ALASKA HABITAT MANAGEMENT GUIDE

SOUTHWEST REGION

MAP ATLAS

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



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This project is under the direction of the Commissioner of the Alaska Department of Fish and Game, Don W. Collinsworth, the Director of the Division of Habitat, Norman A. Cohen, and the Deputy Director, Bruce H. Baker.

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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 associated with developmental 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 map atlases.

The AHMG presents 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.

Introduction

GUIDE: SOUTHWEST REGION

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 Southwest Region. This map atlas includes information on the distribution and human use of fish and wildlife.

All maps in this volume are numbered on the lower left-hand corner and listed in the Contents. Within each group of species or village maps, individual maps are arranged in a sequence of 1:1,000,000-scale map sheets. These map sheets (plate 2) are numbered and named as follows:

- 1. Kodiak/Inner Bristol Bay
- 2. Alaska Peninsula/Outer Bristol Bay
- 3. Aleutians East/Pribilofs
- 4. Aleutians West
- 5. Aleutians/Pribilofs
- 6. Kodiak/Bristol Bay (subsistence maps only)
- 7. Lower Alaska Peninsula/Pribilofs/Aleutians East (subsistence maps only)

The sequence starts at the northern boundary of the Southwest Region and extends westward to the end of the Aleutian chain. This order of maps allows a user to easily locate and view adjacent map sheets containing similar information.

The maps supplement the two written volumes (*Volume I: Fish and Wildlife Life Histories, Habitat Requirements, Distribution, and Abundance; Volume II: 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 and providing the most current estimates of their distribution and relative abundance. The second volume 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 Southwest Region.

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 Southwest Region habitats (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 index maps contained in this atlas is a synthesis of current information on the distribution and human use of selected species of fish and wildlife in the Southwest Region. The information on species distribution was collected from state and federal agency biologists most expert on each species. The information on areas of subsistence use was collected from local residents. All data were verified by these specialists during a technical review period, which ended in December 1983. Corrections and final cartographic work continued until drafting was completed in February 1985. 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 index maps were prepared are filed in ADF&G offices of the region. Most of the reference maps are at a scale of 1:250,000. 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. Although the index 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 information and the dynamic nature of 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 are found following this introduction. It is therefore important to note that where these maps appear to differ from other contemporary maps of the same subject, 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. This requirement may result in 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 Southwest Region, and with the exception of one type of map, mapped information is not depicted beyond these borders. In the case of areas of subsistence use, the entire use area was mapped even when it extended beyond the Southwest Region's boundary. Please see the appropriate regional reference maps for information on areas outside the Southwest Region. Although it seems logical that mapped information should "edgematch," or show a consistent pattern across a regional boundary, this will not always be the case. The reason is that the distribution and harvest data can change between the time of release of one region's maps and the release of the adjacent region's maps.

In some instances, harvest of fish or wildlife may be indicated in areas outside the mapped area of general distribution of a given species. These discrepancies represent the limitations of experts' knowledge regarding mapped categories or are an artifact of the units by which harvest data are recorded and do not necessarily represent a contradiction of data.

OVERVIEW OF THE SOUTHWEST REGION

The Southwest Region (plate 2) includes the areas of Bristol Bay, the Gulf of Alaska south of Kennedy Entrance, including Kodiak and other islands, the Alaska Peninsula, the Aleutian Islands, the Pribilof Islands, the drainages of the Nushagak River, the Wood River/Tikchik lakes, and Togiak River of the Bristol Bay area.

In the following sections, the biophysical features and human activities of the region are briefly summarized. Readers desiring a more detailed and extensive discussion of these characteristics of the region should consult the Alaska Regional Profiles¹ and the Bristol Bay Area Plan² (BBAP).

Biophysical Features

Portions of the Southwest Region are in the maritime, transitional, and continental climatic zones. The weather in the region is the result of the interaction between land topography and major weather systems that move northward across the Gulf of Alaska or eastward across the Bering Sea. Kodiak Island, the south side of the Alaska Peninsula, and the Aleutian Islands are characterized by a fiordlike coastline rising to volcanic mountainous areas up to 9,000 ft in the Aleutians and occasionally to 8,000 ft on the Alaska Peninsula. The north side of the peninsula and the Bristol Bay area are characterized by a relatively regular coastline with numerous sand and gravel beaches and abutting coastal lowlands, often drained by river systems terminating in broad estuarine areas.

Major storm systems move northward off the Gulf of Alaska and into the south coastal highland areas, dropping precipitation usually as rain on the

southern side and having the leeward (northern) side in somewhat of a rain shadow. The north side of the peninsula and Bristol Bay, however, are subject to eastward-moving storm systems from the Bering Sea; hence these areas are among the stormiest in the state. Headwater areas of the major Bristol Bay-Togiak drainages receive less precipitation than coastal areas and are subject to greater temperature fluctuations due to the influence of the continental climatic zone.

