. Park Serv. Fauna Ser. 7. 210 pp.
135. Michigan Department of Natural Resources. 1976. Michigan's endangered and threatened species program. Lansing, Mich. 30 pp.
136. Minnesota Department of Natural Resources. 1975. The uncommon ones. St. Paul, Minn. 32 pp.
137. Mississippi Game and Fish Commission. 1975. An order and regulations adopting an official list of endangered and threatened vertebrates in Mississippi. Jackson, Miss. 2 pp.
138. Mississippi Rare and Endangered Species Committee. 1975. A preliminary list of rare and threatened vertebrates in Mississippi. Jackson, Miss. 29 pp.
139. Missouri Department of Conservation and U.S. Soil Conservation Service. 1974. Rare and endangered species of Missouri. Jefferson City, Mo.

140. Montana Department of Fish and Game, Environment and Information Division. 1974. A proposed list of endangered species of Montana wildlife. Helena, Mont. 2 pp.
141. Montana Department of Fish and Game. 1972. Montana mammals. Reprinted from: 1959-1960 Montana Almanac. Bozeman, Mont. 4 pp.
142. Montana Department of Fish and Game. 1977. Response to AES survey by Dennis L. Flath, Nongame Biologist. Bozeman, Mont.
143. Montana Department of Fish and Game, Environment and Information Division. 1978. A list of endangered species of Montana wildlife. Mont. Dep. Fish and Game. Helena, Mont. 1 p.
144. Montanucci, R.R. 1965. Observations on the San Joaquin leopard lizard *Crotaphytus wislizenii silus stejnegeri*. *Herpetologica* 21(4):241-283.
145. Moore, J.C. 1951. The status of the manatee in Everglades National Park, with notes on its natural history. *J. Mammal.* 32(1):22-36.
146. Morris, D. 1965. The mammals. Harper & Row, New York, N.Y. 448 pp.
147. Munro, G.C. 1960. Birds of Hawaii. Bridgeway Press, Rutland, Vt. 400 pp.
148. National Audubon Society. 1963. Birds of America. Doubleday & Co., Garden City, N.Y. 3 vols. 852 pp.
149. Nebraska Game and Parks Commission. 1972. The Nebraska fish and wildlife plan. Vol. 1. Lincoln, Nebr. 242 pp.
150. Nebraska Game and Parks Commission, Wildlife Division. 1976. Nebraska's endangered and threatened wildlife species lists and regulations. Lincoln, Nebr. 5 pp. [Manuscript.]
151. ———. 1977. Response to AES survey (no name).
Neff, J.A. 1940. Range, population and game status of the western whitewinged dove in Arizona. *J. Wildl. Manage.* 4(2):117-127.
152. Nevada Department of Fish and Game. 1976. General Regulation 1(6), Classification of Wildlife. Reno, Nev. 7 pp.
153. New Hampshire Fish and Game Department. 1977. List of New Hampshire wildlife found on Federal endangered list. Concord, N.H.
154. ———. 1978. Personal communication. Concord, N.H.
155. New Jersey Department of Environmental Protection. 1975. Endangered, threatened, peripheral, and undetermined wildlife species in New Jersey [official list.] N.J. State Register, April 10, 1975. 10 pp.
156. ———. 1977. Response to AES survey by Joseph M. Penkala, Div. of Fish, Game & Shellfisheries. Trenton, N.J.
157. New Mexico State Game Commission. 1975. Protection of endangered species and subspecies of New Mexico. State Game Comm. Reg. 563. 4 pp.
158. New York State Department of Environmental Conservation. 1977. Order amending traffic in endangered species of fish and wildlife. Albany, N.Y.
159. New York State Department of Environmental Conservation, Wildlife Resources Center. 1977. New York State Wildlife: protected and unprotected species. Delmar, N.Y. 6 pp. [Draft report.]
160. North Carolina Department of Natural and Economic Resources, Endangered Species Committee. 1973. Preliminary list of endangered plant and animal species in North Carolina. Raleigh, N.C. 25 pp.
161. North Carolina Wildlife Resources Commission. 1977. Response to AES survey by Frank Barick, Chief. Raleigh, N.C.
162. North Dakota State Game and Fish Department, Bismarck. 1978. Personal communication.
163. Nowak, R.M. 1972. The mysterious wolf of the South. *Nat. Hist.* 81(1):50-53, 74-77.
164. Ohio Biological Survey. 1977. Response to AES survey (and enclosures on game animals in Ohio) by Charles C. King, Director. Columbus, Ohio.
165. Ohio Department of Natural Resources. 1976. Endangered wild animals in Ohio. Publ. 316 (R576). Columbus, Ohio. 3 pp. [Official list.]
166. Oklahoma Department of Wildlife Conservation, Oklahoma City. 1978. Personal communication.
167. Oklahoma State University, Cooperative Wildlife Research Unit. 1977. Response to AES survey by Dr. James C. Lewis. Stillwater, Okla.
168. Oklahoma Department of Wildlife Conservation. 1977. Response to AES survey by Ron Freeman, Biologist. Oklahoma City, Okla.
169. Oregon Wildlife Commission. 1975. Threatened or endangered Oregon wildlife. Portland, Oreg. 13 pp. [Manuscript.]
170. Orr, R.T. 1940. The rabbits of California. *Occas. Pap. Calif. Acad. Sci.* 19. 227 pp.
171. Pennsylvania Fish Commission, Office of Information. 1975. Pennsylvania's endangered fish, reptiles, and amphibians. Harrisburg, Pa. 1 p. [Manuscript.]
172. Pennsylvania Game Commission. 1978. Harrisburg, Pa. Personal communication.

