Development and Implementation of the Provincial Identified Wildlife Management Strategy in British Columbia, Canada

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Abstract: The Identified Wildlife Management Strategy was developed in British Columbia in the mid-1990s to address increasing threats and potential endangerment of species at risk from forest and range practices. Authority for this strategy stems from the 1995 Forest Practices Code, and the strategy represents part of the provincial response to the *National Accord for the Protection of Species at Risk*. Volume 1 of the strategy (released in 1999) consists of accounts and procedures/management measures for 40 at-risk elements. The strategy has been implemented through the establishment of Wildlife Habitat Areas for these elements and the consideration of recommendations in landscape-level resource management plans.

We currently plan to expand the strategy to address 85 at-risk elements (species, species-pairs, subspecies, populations, population units, or plant communities), subject to approval under the new Forest and Range Practices legislation. The expansion would included those species listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as of December 2001 that are impacted, at least moderately, by forest or range practices, plus other provincially red- and blue-listed elements. These elements have been ranked objectively in a priority list. If approved, there should be momentum to develop a considerable number of new Wildlife Habitat Areas and increase the focus on at-risk wildlife in landscape-level resource management plans. Incorporating recommendations from recovery teams into these efforts will be important. We also plan to start a review process by investigating the effectiveness of Wildlife Habitat Areas established for Identified Wildlife.

Key Words: Identified Wildlife Management Strategy, species at risk, British Columbia

Introduction

This paper outlines the history of the development of the Identified Wildlife Management Strategy, the accomplishments in implementing it, the development and proposal of the next version, and the related effectiveness evaluations that are anticipated under the *Forest and Range Practices Act*.

The Identified Wildlife Management Strategy serves as a tool for addressing species at risk in British Columbia. Identified Wildlife are species at risk which have been designated as requiring

special management attention under the *Forest and Range Practices Act*. Taxa can include endangered, threatened, or vulnerable vertebrates or invertebrates; endangered or threatened plants or plant communities; and regionally important vertebrates (Paige 2002).

The strategy originated from the 1995 Forest Practices Code in response to increasing threats to, and imminent endangerment of species at risk from forest and range practices. Prior to the federal *Species at Risk Act*, Canadian jurisdictions managed species at risk via the *National Accord for the Protection of Species at Risk*. For species affected by forest or range practices on Crown forest lands, the Identified Wildlife Management Strategy was part of British Columbia's provincial response to the Accord, and it now serves the same relationship with the *Species at Risk Act*. Since initiation of the strategy, Volume 1 has been developed and implemented, and an expanded version (Version 2004) has been prepared, for which government approval is now being sought.

Volume 1 Development

Volume 1 was initiated in 1994 and released in 1999. The volume is comprised of two documents which cover species/plant community accounts (Province of British Columbia 1997) and procedures/management measures (Province of British Columbia 1999; British Columbia Ministry of Environment, Lands and Parks, no date) for 40 Identified Wildlife elements (Table 1). These elements include 36 vertebrate species or subspecies and 4 plant communities. The vertebrates include 1 fish, 1 amphibian, 4 snakes, 20 birds, and 10 mammals. The inclusion of plant communities in the strategy is consistent with their strong history of recognition in British Columbia, even though this goes beyond the Accord and the *Species at Risk Act*. The work of V.J. Krajina (Krajina 1965) and the Biogeoclimatic Ecosystem Classification of the British Columbia Ministry of Forests (Meidinger and Pojar 1991) provided the foundation for including plant communities in the strategy. The Red and Blue Lists developed by the provincial Conservation Data Centre provided another starting point for including elements in the strategy (British Columbia Ministry of Sustainable Resource Management 2004). These lists were developed from species status assessments, and the rankings are as follows: Red List: Endangered or Threatened; Blue List: Sensitive or Special Concern. The Yellow List includes all other species, but those which are 'regionally important' were also considered for inclusion as Identified Wildlife.

Volume 1 Implementation

Wildlife Habitat Areas serve as the mechanism for implementing the Identified Wildlife Management Strategy. They are selected for individual Identified Wildlife, and are mapped areas established on Crown land that is regulated by the Forest Practices Code and the *Forest and Range Practices Act*. They include critical or suitable habitat and follow size and configuration

criteria in order to meet Wildlife Habitat Area planning objectives. General Wildlife Measures are required management actions or prohibitions that relate to access, silviculture, range, and other resource uses.

