ALASKA HABITAT MANAGEMENT GUIDE

WESTERN AND INTERIOR REGIONS

MAP ATLAS

PRODUCED BY
STATE OF ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF HABITAT

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List of Plates

Acknowledgements

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Many individuals have been involved in the production of this fourth Map Atlas. Their contributions have been essential to the production of the maps and are greatly appreciated. All maps were reviewed first by project staff, then distributed for technical review. All reviewed, corrected, and final maps were approved by project staff.

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Introduction

OVERVIEW OF THE ALASKA HABITAT MANAGEMENT GUIDES PROJECT

One of the responsibilities of the Alaska Department of Fish and Game (ADF&G) is to assist land managers by recommending to them the best ways and means for protecting local fish, wildlife, and habitats against adverse effects and impacts that may occur from land and water development activities. Because many proposals and plans for development and land uses require a rapid response from the department, there may not be enough time for staff to actually study the specific area in which the proposed development is to occur. However, the department still needs to accumulate and assess a wide variety of information in order to prepare meaningful recommendations for managing habitat. Therefore, the department initiated the Alaska Habitat Management Guides (AHMG) project to prepare reports of the kinds of information upon which its recommendations must be founded in order to responsibly and rapidly address land and water use proposals made by land managers. These guides include written volumes, reference maps, and color map atlases of index maps.

The guides present the best available information on selected fish and wildlife species: describing their life functions and habitat requirements; mapping and discussing their geographical distribution; mapping and discussing the human uses made of them; and estimating their value to residents of the state. The completed guides coverage encompasses the Fish and Game Resource Management Regions established by the Joint Board of Fisheries and Game (plate 1).

Essential to assessing what might happen to fish and wildlife if their habitats are altered is information about what effects or impacts are typically associated with particular kinds of developmental activities. The habitat management guides therefore also provide summaries of these known effects. This information, in conjunction with the compiled life history and distribution information, will allow concerned individuals to estimate how sensitive a given species might be to a specific proposed activity - whether or not, and to what degree, the fish and wildlife are liable to be impacted.

The guides have been designed to provide users with interrelated subject areas that can be applied to particular questions regarding habitat management. For example, information on species' seasonal and geographic habitat use can be correlated with the written and mapped information on actual distribution and abundance. The narratives and maps regarding human uses of fish and wildlife can be compared with abundance and distribution information to obtain an indication of the overall regional patterns of distribution, abundance, and human use for the species of interest. The specific information on habitat requirements also will relate directly to the information on impacts associated with land and water use.

WESTERN AND INTERIOR REGIONS GUIDE

Organization and Use of the Guide

This map atlas portrays information at the 1:1,000,000 scale that has been compiled from the more detailed 1:250,000 reference maps available in Alaska Department of Fish and Game offices of the Western and Interior regions (plate 2). This map atlas includes information on the distribution of fish and wildlife. All maps in this volume are numbered on the left-hand corner and listed in the Contents.

The maps supplement two written volumes (a statewide volume entitled *Life Histories and Habitat Requirements of Fish and Wildlife*; and a regional volume entitled *Distribution, Abundance, and Human Use of Fish and Wildlife*). The narrative volumes are closely related and interdependent. The first highlights important aspects of selected species life histories, emphasizing the interrelationships of the species with their habitats. The second volume provides the most current estimates of their distribution and relative abundance. It also delineates the regional and subregional patterns, locations, and types of human uses of fish and wildlife resources, including commercial, recreational, and subsistence uses. This portion of the guide provides an understanding of the importance of fish and wildlife to the people within and outside the Western and Interior regions.

Species Selection Criteria

Each species covered in the guides was selected because it met the following criteria: 1) its habitat is representative of some portion of the spectrum of the habitats in the Western and Interior regions (this criterion ensures that regional habitats are well represented); 2) it constitutes an important resource to human users in the region; 3) the species or its habitat is liable to be adversely affected by present or proposed land or water uses; and 4) adequate information on its life history, abundance, and distribution was available.

Map Production and Content

The set of maps contained in this atlas is a synthesis of current information on the distribution of selected species of fish and wildlife in the Western and Interior regions. The information on species distribution was collected from state and federal agency biologists most expert on each species. All data were verified by these specialists during a technical review period, which ended in May 1986. Corrections and final cartographic work continued until drafting was completed in May 1986. Lists of all mappers and reviewers are found in the Acknowledgements. Sources, including personal communications, are listed in the References. The original reference maps from which these color maps were prepared are filed in ADF&G offices of the region. The original maps compiled by the project biologists have been archived in the Division of Habitat in Anchorage to facilitate subsequent updates of mapped information.

The maps in this atlas show the regional and subregional patterns of fish and wildlife distribution, whereas the reference maps illustrate specific distribution categories in relation to more detailed features of the landscape. The color maps provide broad overviews of distribution data and thus function as index maps that can be used in conjunction with reference maps. Although the color maps emphasize seasonal concentration areas (e.g., brown bear concentrations along fish streams) and areas utilized for specific reproductive functions (e.g., calving areas, rookeries), for many species the general distribution is also mapped. "General distribution" in this context applies to areas that provide suitable habitat for the species and are within the known range of the species. Additionally, representative of the anadromous fish species, a separate map category, "unsurveyed areas," has been added in order to denote areas that have not been surveyed to determine whether or not fish are present.

Limitations of Mapped Information

All mapped information is necessarily limited to available information. That is, **where no information appears on a map it does not automatically mean that the map category does not exist there; rather, it means that there was no available information to map**. Because of the limitations of available information and the dynamic nature of mammal, bird, and fish populations, subsequent updates of any maps will very likely change them to some degree.

To maximize the consistency of mapped source data from different specialists, a set of specific definitions was adopted prior to the actual mapping and was used by all mappers and contributors. These definitions can be found following this section. It is therefore important to note that where these maps appear to differ from other contemporary maps of the same species, it will be necessary to compare the actual definitions of categories, which will reveal the differences in what was actually mapped in each case. The potential for apparent discrepancies with other maps is particularly great where the definition requires that the category be valid for more than one year's data, which therefore may result in a more conservative mapping of an area than if only one year's data were used.

The coverage of this set of maps is defined by the boundaries of the Western and Interior regions, and mapped information is not depicted beyond these borders. Please see the appropriate regional reference maps for information on areas outside the Western and Interior regions. Although it seems logical that mapped information should "edge-match," or show a consistent pattern across a regional boundary, that will not always be the case. The reason is that the distribution and harvest data can change during the time required to produce new maps of an adjacent region.

OVERVIEW OF THE WESTERN AND INTERIOR REGIONS

The Western and Interior regions (plate 2) includes the Kuskokwim, Kaiyuh, Ray, White, and Crazy mountains (eastern Brooks Range). A few of the larger river basins in the regions include the drainages of the Yukon, Andreafsky, Innoko, Koyukuk, Chandalar, Sheenjek, Porcupine, Tanana, Kantishna, Delta, Nabesna, Chisana, Fortymile, Kuskokwim, Kwethluk, Aniak, Holitna, Stony, Big, Kanektok, Arolik, and Goodnews rivers. Marine waters associated with the regions are comprised of the Kuskokwim, Hazen, Hooper, Kokechik, Scammon, and Pastol bays and Baird Inlet, and the Bering Sea to the west of the Yukon-Kuskokwim delta, including Nelson, Nunivak, and St. Matthew islands.