References

173. Peterson, R.L. 1955. North American moose. University of Toronto Press, Toronto, Ontario. 280 pp.
174. Peterson, R.T. 1947. A field guide to the birds. Houghton Mifflin Co., Boston, Mass. 254 pp.
175. ———. 1969. A field guide to western birds. Houghton Mifflin Co., Boston, Mass. 372 pp.
176. Phillips A., J. Marshall, and G. Manson. 1964. The birds of Arizona. University of Arizona Press, Tucson, Ariz. 239 pp.
177. Preble, D.E. n.d. Threatened and endangered species in Rhode Island. R.I. Div. of Fish and Wildl., Providence, R.I. 1 p. [Manuscript.]
178. Rare and Endangered Species of Oklahoma Committee. 1975. Rare and endangered vertebrates and plants of Oklahoma. U.S. Soil Conserv. Serv., Stillwater, Okla. 44 pp.
179. Rhode Island Department of Natural Resources. 1977. Response to AES survey by J. Myers, Biologist. Providence, R.I.
180. Robbins, C.S., B. Bruun, and H.S. Zim. 1966. A guide to field identification—birds of North America. Golden Press, New York, N.Y. 340 pp.
181. Rosene, W. 1969. The bobwhite quail: its life and management. Rutgers University Press, New Brunswick, N.J. 418 pp.
182. Rue, L.L., III. 1973. Game birds of North America (An outdoor life book). Harper & Row, New York, N.Y. 490 pp.
183. Russell, R.W., and J.D. Anderson. 1956. A disjunct population of the long-nosed salamander from the coast of California. *Herpetologica* 12:137-140.
184. Sanderson, G.C., ed. 1977. Management of migratory shore and upland game birds in North America. Intl. Assoc. Fish Wildl. Agencies, Washington, D.C. 358 pp.
185. Saunders, J.K., Jr. 1955. Food habits and range use of the Rocky Mountain goat in the Crazy Mountains, Montana. *J. Wildl. Manage.* 19(4):429-437.
186. Sather, J.H. 1958. Biology of the Great Plains muskrat in Nebraska. *Wildl. Monogr.* 2. 35 pp.
187. Segelquist, C.A., and W.E. Green. 1968. Deer food yields in four Ozark forest types. *J. Wildl. Manage.* 32(3):300-337.
188. Seymour, G. 1968. Furbearers of California. Calif. Dep. Fish and Game. Sacramento, Calif. 57 pp.
- Shaw, H. 1961. Influence of saltcedar on white-winged doves in the Gila Valley. *Ariz. Game Fish Dep. Spec. Rep.* 16 pp.
189. Smith, C.C. 1972. Food preferences of squirrels. *Ecology* 53(1):82-91.
190. Smith, J.G. 1952. Food habits of mule deer in Utah. *J. Wildl. Manage.* 16(2):148-155.
191. Snyder, L.L. 1957. Arctic birds of Canada. University of Toronto Press, Toronto. 310 pp.
192. Soper, J.D. 1941. History, range, and home life of the northern bison. *Ecol. Monogr.* 11(4):347-475.
193. South Carolina Wildlife and Marine Resources Department. 1975. Amendment to Section 28-729 and 28-731, 1962 South Carolina Code of Laws (concerning endangered species). Columbia, S.C.
194. ———. 1977. Response to AES survey by Kenneth B. Stansell, Supervisor, Nongame-Endangered Species Section. Columbia, S.C.
195. South Dakota Department of Game, Fish and Parks. 1976. South Dakota 1976-77 hunting guide. Pierre, S.D. 32 pp.
196. ———. 1977. Endangered and threatened species. S. Dak. Code of Laws Section 34A-8 and 41.10.
197. Sparks, D.R. 1968. Diet of black-tailed jack-rabbits on sandhill rangeland in Colorado. *J. Range Manage.* 21(4):203-208.
198. Spencer, D.A. 1976. Wintering bald eagle. *Natl. Agric. Chem. Assoc., Wash., D.C.* 170 pp.
199. Spencer, D.L., and C.J. Lensink. 1970. The muskox of Nunivak Island, Alaska. *J. Wildl. Manage.* 34(1):1-15.
200. Sprunt, A. 1954. Florida bird life. *Natl. Audubon Soc., New York, N.Y.*
201. ———. 1955. North American birds of prey. Bonanza Books, New York, N.Y. 227 pp.
202. ———. 1970. South Carolina bird life. University of South Carolina Press, Columbia, S.C.
203. State of Idaho. 1975. Idaho environmental overview. Boise, Idaho. 261 pp.
204. Stebbins, R.D. 1951. Amphibians of western North America. University of California Press, Berkeley, Calif. 539 pp.
205. Stewart, G.R., and A.I. Roest. 1960. Distribution and habits of kangaroo rats at Morro Bay. *J. Mammal.* 41(1):126-129.
206. Taber, R.D., University of Washington, Seattle. 1977. Personal communications.
207. Takos, M.J. 1947. A semi-quantitative study of muskrat food habits. *J. Wildl. Manage.* 11(4):331-339.