Table 1. Identified Wildlife[a] in Volume 1 of the Identified Wildlife Management Strategy (June 1997).

English name (names in quotes are unofficial subspecies common names)	*Scientific name*
Vertebrates	
American bittern	*Botaurus lentiginosus*
American white pelican	*Pelecanus erythrorhynchos*
Ancient murrelet	*Synthliboramphus antiquus*
"California" bighorn sheep[b]	*Ovis canadensis californiana*
"Rocky Mountain" bighorn sheep	*Ovis canadensis canadensis*
Bobolink	*Dolichonyx oryzivorus*
"Sagebrush" Brewer's sparrow[c]	*Spizella breweri breweri*
Bull trout	*Salvelinus confluentus*
Cassin's auklet	*Ptychoramphus aleuticus*
Ferruginous hawk	*Buteo regalis*
Fisher	*Martes pennanti*
"Great Basin" gopher snake[d]	*Pituophis catenifer deserticola*
Grasshopper sparrow	*Ammodramus savannarum*
Grizzly bear	*Ursus arctos*
Keen's long-eared myotis[e]	*Myotis keenii*
Lewis's woodpecker	*Melanerpes lewis*
Long-billed curlew	*Numenius americanus*
Marbled murrelet	*Brachyramphus marmoratus*
Mountain beaver - rainieri subspecies	*Aplodontia rufa rainieri*
Mountain beaver - rufa subspecies	*Aplodontia rufa rufa*
Mountain goat	*Oreamnos americanus*
Night snake	*Hypsiglena torquata*
Northern goshawk[f]	*Accipiter gentilis atricapillus*
"Queen Charlotte" northern goshawk[g]	*Accipiter gentilis laingi*
Pacific water shrew	*Sorex bendirii*
Prairie falcon	*Falco mexicanus*
Racer	*Coluber constrictor*
Rubber boa	*Charina bottae*
Sage thrasher	*Oreoscoptes montanus*
Sandhill crane	*Grus canadensis*
Tailed frog	*Ascaphus truei*
Trumpeter swan	*Cygnus buccinator*
Vancouver Island marmot	*Marmota vancouverensis*
Western grebe	*Aechmophorus occidentalis*
White-headed woodpecker	*Picoides albolarvatus*
Yellow-breasted chat	*Icteria virens*

Table 1. Identified Wildlife[a] in Volume 1 of the Identified Wildlife Management Strategy (June 1997) (cont'd).

English name	*Scientific name*
Plant Communities	
Douglas-fir/Garry oak - oniongrass	*Pseudotsuga menziesii/Quercus garryana - Melica subulata*
Ponderosa pine - black cottonwood - Nootka rose - poison ivy	*Pinus ponderosa - Populus balsamifera* ssp. *trichocarpa - Rosa nutkana - Rhus radicans*
Ponderosa pine - black cottonwood - snowberry	*Pinus ponderosa - Populus balsamifera* ssp. *trichocarpa - Symphoricarpos albus*
Water birch red-osier dogwood	*Betula occidentalis - Cornus stolonifera*

[a]A total of 36 vertebrate species/subspecies and 4 plant communities have been designated as Identified Wildlife.
[b]According to the BC Species and Ecosystems Explorer (September 2004) and NatureServe Explorer (version 4.0, July 2004), recent taxonomic changes do not recognize the subspecies California bighorn sheep (*Ovis canadensis californiana*). It is now referred to as the bighorn sheep (*Ovis canadensis*).
[c]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the Brewer's sparrow, *breweri* subspecies.
[d]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the gopher snake, *deserticola* subspecies.
[e]NatureServe Explorer (version 4.0, July 2004) currently lists *Myotis keenii* as Keen's myotis.
[f]Currently, the BC Species and Ecosystems Explorer (September 2004) does not list *atricapillus* as a subspecies of the northern goshawk.
[g]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the northern goshawk, *laingi* subspecies.