The biophysical, biotic, and human resources of the region are briefly summarized below. Readers desiring a more detailed and extensive discussion of these characteristics of the region should consult the Alaska Regional Profiles.[1]

Biophysical Features

The Yukon-Kuskokwim delta in the Western Region is in the transitional climatic zone, with a relatively narrow range of seasonal and diurnal temperatures as compared to the continental climatic zone of the Interior Region. In the continental climatic zone, temperatures are generally extreme in both summer and winter, and precipitation and wind are normally light. Fog, precipitation, and winds frequently occur along the coast of the Western Region. The weather in the regions is the result of the interaction among global air movements, land topography, and storms that move northeast across the Bering Sea and North Pacific Ocean.

Sea ice formation in the Bering Sea begins in October. The ice pack persists through May, although the ice begins to melt, break up, and move northward in April.

The topography of the Western Region is dominated by the Yukon and Kuskokwim rivers and the marshy alluvial plain known as the Yukon-Kuskokwim delta. The topography of the Interior Region is also dominated by the Yukon and Kuskokwim rivers, although there are also extensive upland areas in addition to broad alluvial lowlands such as the Yukon and Minto flats. Permafrost is discontinuous throughout the regions. The entire marine area of the Western Region lies within the continental shelf.

Biota

The vegetation of the Western Region is primarily dry alpine tundra, wet tundra, and moist tundra. These highly varied tundra communities are comprised of herbaceous sedges, grasses, and low-growing forbs, lichens, and dwarf shrubs, with a greater percentage of shrubs where soil conditions are drier. The vegetation of the Interior Region is primarily closed and open canopied forests comprised of various associations of white spruce, black spruce, quaking aspen, white birch, balsam poplar, and tamarack trees. The treeline is at 1,000 ft or less along the lower Yukon, at 2,000 ft on the southern slopes of the Brooks Range and northern slopes of the Alaska Range, and at 2,000 and 3,500 ft along the Alaska-Yukon border. Low and tall shrub communities comprised primarily of willow, alder, and shrub birch occur on floodplains, lowland boggy areas, and mountain slopes in both regions. Aquatic herbaceous communities are prevalent in lake-dotted wet tundra areas.

The variety of habitats in the Western and Interior regions support harvestable populations of caribou, moose, Dall sheep, brown and black bears, furbearers, waterfowl, small game such as ptarmigan and grouse, Pacific walrus, ringed, spotted, and bearded seal, belukha whale, and a wide variety of fish, including salmon, whitefish, northern pike, arctic grayling, char, herring, and Pacific halibut, to name a few.

Human Activities in the Region

Many human activities in the Western and Interior regions revolve around the subsistence, recreational, and commercial uses of fish and wildlife. Commercial fishing, trapping, reindeer herding, guided hunting and fishing trips, fur tanning and sewing, and seafood processing are important segments of the local economies.

Service-related businesses and government provide the primary sources of wage employment in both regions. Fairbanks, McGrath, and Bethel are the employment centers of the area.

[1]Arctic Environmental Information and Data Center. N.d. Alaska regional profiles: Southwest Region, Yukon Region. Prepared for the Office of the Governor and Joint Federal/State Land Use Planning Commission.

Definitions

Concentration areas — areas where the density of animals exceeds the density of the species in the surrounding area. "Concentration" is relative to the general densities within the area.
Suitable habitat — the environmental conditions that provide the species with one or more of the following: food, water, cover, or reproductive opportunities. The components of the habitat used by the species are presented in the narrative portion of this guide, *Life Histories and Habitat Requirements of Fish and Wildlife*.

MAMMALS

BELUKHA WHALE

Known major concentration areas — estuarine and nearshore waters where large concentrations of belukha whales are known to occur during ice-free periods, primarily between 1 June and 31 July. Belukhas may utilize these areas intermittently (during a portion of a tidal cycle) or continuously (up to several days). Essential life functions, including calving, are known to occur in these waters.
Known movements associated with feeding — nearshore movements associated with seasonally distributed food sources.

BROWN BEAR

General distribution — suitable habitat within the known range of brown bear, including but not limited to seasonal and life function use areas.
Known concentrations along fish streams — areas where concentrations of brown bears have been observed fishing during more than one year.
Known concentrations associated with mammalian food sources — areas where concentrations of brown bears have been observed feeding on concentrated mammalian food sources. These food sources occur consistently in geographically limited areas during spring and/or summer and include marine mammal carrion or caribou calving aggregations.
Known concentrations in berry areas — areas where concentrations of brown bears have been observed feeding on berries during years of good berry production.
Known denning concentration areas — areas where concentrations of brown bears have been observed to den.
Known spring concentration areas — areas where concentrations of brown bears have been observed during more than one spring.

CARIBOU

General distribution — suitable habitat within the known range of caribou, including but not limited to seasonal and life function use areas.
Known calving areas — one or more areas where most calving by a specific caribou herd has been observed. Small groups or individuals of the herd may calve elsewhere.
Known migration patterns — recurrent patterns of movement by a majority of a specific caribou herd. Migrational movements may occur within well-defined corridors or over a relatively broad expanse between seasonal use areas.
Known winter use areas — areas where a majority of a specific caribou herd has been observed during more than one winter.

DALL SHEEP

General distribution — suitable habitat within the known range of Dall sheep, including but not limited to seasonal and life function use areas.
Known mineral licks — areas where concentrations of Dall sheep have been observed at nutritionally important mineral deposits.
Known winter use areas — areas where Dall sheep have been observed during more than one winter.

MOOSE

General distribution — suitable habitat within the known range of moose, including but not limited to known seasonal and life function use areas.
Known calving concentration areas — areas where concentrations of moose, especially parturient cows, have been observed during the calving period for more than one year.
Known rutting concentration areas — areas where concentrations of moose have been observed during the rutting period for more than one year.
Known winter concentration areas — areas where concentrations of moose have been observed during more than one winter.

PACIFIC WALRUS

Known haulout concentration areas — areas where concentrations of Pacific walruses have been observed hauled out during more than one year.
Known migration patterns — recurring patterns of movement between seasonal or life function use areas. Migrational movements may occur within well-defined corridors or over a relatively broad front.

POLAR BEAR

General distribution — suitable habitat within the known range of polar bear, including but not limited to seasonal and life function use areas.

BIRDS

DUCKS AND GEESE

General distribution — suitable habitat within the known range of dabbling or diving ducks and/or geese, including but not limited to known seasonal and life function use areas.
Known fall concentration areas — areas where concentrations of one or more species of ducks and/or geese have been observed during fall migration for more than one year.
Known molting concentration areas — areas where concentrations of one or more species of molting ducks and/or geese have been observed during more than one year.
Known nesting concentration areas — areas where concentrations of one or more species of nesting ducks and/or geese have been observed during more than one year.
Known spring concentration areas — areas where concentrations of one or more species of ducks and/or geese have been observed during spring migration for more than one year.
Known winter concentration areas — areas where concentrations of one or more species of ducks and/or geese have been observed during winter for more than one year.