208. Tanner, J.T. 1966. The ivory-billed woodpecker. Dover Publications, New York, N.Y.
209. Taube, C.M. 1947. Food habits of Michigan opossums. J. Wildl. Manage. 11(1):97-103.
210. Taylor, W.P. 1954. Food habits and notes on life history of the ring-tailed cat in Texas. J. Mammal. 35(1):55-63.
211. Taylor, W.P., ed. 1956. The deer of North America. The Stackpole Co., Harrisburg, Pa., and Wildl. Manage. Inst., Washington, D.C. 668 pp.
212. Tennessee Heritage Program. 1974. List of special animal and plant species. Nashville, Tenn. 10 pp. [Manuscript.]
213. Tennessee Wildlife Resources Commission. 1977. Proclamation: endangered or threatened species. Tenn. Wildl. Resour. Comm., Nashville, Tenn. 3 pp.
214. Terrel, T.L. 1972. The swamp rabbit (*Sylvilagus aquaticus*) in Indiana. Am. Midl. Nat. 87(2):283-295.
215. Texas Parks and Wildlife Department. 1976a. A guide to Texas hunting and sport fishing regulations, 1976-1977. Austin, Tex. 24 pp.
216. _____. 1976b. Regulations for taking, possessing, transporting, exporting, processing, selling, or offering for sale, or shipping endangered species. Regulation 127.30.09.001-.006. Austin, Tex. 3 pp.
217. _____. 1977. Response to AES survey by Ted L. Clark, Director, Wildl. Div. Austin, Tex.
218. Tiemeier, O.W. 1965. Bionomics section. Pages 35-40 in The black-tailed jackrabbit in Kansas. Kans. State Univ. Agric. Exp. Stn. Tech. Bull. 140.
219. Tileston, J.V., and L.E. Yeager. 1962. A resume of Colorado big game research projects, 1939-1957. Colo. Dep. Fish Game Tech. Bull. 9. 81 pp.
- Todd, R.S. 1969. Nongame investigations. Proj. W-53-R-19; WP5, J1. Ariz. Game and Fish Dep. Prog. Rep. 26 pp.
- _____. 1970. Nongame investigations. Proj. W-53-R-20; WP5, J1. Ariz. Game and Fish Dep. Prog. Rep. 16 pp.
- _____. 1971. Nongame investigations. Proj. W-53-R-22; WP5, J1. Ariz. Game and Fish Dep. Prog. Rep. 11 pp.
- _____. 1972a. Nongame investigations. Proj. W-53-R-22; WP5, J1. Ariz. Game and Fish Dep. Prog. Rep. 22 pp.
- _____. 1972b. Biological report on a marsh near Tuzigoot National Monument. Proj. W-53-R-23; WP5, J1. Ariz. Game Fish Dep. Spec. Rep. 4 pp.
220. Todd, J.W. 1975. Foods of Rocky Mountain bighorn sheep in southern Colorado. J. Wildl. Manage. 39(1):108-111.
221. Tuck, L.M. 1972. The snipes: a study of the genus *Capella*. Can. Wildl. Serv. Monogr. Ser. 5. 428 pp.
222. Turkowski, F.J. 1975. Dietary adaptability of the desert cottontail. J. Wildl. Manage. 39(4):748-756.
223. University of Arizona, Cooperative Wildlife Research Unit. 1977. Response to AES survey by Dr. Lyle K. Sowls, Professor. Tucson, Ariz.
224. University of Arkansas, Cooperative Extension Service. 1977. Response to AES survey by James E. Miller, Forester/Wildlife Specialist. Little Rock, Ark.
225. University of Connecticut. 1977. Response to AES survey by Dr. R.D. McDowell, Wildlife Professor. Storrs, Conn.
226. U.S. Army Corps of Engineers, Environmental Resources Section, and University of Washington Institute for Environmental Studies. 1975. Washington environmental atlas. U.S. Government Printing Office, Washington, D.C. 114 pp.
227. U.S. Department of Agriculture, Soil Conservation Service. 1972. Rare and endangered plant and animal species (for N. Dak.). Environ. Memo. ND-3. 8 pp.
228. U.S. Bureau of Sport Fisheries and Wildlife. 1970. Hawaii's endangered waterbirds. Portland, Oreg. 30 pp.
229. U.S. Fish and Wildlife Service. 1976. Endangered and threatened wildlife and plants. Federal Register 41(208): 47181-47198.
230. _____. 1974. Hawaii endangered forest birds. Kailua, Hawaii. 30 pp.
231. _____. 1977a. Endangered and threatened species list for Washington State as found in the October 27, 1976, Federal Register. Olympia, Wash. (Ecological Services Office). 1 p. [Typewritten.]
232. _____. 1977b. Response to AES survey by Mr. Ed Aderkas. Sacramento, Calif. (Ecological Services Office.)
233. _____. 1977c. Response to AES survey by Leon G. Colborn, Acting Field Supervisor. Vicksburg, Miss. (Ecological Services Office.)
234. _____. 1977d. Response to AES survey by Leon G. Colborn, Acting Field Supervisor. Vicksburg, Miss. (Field Office.)
235. _____. 1977e. Response to AES survey by R.A. Hoope, Supervisor. Green Bay, Wis. (Ecological Services Office.)
236. _____. 1977f. Response to AES survey by Jerome L. Johnson, Field Supervisor. Fort Worth, Tex. (Ecological Services Office.)