Staff from the Ministry of Water, Land and Air Protection have initiated and collaborated on field projects that have lead to the proposal of a large number of Wildlife Habitat Areas. As of February 2004, 160 Wildlife Habitat Areas totaling 49,120 ha have been established. Some highlights include the 34 Wildlife Habitat Areas that have been established for marbled murrelet (*Brachyramphus marmoratus*) nesting habitat, and the 15 Wildlife Habitat Areas that have been established for Queen Charlotte Island northern goshawk (*Accipiter gentilis laingi*) nesting and foraging habitat. Another 15 proposals for the latter species are partway through the approval process, and an adaptive management project is underway with Canadian Forest Products Ltd. Field projects for the western rattlesnake[1] (*Crotalus oreganus*) have resulted in the location of many new dens, a new focus on the Thompson/Nicola populations, and a number of Wildlife Habitat Area opportunities. Existing data on the Coeur d'Alene salamander (*Plethodon idahoensis*) have been compiled and reviewed, all known Crown land occurrences have been visited, and 21 potential Wildlife Habitat Areas have been identified. A collaborative project with Carmen Holschuh has located 22 new sites and 13 potential Wildlife Habitat Areas for the Queen Charlotte Island saw-whet owl[2] (*Aegolius acadicus brooksi*). For the western screech-owl, *macfarlanei* subspecies, surveys have confirmed a significant range expansion into the Vernon, Thompson, and Cache Creek areas. The surveys have also identified potential Wildlife Habitat

[1]NatureServe Explorer (version 4.0, July 2004) lists the common name of this species as rattlesnake.
[2]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the northern saw-whet owl, *brooksi* subspecies.

Areas in theses regions and have located 29 new sites and confirmed breeding at 6 sites. Additionally, 90 new cliffs were searched for prairie falcons (*Falco mexicanus*), and 27 historic sites were revisited. Breeding was confirmed at 3 known sites and 1 new site. Three Wildlife Habitat Areas have been established for the prairie falcon, and a fourth proposal is in the approval process.

The habitat needs of several species, including the American white pelican (*Pelecanus erythrorhynchos*), ancient murrelet (*Synthliboramphus antiquus*), and Cassin's auklet (*Ptychoramphus aleuticus)*, are now thought to have been met on Crown forest lands. Important feeding lakes for American white pelicans are now covered by 19 Wildlife Habitat Areas which were established to prevent disturbance of those sites. Breeding colonies of the ancient murrelet and Cassin's auklet are similarly protected by 18 Wildlife Habitat Areas.

Regional and provincial committees reviewed proposals, consulted stakeholders, and resolved issues to facilitate establishment of Wildlife Habitat Areas. Under the Forest Practices Code, Wildlife Habitat Areas were jointly approved by signatories for the Ministry of Forests and the Ministry of Water, Land and Air Protection, and then singly approved by the latter decision maker. Company-sponsored proposals were an important part of Volume 1, and increasing numbers of such proposals are expected if Version 2004 is approved.

Recommendations from the Identified Wildlife Management Strategy have also been considered in landscape-level resource management plans. Higher level plan recommendations were made to planning tables for three species: the fisher (*Martes pennanti*), bull trout (*Salvelinus confluentus*), and grizzly bear (*Ursus arctos*). Planning considerations were provided on a landscape unit basis for other species.

Version 2004 Development

We currently propose to expand the focus of the Identified Wildlife Management Strategy to address 85 at-risk elements (species, species-pairs, subspecies, populations, population units, or plant communities). Updates to the procedures have been drafted to reflect changing operational realities. The recent *Forest and Range Practices Act* and associated regulations provide a renewed umbrella under which to continue this work. Approval will be sought to release the revised strategy documents as Version 2004 (Hoyt 2004; Paige 2004). If approved in accordance with the revised process in legislation, the new documents will replace Volume 1 for the management of Identified Wildlife.

The proposed expansion of the strategy includes those species listed by the federal Committee on the Status of Wildlife in Canada (COSEWIC) as of 2001 that are considered to be affected, at least moderately, by forest or range practices, plus other provincially red- and blue-listed elements. Plants and invertebrate taxa are included. Candidate elements were ranked objectively in consultation with a technical advisory committee. This committee included representatives from industry and environmental organizations. The ranking incorporates

experience gained from working with Volume 1 and follows from a commitment to develop a systematic and defensible method for selecting from among eligible candidate elements.