FISH

ANADROMOUS FISH

Documented presence in streams or lakes — areas where the presence of an anadromous fish species (i.e., salmon or arctic char/Dolly Varden) in a stream or lake during any time of year or life cycle has been observed.
Anadromous watershed areas — drainages or migration corridors with documented presence of anadromous fish.
Unsurveyed watershed areas — areas where documentation of the presence or absence of anadromous fish species is not available.
Not present in watershed areas — areas that have been surveyed in which anadromous fish were documented not to be present.

KING CRAB

General distribution — suitable habitat within the known range of red and blue king crab, including but not limited to seasonal and life function use areas.
Known concentration areas of juvenile blue king crab — areas where concentrations of juvenile blue king crab with less than 60 mm carapace have been observed.

PACIFIC HERRING

Known fall concentration areas — areas where concentrations of Pacific herring have been observed during fall months (i.e., September through October).
Known spawning concentration areas — areas where concentrations of spawning Pacific herring or herring roe-on-substrate have been observed.
Known summer concentration areas — areas where concentrations of Pacific herring have been observed during summer months (i.e., July through August).
Known overwintering areas — areas where concentrations of Pacific herring have been observed during winter months (i.e., December through March).

SELECTED FRESHWATER FISH

General distribution — suitable habitat within the known range of the species, including but not limited to seasonal and life function use areas. Polygons include areas containing the common occurrence of these species, whether in their anadromous or freshwater form. Lake trout distribution on quads where they are found, as well as arctic char/Dolly Varden and rainbow trout distribution on some quads, are site-specific, and general distribution polygons are not drawn for them. General distribution polygons are redrawn from ADF&G 1978, with boundaries expanded to include new information.
Documented presence in stream or lake — areas where the presence of a species in a specific stream segment or lake has been observed. Upper points document the limits of fish surveys and usually do not indicate the extent of fish habitat.
Documented rearing areas — areas where juveniles of one or more species have been observed.

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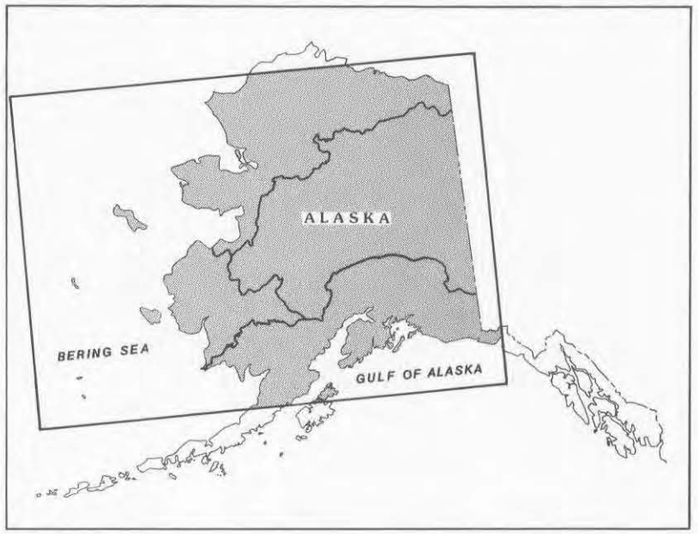
PLATES

SIX REGIONS OF THE ALASKA HABITAT MANAGEMENT GUIDE PROJECT

1 — SOUTHEAST
2 — SOUTHCENTRAL
3 — SOUTHWEST
4 — WESTERN
5 — ARCTIC
6 — INTERIOR



N

CENTRAL YUKON / KUSKOKWIM

LOWER YUKON / KUSKOKWIM / BERING SEA

UPPER YUKON / TANANA

U.S.A. CANADA

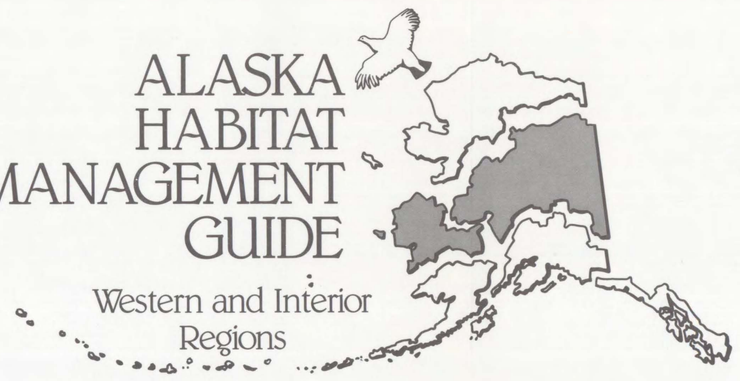
KILLIK RIVER
CHANDLER LAKE
PHILIP SMITH MTS.
ARCTIC
TABLE MTN.
MT. MICHELSON
DEMARCATION POINT
SURVEY PASS
WISEMAN
CHANDALAR
CHRISTIAN
COLEEN
SHUNGNAK
HUGHES
BETTLES
BEAVER
FORT YUKON
BLACK RIVER
CANDLE
KATEEL RIVER
MELOZITNA
TANANA
LIVENGOOD
CIRCLE
CHARLEY RIVER
NORTON BAY
NULATO
RUBY
KANTISHNA RIVER
FAIRBANKS
BIG DELTA
EAGLE
ST. MICHAEL
UNALAKLEET
BLACK
OPHIR
MEDFRA
MT. MCKINLEY
HEALY
MT. HAYES
TANACROSS
KWIGUK
HOLY CROSS
IDITAROD
MCGRATH
TALKEETNA
ST. MATTHEW
HOOPER BAY
MARSHALL
RUSSIAN MISSION
NABESNA
NUNIVAK ISLAND
SLEETMUTE
LIME HILLS
TYONEK
BAIRD INLET
MCCARTHY
BERING SEA
CAPE MENDENHALL
BETHEL
TAYLOR MTS.
KUSKOKWIM BAY
LAKE CLARK
GOODNEWS BAY
HAGEMEISTER ISLAND
GULF OF ALASKA

50 0 50 100 150 MILES
50 0 50 100 150 KILOMETERS

1:1,000,000 BASE MAPS
WESTERN AND INTERIOR REGIONAL BOUNDARIES

ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



LEGEND

DISTRIBUTION OF CARIBOU AND DALL SHEEP

CARIBOU

- General Distribution
- Known Winter Use Areas
- Known Calving Areas
- Known Migration Patterns

DALL SHEEP

- General Distribution

- Regional Boundary

The Dall Sheep categories "Known Winter Use Areas" and "Known Mineral Licks" are not included on this map because available data do not document such areas.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

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ALBERS EQUAL AREA PROJECTION

SOURCES: Caribou—ADF&G 1973; Anderson, pers. comm.; Anderson and Smith, pers. comm.; Davis, pers. comm.; Machida, pers. comm.; Osborne, pers. comm.; Pegau, pers. comm.; Troyer 1981. **Dall Sheep**—ADF&G 1973, 1984c; Heimer, pers. comm.; James, pers. comm.; Nichols, pers. comm.; Pegau, pers. comm.