References

237. _____. 1977g. Response to AES survey by Maurice H. Taylor, Field Supervisor. Honolulu, Hawaii. (Ecological Services Office.)
238. Utah Division of Wildlife Resources. 1976. Status of selected animal species in Utah. Salt Lake City, Utah. 8 pp. [Manuscript.]
239. Vermont Department of Fish and Game. 1977. Response to AES survey by Benjamin Day, Biologist, Montpelier, Vt.
240. _____. 1975. Endangered species list for the State of Vermont. Section 3651(3)(A) and Section 3651 (3)(B) of Title 13, Vermont Statutes Annotated.
241. Virginia Commission of Game and Inland Fisheries, Richmond, Va. 1978. Personal communication.
242. Virginia Cooperative Wildlife Research Unit. n.d. Endangered and rare vertebrates of Virginia. Blacksburg, Va. 5 pp. [Manuscript.]
243. Walkinshaw, L. 1973. Cranes of the world. Winchester Press, New York, N.Y. 273 pp.
244. Washington Department of Game. 1974. Classification of wildlife in Washington. Olympia, Wash. 2 pp. [Manuscript.]

Wauer, R.H. 1973. Birds of Big Bend National Park and vicinity. University of Texas Press, Austin, Tex. 223 pp.
245. Welles, R.E., and F.B. Welles. 1961. The bighorn of Death Valley. U.S. Natl. Park Serv. Fauna Ser. 6. 242 pp.
246. Wellner, C.A., and F.D. Johnson, eds. 1974. Research natural area needs in Idaho—a first estimate. Pages 91-96 in Report of the natural areas workshop. Boise, Idaho.
247. West Virginia Department of Natural Resources. 1978. Charleston, W. Va. Personal communication.
248. West Virginia Department of Natural Resources, Heritage Trust Program. 1977. Response to AES survey by Dr. Dale E. Pike. Charleston, W. Va.
249. Wetzel, J.F., J.R. Wambaugh, and J.M. Peek. 1975. Appraisal of white-tailed deer winter habitat in north-eastern Minnesota. J. Wildl. Manage. 39(1):59-66.

Wigal, D.D. 1973. A survey of the nesting habitats of the whitewinged dove in Arizona. Ariz. Game Fish Dep. Spec. Rep. 2. 37 pp.
250. Wilbur, S.R. 1974. The status of the light-footed clapper rail. Am. Birds 28(51):868-870.
251. Wisconsin Department of Natural Resources. 1955. Endangered animals in Wisconsin. Madison, Wisc. 10 pp.
252. _____. 1975. Wisconsin endangered species list. Pages 202-10 and 202-11 in Administrative Code, Wisconsin Register, Sept. 1975 (237).
253. Wyoming Game and Fish Department, Cheyenne. 1978. Personal communication.
254. Wyoming Wildlife Federation. 1977. Response to AES survey by H.L. Trejo. Rawlins, Wyo.
255. Yocom, C., and R.F. Dasmann. n.d. The Pacific coastal wildlife region. Revised ed. Naturegraph Co., Healdsburg, Calif. 120 pp.
256. Yocom, C., and V. Brown. 1971. Wildlife and plants of the Cascades. Naturegraph Co., Healdsburg, Calif. 286 pp.
257. Zarn, M., T. Heller, and K. Collins. 1977. Wild, free-roaming burros—status of present knowledge. U.S. Dep. Inter./U.S. Dep. Agric. Tech. Note 296. 65 pp.