Biota

Vegetation in the region is varied. The coastal spruce forest (mostly Sitka spruce) is restricted to Kodiak and Afognak islands and scattered locations on the south side of the peninsula. Most of the mountains in the region are covered by alpine tundra or barren areas at higher elevations, with a subalpine zone of mixed low and tall shrubs. On Kodiak and Afognak islands, this shrub layer is coastal alder thicket. Grasslands, shrublands, and wetland meadows comprise most of the remainder of the vegetation types on the peninsula and in the Aleutians; however, the broad river valleys interior to the Bristol Bay coast contain large stands of spruce, cottonwood, and birch.

In addition to the rich marine life of the Bering Sea/Bristol Bay and Kodiak/ Shelikof area, the lake systems at the heads of the Nushagak, Kvichak, Naknek, Egegik, Ugashik, and Wood rivers provide optimum conditions for the world's foremost nursery of sockeye salmon, upon which most of the area's human population depends. Much of the North Pacific's population of shorebirds and waterfowl use the extensive estuarine system of the Alaska Peninsula and eastern Bristol Bay as spring and fall feeding and staging areas. Kodiak Island and the Alaska Peninsula host the largest brown bears in the world, and the region as a whole probably contains the greatest abundance of these animals to be found anywhere in the world. The majority of the world's population of Steller sea lions and northern fur seals breed in the region, and two endangered species of whales, the gray and bowhead, use the Bering Sea extensively for feeding.

Human Activities in the Region

As one would expect from the concentration of fish and wildlife in the Southwest Region, human activities revolve around the commercial, sport, and subsistence uses of these resources. Noncommercial harvest, including subsistence, is a major activity in the region that is especially important in areas with no direct connection to the commercial fishing and processing industry. Bristol Bay is the world's largest sockeye salmon fishery and the state's largest salmon fishery, which is by far the dominant enterprise in the region. Dillingham and Naknek are the major ports, although fishing fleets work out of numerous smaller communities also. Major fish-processing areas include Kodiak, Unalaska/Dutch Harbor, Naknek, and Dillingham. Kodiak hosts the largest fishing fleet in the state, a large portion of which concentrates on shellfish.

Additional economic bases are provided by the tourist industry, mostly associated with sportfishing and hunting lodges in the Bristol Bay lakes area,

and by government services, including military bases. A commercial timber industry is located on Afognak and Kodiak islands, although it is small compared to that of Southeast Alaska. Because of soils and climate, commercial agriculture is not feasible, although some cattle grazing occurs on Kodiak Island. There is some potential for offshore oil and gas development in the Shelikof Straits, North Aleutian Basin, and St. George Basin, and for upland oil and gas development on the Alaska Peninsula. Onshore reserves are not thought to be as promising as the offshore reserves.

Infrastructure development is minimal. Although Kodiak is a trade and services center for that area, it contains only a small network of roads and an improved harbor. Dillingham has the only improved harbor in the Bristol Bay area, and the road network is minor and local. Dutch Harbor has developed as a seafood supply and processing center with some port development and is being used temporarily as an offshore oil/gas staging area for Bering Sea offshore exploration. Most travel within the region is by plane (scheduled and charter) or private boat. There is no connecting road network, and the Alaska Marine Highway system services only Kodiak, King Cove, Sand Point, and Dutch Harbor.

The population centers of the region are thus physically isolated from one another, as is the region as a whole from other regions. This factor has limited the diversification of the local economies so that they remain closely tied to the regional fish and wildlife resources.

¹ Arctic Environmental Information and Data Center. N.d. Alaska regional profiles: Southwest Region. Prepared for the Office of the Governor and Joint Federal/State Land Use Planning Commission. 313 pp.

_____. N.d. Alaska regional profiles: Southcentral Region. Prepared for the Office of the Governor and Joint Federal/State Land Use Planning Commission.

² Alaska Department of Natural Resources. 1984. Bristol Bay Area Plan. [Juneau.]

Distribution Maps

Concert transton – areas where the density of animals exceeds the density of the sp = ci = s in the surrounding area; "concentration" is thus relative to the general ci = s, sities within the area.

Suitable habitat — the environmental conditions that provide the species with on = or more of the following: food, water, cover, or reproductive opportunities. The components of the habitat used by the species are presented into its life history in the narrative portion of this guide, Volume I: Fish and Window its life Histories, Habitat Requirements, Distribution, and Abundance.