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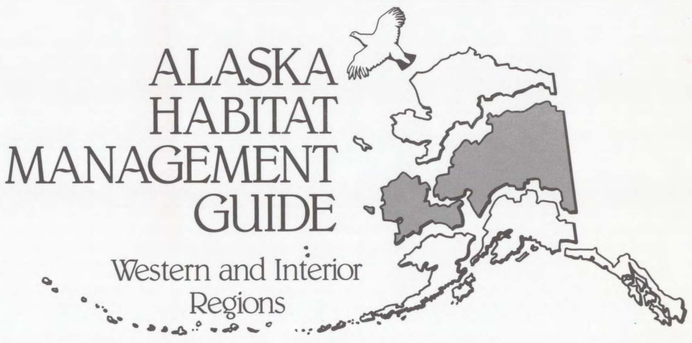
HABITAT DIVISION
1986

ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



LEGEND

DISTRIBUTION OF CARIBOU AND DALL SHEEP

CARIBOU

- General Distribution
- Known Winter Use Areas
- Known Calving Areas
- Known Migration Patterns

DALL SHEEP

- General Distribution
- Known Winter Use Areas
- Known Mineral Licks
- Interior Regional Boundary

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SOURCES: Caribou—ADF&G 1973; Anderson, pers. comm.; Anderson and Smith, pers. comm.; Cameron, pers. comm.; Davis and Valkenburg 1983, 1984; Davis et al. 1978; Duff and Singer 1982; Johnson, pers. comm.; Kelleyhouse, pers. comm.; Lieb, pers. comm.; Nowlin, pers. comm.; Osborne, pers. comm.; Troyer 1981; Valkenburg, pers. comm.; Whitten, pers. comm. **Dall Sheep**—ADF&G 1973, 1979; Heimer, pers. comm.; James, pers. comm.; Johnson, pers. comm.; Kelleyhouse, pers. comm.; Tobey, pers. comm.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

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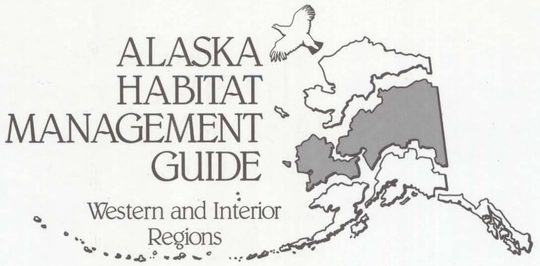
ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



LEGEND

DISTRIBUTION OF MOOSE AND PACIFIC HERRING

MOOSE

- General Distribution
- Known Winter Concentration Areas
- Known Rutting Concentration Areas

PACIFIC HERRING

- Known Summer Concentration Areas
- Known Fall Concentration Areas
- Known Overwintering Areas
- Known Spawning Concentration Areas

- Western Regional Boundary

The moose category "Known Calving Concentration Areas" is not included on this map because available data do not document such areas.

SOURCES: Moose—Machida, pers. comm.; Pegau, pers. comm.; Osborne, pers. comm. **Pacific Herring**—ADF&G 1978a; Barton and Steinhoff 1980; Barton et al. 1977; Macy et al. 1978; Pahlke, pers. comm.; Starr et al. 1981; Wespestad and Barton 1981; Whitmore, pers. comm.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

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ALBERS EQUAL AREA PROJECTION

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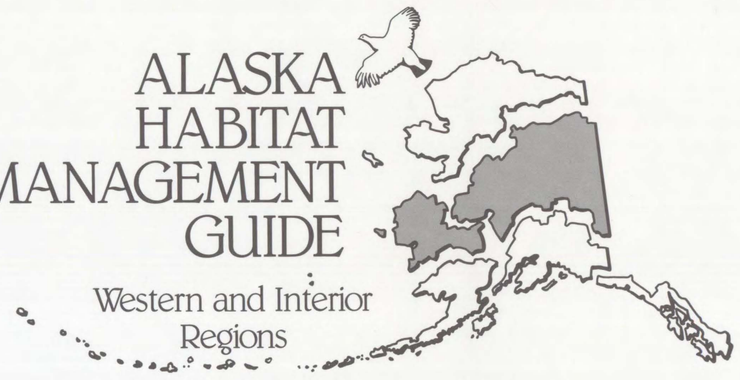
ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



LEGEND

DISTRIBUTION OF MOOSE

- General Distribution
- Known Winter Concentration Areas
- Known Calving Concentration Areas
- Known Rutting Concentration Areas
- Regional Boundary

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

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10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: Moose—ADF&G 1973, 1979, 1981; Haggstrom, pers. comm.; Machida, pers. comm.; Osborne, pers. comm.; Pegau, pers. comm. Wespestad and Barton 1981; Whitmore, pers. comm.

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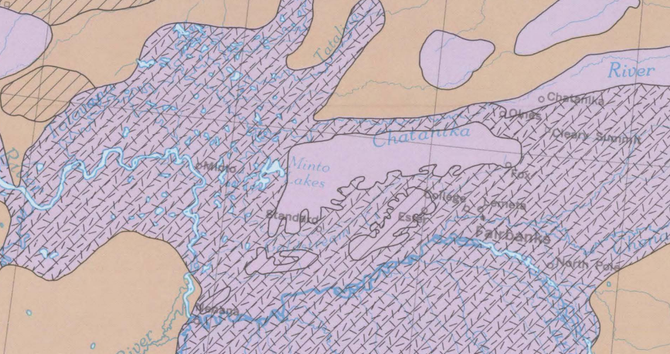
Arctic Circle

ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



LEGEND

DISTRIBUTION OF MOOSE

- General Distribution
- Known Winter Concentration Areas
- Known Calving Concentration Areas
- Known Rutting Concentration Areas
- Interior Regional Boundary

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SOURCES: Moose—ADF&G 1973, 1979, 1981; Gasaway, pers. comm.; Haggstrom, pers. comm.; Johnson, pers. comm.; Kelleyhouse, pers. comm.; Nowlin, pers. comm.; Osborne, pers. comm.; Pegau, pers. comm.

SCALE 1:1,000,000

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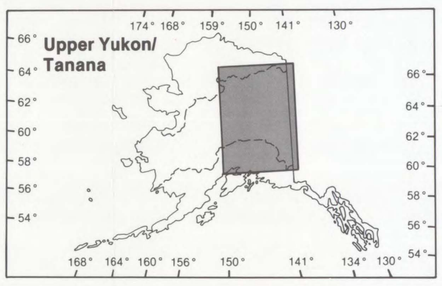
ALBERS EQUAL AREA PROJECTION



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NOTE: Some bowheads winter in polynyas that usually form south of St. Lawrence and St. Matthew islands near the ice edge, the location of which varies yearly.

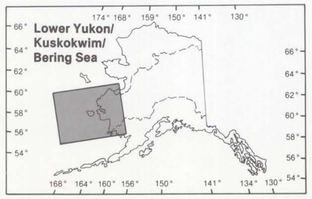
NOTE: General distribution of polar bears extends beyond the boundaries of this map and is associated with the seasonal distribution of ice.

NOTE: From December to March, walruses breed in two general areas: one south and west of the polynya south of St. Lawrence Island, and one near Nunivak Island. Location of breeding areas in any one year depends on the extent of the sea ice.

NOTE: General distribution of polar bears extends beyond the boundaries of this map and is associated with the seasonal distribution of ice.

NOTE: General distribution of polar bears extends beyond the boundaries of this map and is associated with the seasonal distribution of ice.