Selection of a Priority List for Identified Wildlife

The Conservation Data Centre's Red and Blue Lists provided a starting point for developing the priority list for Identified Wildlife (Paige 2002). Out of a total of 1247 elements, 889 elements were eligible for further assessment. The Nature Conservancy ranking system was also used in this process. This is a scientifically-based, peer-reviewed system that includes global ranks and provincial status ranks (Master 1991). Elements were assigned a relative conservation concern rating (The Nature Conservancy 1996) by combining global and provincial ranks. Global concern takes precedence over provincial concern so that priority is placed on the risk of extinction over the risk of extirpation. As applied, an endemic and endangered element (e.g., the Vancouver Island marmot [*Marmota vancouverensis*]) is considered the highest concern, whereas a globally common and secure element at the periphery of its range (e.g., the sage thrasher [*Oreoscoptes montanus*]) is considered of intermediate concern.

The relative risk to an element from forest or range management was assessed using four considerations:

1. Is the element negatively impacted by forest or range management practices through habitat loss, disturbance, trampling, water diversion, introduction of exotic species, or other impacts?
2. What is the magnitude of the impacts on the species, on a 4-class scale?
3. What is the likelihood of impacts occurring?
4. What is the risk of impacts, considering magnitude and likelihood?

Preliminary priorities were established for the ranked elements by placing them into three groups:

1. high priority candidates for designation (52 elements)
2. intermediate priority candidates for designation (115 elements)
3. low priority candidates not for designation at this time (79 elements)

The priority ranking was further confirmed when the species/plant community accounts, which included extensive literature reviews, had been completed. If an element from the intermediate group was listed by COSEWIC, it was elevated as a candidate for designation as Identified Wildlife. The intention for the future is to revisit priorities on an annual basis for provincial or federal status changes.

Species/Plant Community Accounts for Identified Wildlife

A technical government working group directed the development of Version 2004, in consultation with the stakeholder technical advisory committee. Accounts were written and peer-reviewed by experts from the scientific community and relevant recovery teams. An operational review was conducted by the agencies and industries. These accounts summarize the status, life history, distribution, habitat requirements, and management standards for Identified Wildlife. Table 2 shows the additions to Identified Wildlife that are proposed under Version 2004.

Table 2. Additions to Identified Wildlife proposed in Version 2004 (see also Table 1[a]).

English name	*Scientific name*
Plant communities	
Alkali saltgrass herbaceous vegetation	*Distichlis spicata var. stricta herbaceous vegetation*
Antelope-brush/bluebunch wheatgrass	*Purshia tridentata/Pseudoroegneria spicata*
Antelope-brush/needle-and-thread grass	*Purshia tridentata/Hesperostipa comata*
Douglas-fir/Alaska oniongrass[b]	*Pseudotsuga menziesii/Melica subulata*
Douglas-fir/common juniper/*Cladonia* lichens	*Pseudotsuga menziesii/Juniperus communis/ Cladonia* spp.
Douglas-fir/dull Oregon-grape	*Pseudotsuga menziesii/Mahonia nervosa*
Douglas-fir/common snowberry/balsamroot	*Pseudotsuga menziesii/Symphoricarpos albus/ Balsamorhiza sagittata*
Hybrid white spruce/ostrich fern	*Picea engelmannii* x *glauca/Matteuccia struthiopteris*
Ponderosa pine/bluebunch wheatgrass - silky lupine	*Pinus ponderosa/Pseudoroegneria spicata - Lupinus sericeus*
Vasey's big sage/pinegrass	*Artemisia tridentata* ssp. *vaseyana/ Calamagrostis rubescens*
Water birch/red-osier dogwood	*Betula occidentalis/Cornus stolonifera*
Western hemlock - Douglas-fir/electrified cat's-tail moss	*Tsuga heterophylla - Pseudotsuga menziesii/ Rhytidiadelphus triquetrus*
Western redcedar - Douglas-fir/devil's club	*Thuja plicata - Pseudotsuga menziesii/ Oplopanax horridus*
Western redcedar - Douglas-fir/vine maple	*Thuja plicata - Pseudotsuga menziesii/Acer circinatum*
Western redcedar/devil's club/ostrich fern	*Thuja plicata/Oplopanax horridus/Matteuccia struthiopteris*
Invertebrates	
Gillett's checkerspot	*Euphydryas gillettii*
Johnson's hairstreak	*Loranthomitoura johnsoni*
Quatsino cave amphipod	*Stygobromus quatsinensis*
Sonora skipper	*Polites sonora*
Sooty hairstreak	*Satyrium fuliginosum*
Plants	
Scouler's corydalis	*Corydalis scouleri*
Tall bugbane	*Cimicifuga elata*

Table 2. Additions to Identified Wildlife proposed in Version 2004 (cont'd) (see also Table 1[a]).