MAMNL&LS

BEAVEF

General di-stribution -- suitable habitat within the known range of beaver, including by the not limited to known seasonal and life function areas. Known high density areas -- areas where moderate and high concentrations of bearwers have been observed during more than one year.

BELUKHA WHALE

Known call ving concentrations – areas where concentrations of calving belukha where ales have been observed during more than one year. Known fee=ding concentrations – areas where concentrations of belukha whales hav = been observed feeding during more than one year.

BLACK-TALLED DEER

General di Stribution — suitable habitat within the known range of blacktailed deer. including but not limited to known seasonal and life function areas.

Known winter concentrations – areas where concentrations of blacktailed deer in ave been observed during more than one winter.

BROWN BEAR

General disstribution — suitable habitat within the known range of brown bear, inclucing but not limited to seasonal and life function use areas. **Known corncentrations along fish streams** — areas where concentrations of brown bears have been observed fishing during more than one year. **Known demning concentration areas** — areas where concentrations of brown bears have been observed to den.

Known spiring concentration - areas where concentrations of brown bear have $b \neq en$ observed during more than one spring.

CARIBOU

General diistribution – suitable habitat within the known range of caribou, inc luding but not limited to seasonal and life function use areas.

Definitions

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 – areas known to be traditionally traversed between seasonal use areas by a majority of a specific caribou herd.

Known rutting areas — areas where a majority of a specific caribou herd has been observed rutting during more than one year.

Known winter use areas – areas where a majority of a specific caribou herd has been observed during more than one winter.

ELK

General distribution — suitable habitat within the known range of elk, including but not limited to known seasonal and life function areas. **Known winter concentrations** — areas where concentrations of elk have been observed during more than one winter.

FUR SEAL

Known haulout concentrations — areas where concentrations of fur seals have been observed hauled out during more than one year. **Known rookeries** — areas where concentrations of breeding and pupping fur seals have been observed during more than one year.

HARBOR SEAL

Known haulout concentrations — areas where concentrations of harbor seals have been observed for breeding, pupping, resting and/or molting purposes during more than one year.

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 concentrations** — areas where concentrations of moose, especially parturient cows, have been observed during the calving period during more than one year.

Known rutting concentrations – areas where concentrations of moose have been observed rutting during more than one year.

Known winter concentrations – areas where concentrations of moose have been observed during more than one winter.

SEA LION

Known haulout concentrations – areas where concentrations of sea lions have been observed hauled out during more than one year.

Known haulouts and/or rookeries – sites identified in *Alaska's Wildlife and Habitats, Vol. I,* in which haulouts were not distinguished from rookeries.

Known rookeries – areas where concentrations of breeding and pupping sea lions have been observed during more than one year.

SEA OTTER

Established populations — areas where sea otter populations are established but at low to moderate densities. Some of these areas near edges of expanding populations may become concentration areas.

Known concentration areas — areas where concentrations of sea otters have been observed during more than one year.

Unpopulated habitat — areas where sea otter densities remain well below the capacity of the habitat, but which are expected to increase significantly in the next decade.

WALRUS

Known haulout concentrations — areas where concentrations of walrus have been observed hauled out during more than one year.

BIRDS

BALD EAGLE

Known concentrations — areas where concentrations of feeding or roosting Bald Eagles have been observed during more than one year. **Known nest sites** — sites where active or inactive Bald Eagle nests have been observed.

Known nest site areas — a nest site is known to be located within the area but the exact location is not known.

DUCKS

General distribution — suitable habitat within the known range of dabbling or diving ducks, including but not limited to known seasonal and life function use areas.

Known fall concentrations — areas where concentrations of one or more species of ducks have been observed during fall migration for more than one year.

Known molting concentrations — areas where concentrations of one or more species of molting ducks have been observed during more than one year.

Known nesting concentrations – areas where concentrations of one or more species of nesting ducks have been observed during more than one year.

Known spring concentrations — areas where concentrations of one or more species of ducks have been observed during spring migration for more than one year.

Known winter concentrations — areas where concentrations of one or more species of ducks have been observed during winter for more than one year.

GEESE

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

Known fall concentrations — areas where concentrations of one or more species of geese have been observed during fall migration for more than one year.

Known molting concentrations – areas where concentrations of one or more species of molting geese have been observed during more than one year.

Known nesting concentrations – areas where concentrations of one or more species of nesting geese have been observed during more than one year.

Known spring concentrations — areas where concentrations of one or more species of geese have been observed during spring migration for more than one year.

Known winter concentrations – areas where concentrations of one or more species of geese have been observed during winter for more than one year.

SEABIRDS

Known nesting colonies – areas where concentrations of one or more species of nesting seabirds have been observed during more than one year.