LEGEND



DISTRIBUTION OF BROWN BEAR, PACIFIC WALRUS, BELUKHA WHALE, POLAR BEAR, AND BOWHEAD WHALE

BROWN BEAR

- General Distribution
- Known Concentrations Along Fish Streams

PACIFIC WALRUS

- Known Haulout Concentration Areas
- Known Migration Patterns

BELUKHA WHALE

- Known Major Concentration Areas
- Known Movements Associated with Feeding

- Western Regional Boundary

The brown bear categories "Known Spring Concentration Areas," "Known Concentrations Associated with Mammalian Food Sources," "Known Concentrations in Berry Areas," and "Known Denning Concentration Areas" are not included on this map because available data do not document such areas.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: **Brown Bear**—ADF&G 1973; Machida, pers. comm.; Osborne, pers. comm.; Reynolds, pers. comm. **Pacific Walrus**—Fay 1982; Frost et al. 1982; Lowry, pers. comm.; Nelson, pers. comm. **Belukha Whale**—Frost et al. 1982; Lowry, pers. comm.; Nelson, pers. comm. **Polar Bear**—Amstrup, pers. comm. **Bowhead Whale**—Brueggeman 1982.

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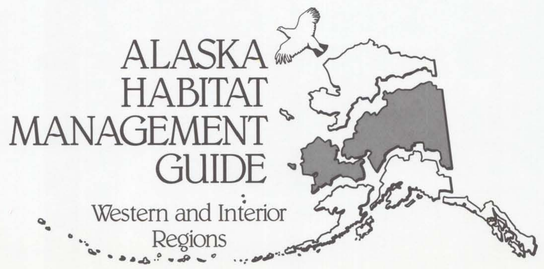
1986

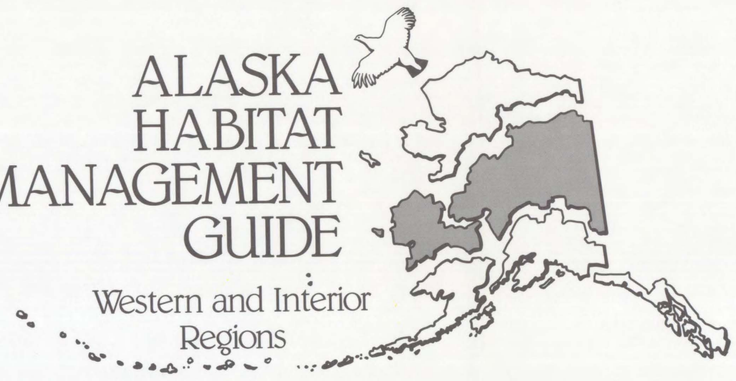
ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



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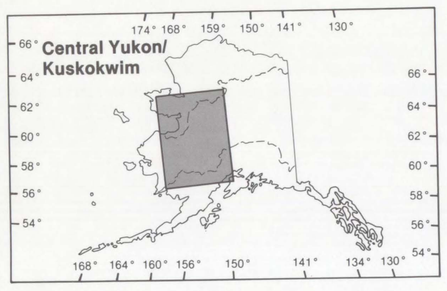

DISTRIBUTION OF BROWN BEAR

- General Distribution
- Known Spring Concentration Areas
- Known Concentrations Along Fish Streams
- Known Concentrations Associated with Mammalian Food Sources
- Known Concentrations in Berry Areas
- Known Denning Concentration Areas
- Regional Boundary

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: Brown Bear—ADF&G 1973, 1979; Grauvogel, pers. comm.; Machida, pers. comm.; Osborne, pers. comm.; Pegau, pers. comm.; Reynolds, pers. comm.

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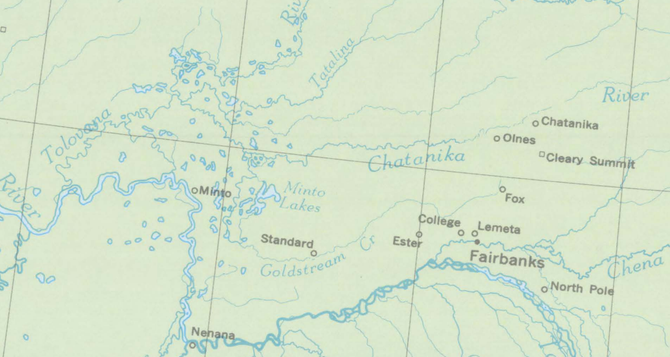
Western and Interior Regions



LEGEND

DISTRIBUTION OF BROWN BEAR

- General Distribution
- Known Spring Concentration Areas
- Known Concentrations Along Fish Streams
- Known Concentrations Associated with Mammalian Food Sources
- Known Concentrations in Berry Areas
- Interior Regional Boundary

The brown bear category "Known Denning Concentration Areas" is not included on this map because available data do not document such areas.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

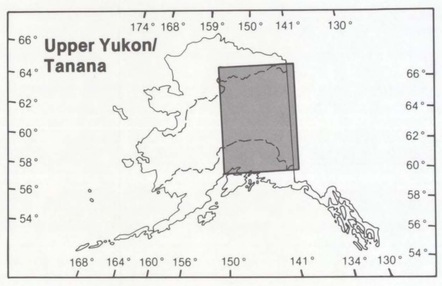
SOURCES: Brown Bear—ADF&G 1973, 1979; Hechtel, pers. comm.; Kelleyhouse, pers. comm.; Nowlin, pers. comm.; Osborne, pers. comm.; Reynolds, pers. comm.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION



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HABITAT DIVISION
1986

LEGEND

DISTRIBUTION OF DUCKS AND GEESE

- General Distribution
- Known Fall Concentration Areas
- Known Spring and Fall Concentration Areas
- Known Nesting Concentration Areas
- Known Molting Concentration Areas
- Known Migration Patterns
- Western Regional Boundary

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: Ducks and Geese—Butler, pers. comm.; Byrd 1983; King, pers. comm.; Lawhead, pers. comm.; Lensink, pers. comm.; Smith, pers. comm.; Sowls 1983.

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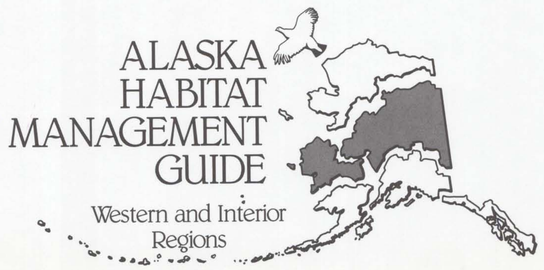
Western and Interior Regions



Eiders winter in the polynya that usually forms south of St. Matthew.

General distribution of ducks extends out into marine waters up to 60 feet deep.

NOTE: Recurring polynya is winter concentration area for oldsquaw and spectacled eider.

NOTE: Ducks and geese migrate along Yukon River.