English name	*Scientific name*
Vertebrates	
Badger	*Taxidea taxus jeffersonii*[c]
Bay-breasted warbler	*Dendroica castanea*
Black-throated green warbler	*Dendroica virens*
Burrowing owl	*Athene cunicularia*
Cape May warbler	*Dendroica tigrina*
Caribou (3 ecotypes)	*Rangifer tarandus caribou*
Coastal giant salamander	*Dicamptodon tenebrosus*
Coeur d'Alene salamander	*Plethodon idahoensis*
Columbian sharp-tailed grouse[d]	*Tympanuchus phasianellus columbianus*
Connecticut warbler	*Oporornis agilis*
Flammulated owl	*Otus flammeolus idahoensis*[e]
Fringed myotis	*Myotis thysanodes*
Great Basin spadefoot	*Spea intermontana*
Great blue heron	*Ardea herodias*
Interior western screech-owl[f]	*Otus kennicottii macfarlanei*
Nelson's sharp-tailed sparrow	*Ammodramus nelsoni*
Northern leopard frog	*Rana pipiens*
Queen Charlotte hairy woodpecker[g]	*Picoides villosus picoideus*
Queen Charlotte northern saw-whet owl	*Aegolius acadicus brooksi*
Red-legged frog	*Rana aurora*
Short-eared owl	*Asio flammeus*
Spotted bat	*Euderma maculatum*
Spotted owl	*Strix occidentalis*
Tiger salamander	*Ambystoma tigrinum*
Vananda Creek limnetic and benthic sticklebacks	*Gasterosteus* species 16 and 17
Vancouver Island common water shrew[h]	*Sorex palustris brooksi*
Vancouver Island northern pygmy-owl[i]	*Glaucidium gnoma swarthi*
Vancouver Island white-tailed ptarmigan[j]	*Lagopus leucurus saxatilis*
Western rattlesnake	*Crotalus oreganus*
Westslope cutthroat trout[k]	*Oncorhynchus clarki lewisi*
Williamson's sapsucker	*Sphyrapicus thyroideus nataliae* and *S. t. thyroideus*
Wolverine	*Gulo gulo luscus* and *G. g. vancouverensis*

[a]Note: there have been some deletions from Volume 1.
[b]Garry oak (*Quercus garryana*) was formerly included in this name. This and many other communities are qualified by structural stage and/or biogeoclimatic subzone variant.
[c]Currently, neither the BC Species and Ecosystems Explorer (September 2004) nor NatureServe Explorer (version 4.0, July 2004) list subspecies for the badger.
[d]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the sharp-tailed grouse, *columbianus* subspecies.
[e]Currently, neither the BC Species and Ecosystems Explorer (September 2004) nor NatureServe Explorer (version 4.0, July 2004) list subspecies for the flammulated owl.
[f]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the western screech-owl, *macfarlanei* subspecies.
[g]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the hairy woodpecker, *picoides* subspecies.

[h]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the common water shrew, *brooksi* subspecies.
[i]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the northern pygmy-owl, *swarthi* subspecies.
[j]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the white-tailed ptarmigan, *saxatilis* subspecies.
[k]The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as the cutthroat trout, *lewisi* subspecies.

Figure 1 illustrates the content of species accounts from the draft Version 2004 document (Paige 2004). Of the different components, the Wildlife Habitat Area and General Wildlife Measures are the most important for the implementation and management of the Identified Wildlife Management Strategy. Criteria for selecting Wildlife Habitat Areas are given under the 'goal', 'feature', 'size', and 'design' subsections. Figure 2 provides an example of the Wildlife Habitat Area design criteria for the white-headed woodpecker (*Picoides albolarvatus*). General Wildlife Measures would form legal practice requirements for resource users. Forest licensees would be expected to either include the measures as default results and strategies in their Forest Stewardship Plans or propose alternative results and strategies. Similar obligations apply to range licensees. General Wildlife Measure goals would serve a benchmark to evaluate the ecological success of forest and range practices. Figure 3 gives an example of the General Wildlife Measures for the white-headed woodpecker.