Zimmerman, D.R. 1978. A technique called cross-fostering may help save the whooping crane. Smithsonian 9(6):52-63.

- achene** A one-seeded, dry, indehiscent fruit with seed attached to fruit wall at one point only, derived from a superior ovary.
- acorn** The fruit of the oak; a nut in a hardened scaly cup.
- aggregate fruit** A group of separate fruits developed from one flower.
- allelopathic inhibition** The influence of one living plant upon another due to secretion of toxic substances.
- alluvial soil** A soil, recently deposited by running water, showing practically no horizon development (save A1 formation) or other modification.
- alternating current (AC)** A current that reverses direction in regular cycles.
- altricial** Referring to those birds that after hatching are helpless and require parental care for a period of time.
- annual** Living one year.
- anthesis** The time when the flower expands and opens or the process of expansion and opening.
- anthocarp** Structure in which fruit is united with perianth or receptacle.
- apical dominance** The upward growth of terminal shoot meristems that inhibits the growth of underlying lateral buds.
- awn** A bristle-shaped appendage at the end or on the back or edge of an organ.
- axil** The angle formed between a plant axis and any organ developing from it (e.g., a leaf axil).
- barrier effect** The inhibition of the movement or reproductive behavior of an endangered species when its habitat is fragmented by a ROW.
- basal leaves** With branches from ground level.
- bench** Level or gently sloping land surrounded by steeper slopes above and below it.
- berry** Fleshy fruit.
- biennial** Living two years; usually flowering the second year.
- bifid** Forked; that is, having two equal parts.
- bipinnate** A leaf two times pinnately compounded.
- blowdown** An area where wind has blown over all tall-growing vegetation.
- bog** An extremely wet, poorly drained area characterized by a floating, spongy mat of vegetation, composed of sphagnum, sedges, and heaths.
- bract** Modified leaf found in the inflorescence.
- browse** Leaves, stems, twigs, bark, and wood of woody plants consumed by animals.
- bulb** A short, erect, underground stem surrounded by fleshy leaves.
- bur** Any rough or prickly involucre or pericarp.
- cabling** A vegetation maintenance technique in which a 150 foot to 200 foot 1.5 inch cable is dragged between two tractors to break off or uproot plants.
- caespitose** See "cespitose."
- calcareous soils** Of soils made alkaline by calcium carbonate or calcium magnesium bicarbonate.
- callus** Wound tissue. Generally, soft parenchymatous tissue that develops after the wounding of a plant, tending to cover the wound. Specifically, a caplike mass of callose that covers the sieve plates of nonfunctioning sieve tubes.
- calyx** The outermost layer of modified leaves, sepals.
- canopy** A network of the uppermost branches of a forest which partially or fully cover the understory.
- capsule** A dry, dehiscent fruit derived from a two or more carpelled ovary.
- carpellate** Plant with female or pistillate flowers.
- caryopsis** A one-seeded, dry, indehiscent fruit with the seed coat attached to the fruit wall.
- cauline** Leaves more or less distributed evenly on a stem.
- cespitose** Short, much-branched; a plant forming a cushion.
- chaining** A vegetation maintenance technique in which a heavy anchor chain is dragged between two tractors to break off or uproot plants.
- chipping** A process of slash disposal in which a machine is used to grind up large pieces of wood into small chips.
- circuit, double** Referring to a transmission line that has two separate circuits (each with three phases).
- circuit, single** Referring to a transmission line that has only one electrical circuit consisting of three phases.
- clear cut** Removal of all trees in an area in one cutting operation.
- coalesce** To grow together or into one body.
- coalescent** The union of similar parts (e.g., the petals of a flower).
- coma** A tuft of hairs especially at the tips of seeds.
- community** An assemblage of animal and plant populations that live together in a prescribed area or habitat.
- compaction** Firm, concentrated soil caused by pressure on top layers (e.g., bulldozing).
- composites** Members of the plant family Compositae (Asteraceae).
- conductor** A substance, body, or device that readily conducts heat, electricity, sound, etc.
- cone** The reproductive structure of pine, fir, and other conifers, consisting of an axis to which are attached many woody, overlapping scales which bear seeds.
- conifer (coniferous)** Cone-bearing.
- continental** Having large annual and daily ranges in temperature.
- cordate** Of a conventional heart shape.
- corm** The enlarged, solid, fleshy base of a stem with scales; an upright underground storage stem.
- corolla** The whorl of petals above the sepals.
- corymb** A flat-topped or convex indeterminate cluster of flowers.
- cover** Plants or objects used by wildlife for protection from predators and adverse weather and for rearing their young.
- cover type** The dominant plant type covering an area (e.g., aspen cover type).
- culm** A stem of a grass (e.g., bamboo); sometimes a sedge that is typically hollow between nodes.
- culvert** A drainage device designed to prevent erosion near roads.
- cuneate** Obtriangular; inversely triangular.
- danger tree** Any tree adjacent to a transmission line right-of-way that could fall into or otherwise endanger the line.
- dieback** A diseased condition of the peripheral, aboveground structures of woody plants caused by parasites or other agents (e.g., winter injury).
- deciduous** Of any plant organ or group of organs that is shed naturally — leaf-losing. Of perennial plants that are normally leafless for some time during the year.
- decumbent** Reclining or lying on the ground with the tips ascending.
- deer yard** An area of heavy cover where deer congregate in winter for food and shelter.
- dehiscent** Opening regularly by valves, slits, etc., as a capsule or anther.
- deltoid** Triangular in shape.
- dentate** Toothed; referring to margins of leaves.