BERING SEA

HAGEN BAY

NUNIVAK ISLAND

ETOLIN STRAIT

NELSON ISLAND

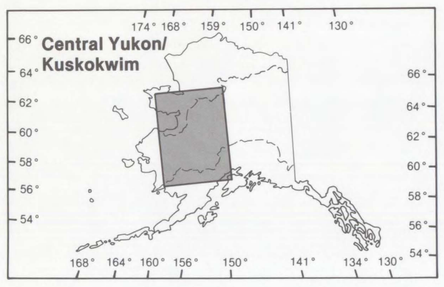
KUSKOKWIM BAY

Stuart Island
Stephens Pass
Stebbins
St Michael
Nunaktuk I
Pt Romanof
Pastol Bay
Kwiguk
Mekoryuk
Sheldon Point
Kwiguk
Kwethluk
Kwethluk R
Kwethluk River
Andreafsky River
East Fork Andreafsky River
Krekatak
Nerugon I
Cape Romanzof
Aniktum I
Kokechik Bay
Hooper Bay
Kevak
Punuqtat Pt
Andreyevsky Bay
Wilburs Point
Old Mission
Grass Point
Stanley Point
Marshall
Russian Mission
Yukon River
Kigigak I
Ikkuk Pt
Cape Mohican
Dathokekuk Point
Nash Harbor
Etolin Point
Cape Vancouver
Umkumiut
Tanunak
Kangirlvar
Chingigak
Cape Fleming
Aldigo Pt
Cape Mendenhall
Baird Inlet
Kwigillingok
Kwigluk I
Tuntutuliak
Eek
Eek River
Middle Fork
Kolavinerak River
Kolavinerak Fork
Tuluksak River
Carter Spit
Goodnews
Goodnews Bay
Quinhagak
South Spit
Togiak
Togiak Bay
Togiak River
Togiak Lake
Nunavaugaluk Lake
Arnanka Lake
Cape Newenham
Chagvan
Tongue Pt
Rocky Pt
Manokotak
Akiachak
Akiak
Atmautluak
Bethel
Oscarville
Napaskiak
Kasigluk
Nunapitchuk
Kwethluk
Tuluksak
Lower Kalskag
Aniak
Aniak River
Kisaralik River
Kuskokwim River
Johnson River
Tatlawiksuk River
Holitna River
Stony River
Kuskokwim Lake
Eek Lake
Tuluksak Lake
Tatlawiksuk Lake
Kanektok River
Arolik River
Togiak Lake
Nunavaugaluk Lake
Arnanka Lake

ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions

LEGEND



DISTRIBUTION OF DUCKS AND GEESE

- General Distribution
- Known Fall Concentration Areas
- Known Spring and Fall Concentration Areas
- Known Nesting Concentration Areas
- Known Molting Concentration Areas
- Known Migration Patterns
- Regional Boundary

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: Ducks and Geese—Butler, pers. comm.; Byrd 1983; King, pers. comm.; Lensink, pers. comm.; Nunn, pers. comm,; Smith, pers. comm.

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NOTE: Ducks and geese migrate along Yukon River.

NOTE: Geese migrate through pass.

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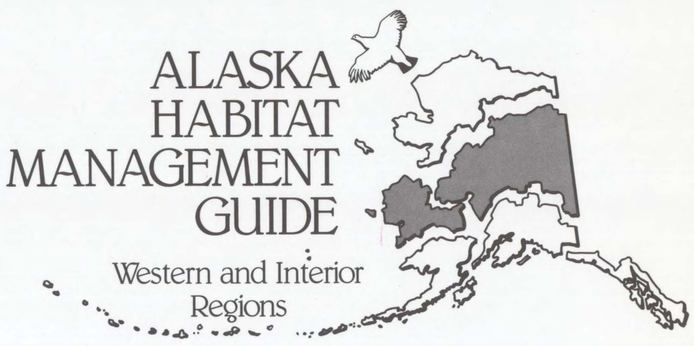
Western and Interior Regions



LEGEND

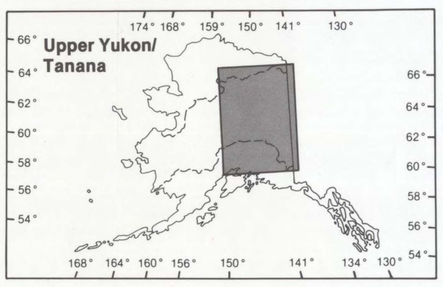
DISTRIBUTION OF DUCKS AND GEESE

- General Distribution
- Known Spring Concentration Areas
- Known Fall Concentration Areas
- Known Spring and Fall Concentration Areas
- Known Nesting Concentration Areas
- Known Molting Concentration Areas
- Known Migration Patterns
- Interior Regional Boundary

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SOURCES: Ducks and Geese—King, pers. comm.; Lensink, pers. comm.; McLean 1985, pers. comm.; Nunn, pers. comm.



SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

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NOTE: Ducks and geese migrate along Yukon River.

NOTE: Ducks and geese migrate along Tanana River.

LEGEND

Lower Yukon/
Kuskokwim/
Bering Sea

DISTRIBUTION OF ANADROMOUS FISH SPECIES AND KING CRAB

ANADROMOUS FISH

🟥	Documented Presence in Stream or Lake
🟨	Anadromous Watershed Areas
🟧	Unsurveyed Watershed Areas

KING CRAB

🟪	General Distribution of Blue King Crab
⁘	Known Concentration Areas of Juvenile Blue King Crab
▨	General Distribution of Red King Crab
━	Western Regional Boundary

The Anadromous fish category "Not Present in Watershed Areas" is not included on this map because available data do not document such areas.

Anadromous fish distribution is represented on this map by the following species: chinook, coho, chum, sockeye, and pink salmon; and arctic char/Dolly Varden.

For details of known spawning or rearing areas, see An Atlas to the Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: Anadromous Fish—ADF&G 1984a; Geiger, pers. comm. **King Crab**—USDC in prep.

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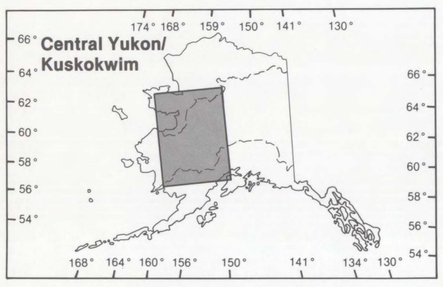
LEGEND



DISTRIBUTION OF ANADROMOUS FISH SPECIES

- Documented Presence in Stream or Lake
- Anadromous Watershed Areas
- Unsurveyed Watershed Areas
- Not Present in Watershed Areas
- Regional Boundary

Anadromous fish distribution is represented on this map by the following species: chinook, coho, chum, sockeye, and pink salmon; and arctic char/Dolly Varden.

For details of known spawning or rearing areas, see An Atlas to the Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: ADF&G 1984a, 1984b; Barton, pers. comm.; Geiger, pers. comm.; Sundberg, pers. comm.