Anticipated Version 2004 Implementation

Release of Version 2004 is expected to result in the establishment of a considerable number of new Wildlife Habitat Areas to increase the focus on endangered wildlife in landscape-level resource management plans. Incorporating the recommendations of recovery teams into these efforts will be important.

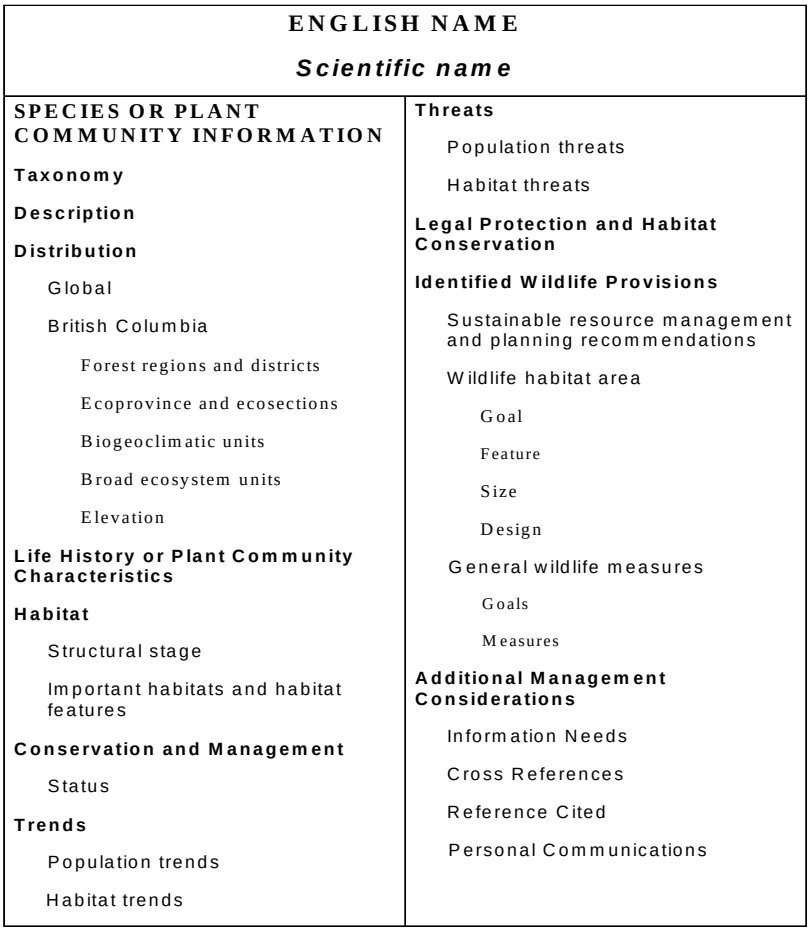

Figure 1. Identified Wildlife species account format under proposed Version 2004.

Wildlife habitat area

Goal
Maintain historic, current and future suitable nesting habitat.

Feature
Establish WHAs at, or close to, known occurrences within suitable habitat or habitats that will provide the desired attributes in a short time period if the attributes do not currently exist.

Size
Typically between 20 to 80 ha.

Design
A WHA should include mature or old ponderosa pine forest, preferably with 40-70% canopy closure where it exists, but can range from 6 to 75% (i.e., crown closure classes 1-7) with a mix of large (≥60cm dbh preferred, minimum 25 cm dbh) live and standing dead trees (i.e., ponderosa pine, Douglas-fir, aspen; lodgepole pine and Engelmann spruce) suitable for nesting.

Figure 2. Example of Wildlife Habitat Area (WHA) design criteria for the white-headed woodpecker from the Identified Wildlife species account in the proposed Version 2004.

Role of Naturalists, Recovery Teams, and Industry

Under the draft revised procedures, naturalists, recovery teams, industry, and others may submit Wildlife Habitat Area proposals. These proposals are welcome because of the extensive field knowledge they may represent and the opportunities they may provide to comprehensively address the needs of Identified Wildlife in particular areas. Wildlife Habitat Areas can be used as one tool in recovery planning. Proposals by forest licensees could form part of Forest Stewardship Plans, and similar arrangements are possible for range licensees.