Glossary

- den tree** A tree, either hollow or having holes, that is utilized by various animals for cover and nesting.
- digitate** Several members arising from the summit of support. Said especially of spikes from the summit of a stalk of clustered flowers.
- dioecious** Unisexual flowers; having the staminate and pistillate on different plants. Also refers to gymnosperms with pollen and seed cones on different individuals.
- direct current (DC)** Electric current with no change in the direction of electron flow and with only slightly varied magnitude.
- disking** A vegetation maintenance technique that cuts, lifts, and inverts vegetation while scarifying the soil.
- diurnal** Active during the day.
- drupe (druplet)** A fleshy fruit with a stony endocarp. A druplet is a small drupe.
- ecological characteristics** The basic information about a species, including distribution, habitat, reproduction, growth characteristics and needs, and responses to habitat changes.
- ecosystem** The interaction of a community of living organisms with their nonliving surroundings.
- ecotone** The transition zone between two or more biotic communities (e.g., the ecotone between forest and prairie).
- edge** The transition zone between two or more vegetation types (i.e., the edge between a field and a forest).
- ellipsoid** Solidly-shaped, with an elliptical outline.
- elliptic** With widest axis at midpoint of structure and with margins symmetrically curved.
- endangered species** A species whose chances for survival are in immediate danger.
- Endangered Species Act of 1973—PL93-205; 87 Stat. 884** A law providing a means to protect and conserve endangered or threatened species and their habitats.
- endemic** Native to a particular region.
- epiphyte** A plant growing on, but not nourished by, another plant.
- epicormic** Growing from a dormant bud exposed to light and air.
- exotic species** A species not native to a geographical area in which it is found.
- fascicle** A bundle or cluster of flowers.
- feral** Having reverted to a wild state after being domesticated at one time (e.g., feral hogs).
- filter strip** A protective area of absorbent, undisturbed soil between access roads and streams, preventing runoff.
- flashover** A sudden electrical surge between two conductors that causes an arc.
- flats** Level tracts of land with little or no relief.
- follicle** A dry, dehiscent fruit derived from one carpel that splits along a suture.
- forage** All plants available to wildlife or livestock for feeding.
- fronds** Leaves of a fern.
- fuelbreak** A cleared strip in a wooded area that serves as a line of fire defense.
- furbearer** A mammal commonly harvested for its hide.
- fusiform** In spindle shape; that is, widest at the middle and tapering gradually to each pointed end, the body being circular in cross-section.
- gestation** The length of time from conception to birth.
- girdling** The act of encircling a tree with cuts through the cambium layer to kill the tree.
- glabrous** Smooth; not hairy.
- glacial drift** A deposit of soils and minerals transported by a glacier.
- glacial till** A clay subsoil originally transported and deposited by a glacier.
- glandular hairs** Hair-bearing glands or glandlike appendages.
- globose** Spherical, globular.
- glumes** Bracts, usually occurring in pairs, at the base of a grass spikelet.
- grading** A restoration method to return soil to its original contour on construction sites that will no longer be used.
- habit** Characteristic mode of growth or occurrence in plants.
- habitat** An area where an organism and all its life requirements can be found; the natural environment of a plant or animal.
- halophyte** A plant that is more or less restricted to saline soil or to sites that are influenced by salt water.
- heath layer** A layer of vegetation consisting of members of the Ericaceae.
- hinge-cutting** The act of cutting through a tree trunk enough to fell it but leave a strip of wood and bark attached.
- home range** The area within which an animal commonly travels to find all its life requirements.
- hummock** A round, conical hollock or knoll; a slight rise in ground-level.
- indehiscent** Not opening by valves, or any other means; persistently closed.
- inflorescence** The flowering part of a plant, and especially the mode of its movement.
- insectivorous** Adapted to feeding on insects.
- insulator** A material of such low conductivity that the flow of current through it can usually be neglected.
- interspersed** The actual mixing of habitat types at an edge.
- involute** Having edges rolled inward over upper surface.
- kilovolt (kV)** A unit of electromotive force equal to 1000 volts.
- lanceolate** Lance-shaped; about 4 times as long as wide and broadest below or about the middle.
- lacustrine** Relating to or formed in lakes.
- leaflet** A distinct and separate segment of a leaf.
- legume** A usually dry, dehiscent fruit derived from one carpel that splits along two sutures.
- lemmas** Outer scales subtending a grass floret.
- lenticular** Lens-shaped; biconvex.
- ligulate** Having a tongue-like outgrowth at the base of blade or top of sheath.
- loam** A soil consisting of an easily crumbled mixture of clay, sand, and silt.
- locule** Compartment of an anther; ovary cavity.
- loess** A loam mixture, ranging from clay to fine sand with calcareous elements, that is extensively prevalent in the Continental U.S.
- marsh** A low, treeless, wet area, characterized by sedges, rushes, and cattails.
- mericarp** A portion of fruit that seemingly matured as a separate fruit.
- metamorphic** Changing mineral constitution; compact, highly crystalline.
- moraines** A deposit of glacial drift at the foot or sides or along the bottom of a glacier; typically ridges of irregular form, save for the ground moraine which is gently rolling or hummocky, and composed largely of till.
- muck farm** A cultivated area of wet, fertile soil marked by the presence of decaying plant matter.
- muskegs** A tract of partly forested peatland supporting mosses (typically sphagnum), shrubby plants, and scattered spruce and larch.
- nocturnal** Active at night.
- oblanceolate** Lanceolate with the broadest part toward the apex.
- obovate** Inversely ovate.
- obovoid** Having the form of an egg with the broad end apical.
- omnivore** An animal that eats both plant and animal matter.
- oolitic** Consisting of calcareous, granular limestone; sometimes containing silica or iron oxide.
- orbicular** Circular.
- outwash** Soils and minerals transported down slopes by rainwater to settle on adjacent lower land.
- ovate** With widest axis below middle and with margins symmetrically curved; egg-shaped.
- ovoid fruit** Fruit having an oval or ovate body.