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Western and Interior Regions

Arctic Circle

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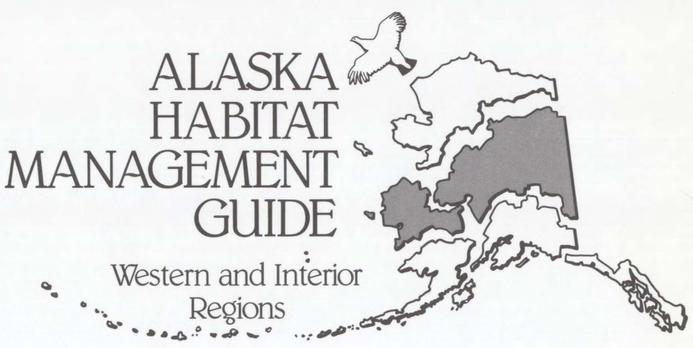
Western and Interior Regions



LEGEND

DISTRIBUTION OF ANADROMOUS FISH SPECIES

- Documented Presence in Stream or Lake
- Anadromous Watershed Areas
- Unsurveyed Watershed Areas
- Not Present in Watershed Areas
- Interior Regional Boundary

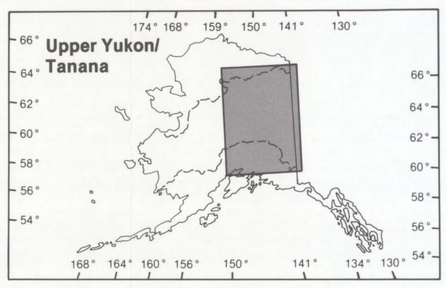
Anadromous fish distribution is represented on this map by the following species: chinook, coho, chum, sockeye, and pink salmon; and arctic char/Dolly Varden.

For details of known spawning or rearing areas, see An Atlas to the Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SOURCES: ADF&G 1984b; Barton, pers. comm.



SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

STATE OF ALASKA
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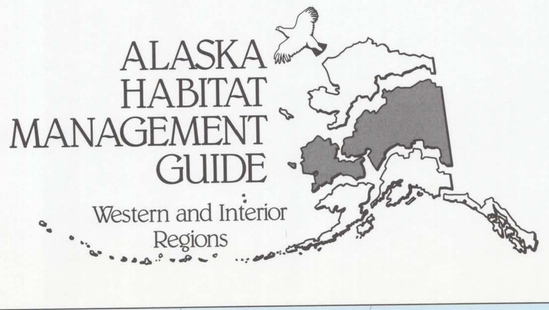

The following occur in Baird Inlet: general distribution of whitefish and northern pike and documented presence of arctic cisco and least cisco.

Documented presence in lake or stream on St. Matthew Island represents: Dolly Varden/arctic char.

This area represents general distribution of arctic grayling.

Documented presence in lake or stream on Nunivak Island represents: Dolly Varden/arctic char.

LEGEND

Lower Yukon/ Kuskokwim/ Bering Sea

DISTRIBUTION OF FRESHWATER FISH SPECIES

●	**Documented Presence in Stream or Lake of One or More of the Following: Arctic Grayling, Dolly Varden/Arctic Char, Burbot, Lake Trout, Rainbow Trout, Northern Pike, Sheefish and Whitefish.**
	General Distribution of Selected Species
🟪	**Arctic Grayling, Whitefish and Sheefish**
🟨	**Arctic Grayling and Whitefish**
🟩	**Whitefish and Sheefish**
🟧	**Whitefish**
▥	**Northern Pike**
▬	**Western Regional Boundary**

Whitefish includes one or more of the following: broad, round, and humpback whitefish; and least, bering, and arctic cisco.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: ADF&G 1978b, 1984a, 1985a, 1985b; Alt 1976, 1977, 1979, 1980a, 1981a, 1982, pers. comm.; Alt and DeCicco, pers. comm.; Arvey, pers. comm.; Baxter, pers. comm.; Sundberg, pers. comm.

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Western and Interior Regions

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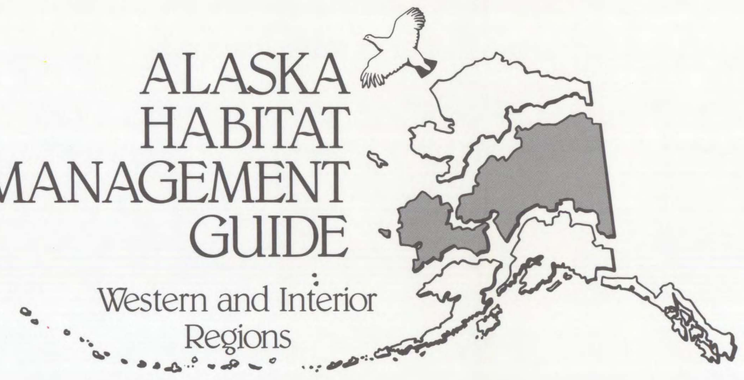
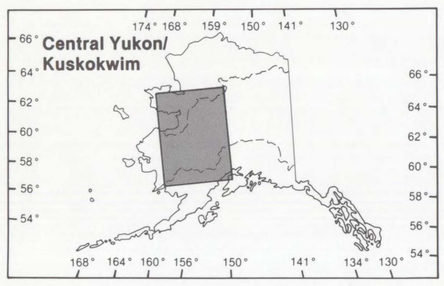
Western and Interior Regions



LEGEND



DISTRIBUTION OF FRESHWATER FISH SPECIES

Documented Presence in Stream or Lake of One or More of the Following: Arctic Grayling, Dolly Varden/Arctic Char, Burbot, Lake Trout, Rainbow Trout, Northern Pike, Sheefish and Whitefish.

General Distribution of Selected Species

- Arctic Grayling, Whitefish and Sheefish
- Arctic Grayling and Whitefish
- Whitefish and Sheefish
- Whitefish
- Northern Pike

Western and Interior Regional Boundary

Whitefish includes one or more of the following: broad, round, and humpback whitefish; and least, bering, and arctic cisco.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCES: ADF&G 1978b, 1984a, 1984b, 1985a, 1985b; Alt 1972, 1975, 1976, 1977, 1978, 1979, 1980a, 1980c, 1981a, 1981b, 1981c, 1982, 1983, pers. comm.; Alt and DeCicco, pers. comm.; Arvey, pers. comm.; Baxter, pers. comm.; Bendock, pers. comm.; Craig 1980, 1981; DeCicco, pers. comm.; Doxey, pers. comm.; Hallberg 1984, pers. comm.; Kramer 1975, 1976b, 1979, pers. comm.; Pearse, 1978, pers. comm.; Sundberg, pers. comm.; Tack 1980; Townsend, pers. comm.; Webb, pers. comm.

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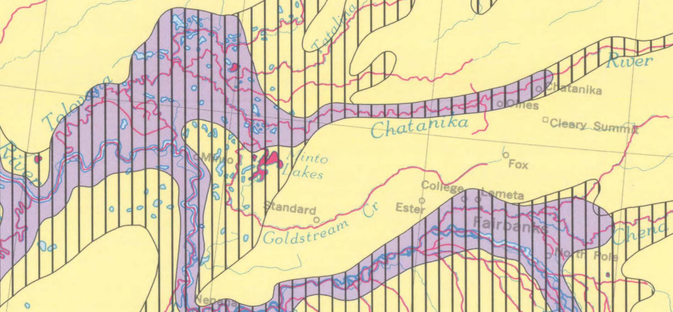
Western and Interior Regions



LEGEND

DISTRIBUTION OF FRESHWATER FISH SPECIES

Documented Presence in Stream or Lake of One or More of the Following: Arctic Grayling, Dolly Varden/Arctic Char, Burbot, Lake Trout, Rainbow Trout, Northern Pike, Sheefish and Whitefish.