General wildlife measures

Goals

1. Provide and recruit an adequate supply of suitable large diameter live and dead wildlife trees for foraging and nesting.
2. Maintain nature or old stand structure with open canopy.
3. Maintain mature cone-producing ponderosa pine to ensure non-breeding food supplies.
4. Minimize new access development (i.e. roads) to prevent habitat fragmentation and to reduce firewood cutting.

Measures

Access

- Do not construct roads. Deactivate and/or close temporary roads immediately after logging.

Harvesting and silviculture

- Do not salvage timber. When harvesting is approved follow the measures below.
- Protect and retain all ponderosa pine live and dead trees $\geq$50 cm dbh. Ensure recruitment of ponderosa pine > 50 cm dbh.
- Maintain at least six standing dead trees/ha. Where it is not possible to retain six $\geq$ 60 cm, use the largest available. The highest practical density of snags or trees can be incorporated into group reserves (plan as no work zones if appropriate; otherwise, maintain snags within the operational setting as described in the Wildlife/Danger Tree Assessor's Course Workbook.
- Use partial cutting silvicultural systems to maintain 40-70% canopy cover, late seral ponderosa pine. On average, removal should be 35% but may be greater where Douglas-fir makes up a greater percentage of the stand. Group selection (openings 0.5 ha), with group reserves, or single tree selection with group reserves are the recommended silvicultural systems.
- Thin young stands to maximize growth and cone production of retained trees. When thinning, retain aspen.
- Replant with ponderosa pine.

Pesticides

- Do not use pesticides.

Figure 3. Example of General Wildlife Measures for the white-headed woodpecker from the Identified Wildlife species account in the proposed Version 2004.

Effectiveness of Wildlife Habitat Areas

Effectiveness evaluations are a key component to the success of the *Forest and Range Practices Act*. These evaluations will assess the ecological effects of licensee results and strategies carried out through practices under this legislation. We plan to start a review process of the Identified Wildlife Management Strategy by investigating the effectiveness of Wildlife Habitat Areas that were established for Volume 1 species. The experience gained from these efforts should enable the design of sampling programs and the collection of baseline data for new Wildlife Habitat Areas established under Version 2004.

Four species have been selected for the initial evaluations: the white-headed woodpecker, Great Basin gopher snake, marbled murrelet, and tailed frog. Through the use of the evaluations, we will seek to identify key effectiveness monitoring questions, recommend effectiveness indicators, and design a monitoring protocol. Pilot projects are planned in order to test the indicators and monitoring methods. The following gives an example of some possible effectiveness indicators for a tailed frog Wildlife Habitat Area:

- tailed frog tadpole densities are stable and/or increasing
- average percent cover of sediment in streams is < 25%
- < 10% of riparian forest upstream of the Wildlife Habitat Area is composed of forest < 20 years old
- average canopy cover in the Wildlife Habitat Area is > 25%

There are also broader but relevant questions that may be pursued under the 'wildlife resource value' effectiveness evaluations of the *Forest and Range Practices Act*. For example, the following question has been selected as a priority for investigation: "Is the amount and distribution of suitable habitat within protected areas or managed areas (Old Growth Management Areas, Wildlife Habitat Areas, Ungulate Winter Ranges) sufficient to maintain the species across its range now and over time?" This question is intended to be applied individually to selected species at risk. As Wildlife Habitat Areas are listed, the question should address both their function and the adequacy of their function in relation to the surrounding landscape. In addition, 'biodiversity resource value' evaluations conducted under this program may inform the review of Identified Wildlife by addressing the ecological contribution made by habitat that results from landscape-level forest stewardship (e.g., riparian reserves, tree patches).

New Aspects of Identified Wildlife

There are aspects of Identified Wildlife that are new to the Forest and Range Practices legislation and have yet to be incorporated. Regionally important wildlife will be defined as a category of Identified Wildlife and will be subjected to the same management regime as species at risk. Also, the legal designation of wildlife habitat features within Wildlife Habitat Areas is anticipated as a means of protecting the residences of species at risk.

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