- palatability** The degree of desirability of a plant as food to an animal.
- palately compound** Leaflets arising from one point at end of a petiole.
- panicle** Branched inflorescence with clusters of flowers.
- papilla** A minute, nipple-shaped projection.
- pappus** Bristly or scaly calyx in composites.
- parasitic** Growing on and deriving nourishment from another organism.
- perennial** Living more than two years.
- perianth** In angiosperms, the floral envelope generally differentiated into a calyx (an outer layer of sepals) and a corolla (an inner ring of petals).
- pericarp** Fruit wall.
- perigynium** Fused scales, a sac, around the pistil or ovary.
- petiolate** With a petiole or leaf stalk.
- phloem** The tissues of the inner bark, characterized by the presence of sieve tubes and serving for the transport of foodstuffs.
- pinnate** Leaflets arranged along a common axis, the rachis.
- pneumatophores** Submerged or exposed roots that have a respiratory function.
- pocosin** An upland swamp of the southeast coastal plain.
- pod** A dry, dehiscent fruit.
- Podzolic** Refers to soils that are matted at the surface; developed in a moist climate with coniferous and other vegetative influences.
- pome** A fleshy fruit derived from an inferior compound ovary and receptacle.
- precocial** Referring to those birds that are active and able to move about at an early age.
- prescribed burn** Intentional burning of an area under selected fuel, moisture, and wind conditions to be able to contain the fire to a desired area and intensity.
- prickles** Sharp-pointed projections from the epidermis or cortex of any organ.
- prostrate** Trailing or lying flat, not rooting at the nodes.
- puberulent** Covered with soft, minute hairs.
- pubescent** Covered with dense or scattered hairs.
- pyriform** Pear-shaped.
- raceme** Unbranched, indeterminate inflorescence with clusters of flowers.
- rachis** The elongated axis of an inflorescence.
- rating** The operating limit of a conductor, expressed in voltage frequency.
- reniform** Kidney-shaped.
- resistance** That property of a conductor in virtue of which the passage of a current is opposed, causing electric energy to be transformed into heat.
- reticulate** With veins forming a network.
- revolute** With the margins or the tip rolled backward.
- rhizome (rhizomatous)** A stem, generally modified (particularly for storing food materials), that grows below the ground surface and produces adventitious roots, scale leaves, and suckers irregularly along its length, not just at nodes.
- riparian** Relating to or bordering a natural waterway.
- roller chopping** A maintenance method creating minimum slash and disturbance by flattening and cutting smaller vegetation with a blade mounted on metal drums.
- root revetment** An underground network of roots that sustains a stream embankment, preventing erosion.
- root sucker** A shoot arising horizontally from a root below ground level.
- rootstock** A root-bearing plant or plant part, generally a stem or root, onto which another plant part is grafted; or, the collective roots in a stand, capable of sprouting.
- rosulate** Leaves from a cluster (rosette) developed in a crowded crown of circles or spirals.
- samara** A winged, dry fruit.
- savanna** Essentially lowland, tropical and subtropical grassland, with a scattering of trees and shrubs.
- scabrous** Covered with rough projections, harsh to touch.
- scalping** A maintenance method that uses a heavy blade to scrape the plants and topsoil layer off a site.
- scapes** Naked, or lightly scaled, flowering stems arising from the ground.
- scarify** To break or loosen hard ground.
- scarious** Thin and dry, appearing shriveled.
- scat** Animal fecal matter.
- schizocarp** A dry fruit with the carpels separating at maturity.
- selective cut** Removal of trees with certain specific qualities such as those of a given species or size.
- semimarine** Referring to a climate controlled by oceanic winds and air masses with a relatively limited range in temperature and high humidity.
- sepal** One of the flower parts of an outer series forming a calyx.