General Distribution of Selected Species

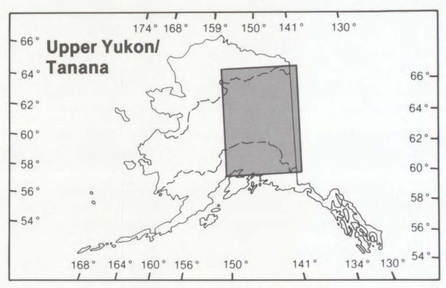
- Arctic Grayling, Whitefish and Sheefish
- Arctic Grayling and Whitefish
- Northern Pike
- Interior Regional Boundary

Whitefish includes one or more of the following: broad, round, and humpback whitefish; and least, bering, and arctic cisco.

Definitions for map categories can be found in the Alaska Habitat Management Guide, Western and Interior Regions Map Atlas.

For more detailed information, such as cases where data are too small to portray at this scale, see the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions.

SOURCES: ADF&G 1978b, 1984d, 1985b; Alt 1971, 1972, 1974, 1975, 1978, 1979, 1980b, 1980c, 1981b, 1981c, pers. comm.; Alt and DeCicco, pers. comm.; Bendock, pers. comm.; Craig 1980, 1981; DeCicco, pers. comm.; Doxey 1984, pers. comm.; Hallberg 1978, 1980, 1982, 1983, 1984, pers. comm.; Jorden, pers. comm.; Kramer 1975, 1976b, 1979, 1981, pers. comm.; Lloyd, pers. comm.; Pearse, 1975, 1976, 1977, 1978, pers. comm.; Peckham 1976, 1979, 1980, 1981, 1983, 1984, pers. comm.; Peckham 1976, 1979, 1980, 1981, 1983, 1984, pers. comm.; Ridder 1981, 1982, 1983, 1984; Tack 1975, 1980; Townsend, pers. comm.; Ward and Craig 1974; Webb, pers. comm.



SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

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HABITAT DIVISION
1986

LEGEND

GAME HARVEST REPORT UNITS

Game Management Units

Minor Tributaries

Western Boundary

See the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions, for the 1983-1984 and 1984-1985 reported harvest and number of hunters and hunter-days by minor tributary units for moose and Dall sheep. Additional data for big game species based on minor tributaries may be obtained from the Statistics Section, Division of Game, Anchorage.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCE: ADF&G 1983.

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1986

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BERING SEA

HAZEN BAY

ETOLIN STRAIT

KUSKOKWIM BAY

NELSON ISLAND

NUNIVAK ISLAND

St. Matthew Island

Stephens Pass

Pastol Bay

Baird Inlet

Dall Lake

Eek River

Kanektok River

Goodnews Bay

Goodnews River

Togiak River

Togiak Lake

Tikchik Lakes

Nunavaugaluk Lake

Amanka Lake

Aleknagik Lake

Nushagak River

Kisaralik River

Andreafsky River

Aniuchuelinguk River

Kasigluk

Nunapitchuk

Atmautluak

Napaskiak

Oscarville

Bethel

Kwethluk

Tuntutuliak

Eek

Quinhagak

Platinum

Togiak

Twin Hills

Manokotak

Dillingham

Aleknagik

Clarks Point

Ekwok

Koliganek

New Stuyahok

Levelock

Igiugig

Iliamna

Newhalen

Nondalton

Port Alsworth

Lake Clark

Tyonek

Beluga

Kenai

Soldotna

Sterling

Homer

Seldovia

Kodiak

Port Lions

Ouzinkie

Old Harbor

Akhiok

Larsen Bay

Karluk

Chignik

Chignik Lake

Chignik Lagoon

Perryville

Ivanof Bay

Port Heiden

Pilot Point

Ugashik

Egegik

Naknek

King Salmon

Dillingham

Aleknagik

Clarks Point

Ekwok

Koliganek

New Stuyahok

Levelock

Igiugig

Iliamna

Newhalen

Nondalton

Port Alsworth

Lake Clark

Tyonek

Beluga

Kenai

Soldotna

Sterling

Homer

Seldovia

Kodiak

Port Lions

Ouzinkie

Old Harbor

Akhiok

Larsen Bay

Karluk

Chignik

Chignik Lake

Chignik Lagoon

Perryville

Ivanof Bay

Port Heiden

Pilot Point

Ugashik

Egegik

Naknek

King Salmon

18

19A

19B

21E

0100

0200

0300

0400

0500

0600

0700

0800

0900

1000

1100

1200

1300

1400

1500

1600

1700

1800

ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions

LEGEND

GAME HARVEST REPORT UNITS

- Game Management Units
- Game Management Subunits
- Minor Tributaries
- Regional Boundary

See the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions, for the 1983-1984 and 1984-1985 reported harvest and number of hunters and hunter-days by minor tributary units for moose and Dall sheep. Additional data for big game species based on minor tributaries may be obtained from the Statistics Section, Division of Game, Anchorage.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION

SOURCE: ADF&G 1983.

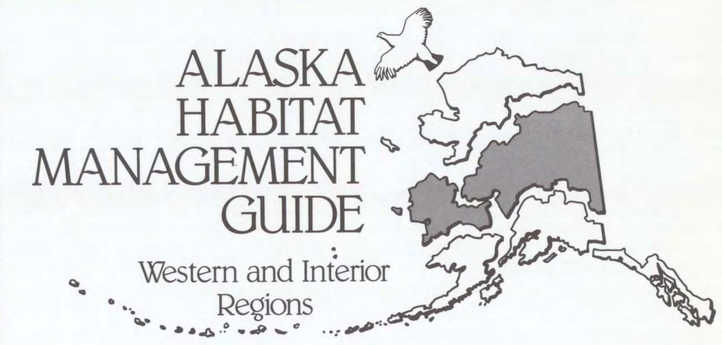
STATE OF ALASKA
DEPARTMENT OF FISH AND GAME
HABITAT DIVISION
1986

Game Management Units: 18, 19A, 19B, 19C, 19D, 20C, 20F, 21A, 21B, 21C, 21D, 21E, 24

Minor Tributaries: 0100, 0200, 0300, 0400, 0500, 0600, 0700, 0800, 0900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300

ALASKA HABITAT MANAGEMENT GUIDE

Western and Interior Regions



LEGEND

GAME HARVEST REPORT UNITS

- Game Management Units
- Game Management Subunits
- Minor Tributaries
- Interior Boundary

See the Alaska Habitat Management Guide Reference Maps, Western and Interior Regions, for the 1983-1984 and 1984-1985 reported harvest and number of hunters and hunter-days by minor tributary units for moose and Dall sheep. Additional data for big game species based on minor tributaries may be obtained from the Statistics Section, Division of Game, Anchorage.

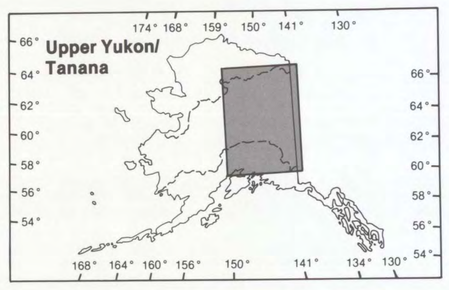
SOURCE: ADF&G 1983.

SCALE 1:1,000,000

10 0 10 20 30 40 50 Miles

10 0 10 20 30 40 50 Kilometers

ALBERS EQUAL AREA PROJECTION



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