- serrate** Saw-toothed; teeth sharp and ascending, with a 1/16 to 1/8 inch distance to midrib or midvein.
- sessile** Without a petiole or leaf stalk.
- shelterbelt** A strip of tall-growing plants planted or left standing in prairie areas to help reduce wind erosion of topsoil.
- silicle** A dry, dehiscent fruit derived from two or more carpels that dehisce along two sutures and which has a persistent partition after dehiscence and is as broad or broader than long.
- silique** A silicle-type fruit that is longer than broad.
- slash** Woody material left after a cutting operation.
- snag** A standing dead tree from which most of the branches have fallen.
- spadix** Unbranched, indeterminate inflorescence with flowers embedded in the rachis.
- spathe** A sheathing leaf subtending or enclosing an inflorescence.
- spathulate** Oblong or obovate apically with a long attenuate base.
- species** A group of individuals reproductively isolated from other groups of individuals under natural conditions.
- spicate** Arranged in or resembling a spike.
- spikelets** Small spikes; the basic inflorescence unit in grasses and sedges.
- sporangium** Spore sac; a structure containing spores.
- spore** A reproductive body, characteristic of the lower plants, consisting of one or a few cells and never containing an embryo.
- staghead** The leafless or dead uppermost branches of a tree.
- static or ground wire** A lead from an electrical apparatus to the ground or to a grounded connection.
- stellate** Star-shaped.
- stipules** Paired scales, spines, glands, or bladelike structures at the base of a petiole.
- stolon (stoloniferous)** A stem or branch from a base plant that grows along or down to the ground surface, taking root at its nodes.
- strobilus** Stem with short internodes and spore-bearing appendages.
- subherbaceous** Slightly having the characteristics of an herb, somewhat leaflike in color and texture.
- subsidence** Flattened soil caused by pressure on top layers (e.g., bulldozing).
- succulent** Juicy, fresh.
- sunscauld** Injury of woody plants caused by intense summer heat and light, characterized by local tissue death and occasionally, cankers.
- swamp** A wet area that usually has standing trees.
- tableland** A broad, elevated plain; plateau; mesa.
- threatened species** Likely to become endangered in the near future.
- trifoliate** Three leaflets, pinnately compounded with terminal leaflets longer than lateral; palmately compounded with leaflets equal in length.
- trigonus** Three-angled.
- trilocular** Having three loculi chambers or cells.
- tripinnate** Referring to a leaf compounded three times.

Glossary

tubercle A small tuber or tuberlike body, often due to symbiotic relation of organisms.

tufted Formed into a tuft or cluster of short-stalked flowers, leaves, or other vegetation, growing from a common point.

tuberoid roots Fleshy, thickened roots, resembling a tuber.

umbels Flat-topped or convex inflorescence with the flower stalks arising from a common point.

understory Foilage consisting of seedlings, shrubs, or herbs that lies beneath and is shaded by canopy or taller plants.

ungulate A hoofed mammal.

utricle A small, bladdery or inflated, one-seeded, dry fruit.

villous Having long and soft (not interwoven) hairs.

voltage Electromotive force, expressed in volts (v).

wetland Any area where the water table is near or above the surface of the land during a significant part of the year.

whorl A group of leaves or other structures at a single node.

wildlife All nondomesticated animals living in a natural environment.

windthrow Uprooting and inversion of trees by strong winds.

wolf tree A tree of dominant size and position that usurps light and space from smaller understory, preventing its growth.

xeric Low or deficient in moisture for the support of plant life.

xerophyte A plant with the adapted structures for survival in a xeric or highly acid or saline environment (e.g., epidermal thickening, dense pubescence, resinous coating).

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