TUNDRA SWAN

General distribution — suitable habitat within the known range of swans, including but not limited to known seasonal and life function use areas. **Known fall concentrations** — areas where concentrations of swans have been observed during fall migration for more than one year.

Known molting concentrations — areas where concentrations of molting swans have been observed during more than one year.

Known nesting concentrations — areas where nesting swans have been observed during more than one year.

Known spring concentrations – areas where concentrations of swans have been observed during spring migration for more than one year.

Known winter concentrations – areas where concentrations of swans have been observed during winter for more than one year.

FISH

ANADROMOUS FISH

Anadromous watershed areas – drainages or migration corridors with documented presence of anadromous fish.

Documented presence in stream or lake — areas where the presence of an anadromous fish species (i.e., salmon, arctic char/Dolly Varden, or steelhead) in a specific stream segment or lake during any time of the year or life cycle has been observed.

Not present in watershed – areas that have been surveyed in which anadromous fish were documented not to be present.

Unsurveyed watershed areas – areas where documentation of the presence or absence of anadromous fish species is not available.

FRESHWATER FISH

General distribution — suitable habitat within the known range of the species, including but not limited to seasonal and life function use areas. **Documented presence in stream or lake** — areas where the presence of a species in a specific stream segment or lake during any time of the year or life cycle has been observed.

Documented presence within watershed – areas where the presence of a species in an unspecified portion of one river system during any time of the year or life cycle has been observed.

Documented spawning areas — areas where the presence of spawning fish, redds, or eggs has been observed in a specific stream segment or lake shore.

GROUNDFISH

General distribution — suitable habitat within the known range of the species, including but not limited to seasonal and life function use areas. **Known concentrations** — areas where concentrations of one or more species of groundfish or halibut have been observed.

Known rearing areas – areas where one or more species of juvenile groundfish or halibut have been observed.

Known spawning concentrations — areas where concentrations of one or more species of spawning groundfish or halibut have been observed.

Known summer concentrations – areas where concentrations of groundfish or halibut have been observed during one or more summers.

Known winter concentrations – areas where concentrations of one or more species of groundfish or halibut have been observed during one or more winters.

PACIFIC HERRING

General distribution — suitable habitat within the known range of species, including but not limited to seasonal and life function use areas. **Known feeding areas** — areas where documented feeding activity has occurred.

Known migration routes – areas where concentrations of herring have been observed migrating between known concentration areas.

Known overwintering areas — areas where concentration of herring have been observed during one or more winters.

Known rearing areas — areas where juvenile herring have been observed for one or more years.

Known spawning areas — areas where the presence of spawning herring or herring roe-on-substrate have been observed for one or more years.

RED KING CRAB

General distribution — suitable habitat within the known range of red king crab, including but not limited to seasonal life function use areas.

RAZOR CLAM

Known concentrations — areas where concentrations of razor clams have been observed.

SHRIMP

General distribution — suitable habitat within the known range of the species, including but not limited to seasonal and life function use areas. Known egg hatch/rearing concentrations — areas where concentrations of eggbearing females and juvenile shrimp have been observed.

TANNER CRAB

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

Human Use Maps

Areas of subsistence use — areas known to have been used consistently over time for resource harvests by residents of a particular community for which data demonstrate that most of the residents include hunting, fishing, and gathering as an integral, customary, and traditional part of their economy and way of life.

Commercial fish harvest areas – areas known to have been used consistently over time for commercial fishing, as allowed by the Board of Fisheries.

Food/bait fishery — areas where Pacific herring in nonspawning condition area harvested for a food/bait product, usually from mid July or August through the end of February.

Intensive sport hunting areas — areas known to have been used consistently over time for sport hunting, as allowed by the Board of Game. **Sac-roe fishery** — areas where Pacific herring in spawning condition area harvested primarily for the sac-roe product, usually from mid April through the end of June.

Sportfishing areas — areas known to have been used consistently over time for sportfishing, as allowed by the Board of Fisheries.

Trapping areas — areas known to have been used consistently over time for trapping of furbearers, as allowed by the Board of Game.

Subsistence Use Area Map Categories

Map Category		Species/Species Groups
Brown bear	means	Brown bear
Deer	means	Sitka black-tailed deer
Waterfowl	means	Ducks and geese
Reindeer	means	Reindeer
Caribou	means	Caribou
Elk	means	Elk
Moose	means	Moose
Marine mammals	means	Sea lion, harbor/hair seal, walrus fur seal, belukha whale, porpoise
Trapping/furbearers	means	Beaver, land otter, weasel, fox, marten, mink, wolverine, lynx, wolf, muskrat —
	except	in the Aleutian-Pribilof island subregion it means fox —
	except	in the Kodiak Island subregion it means beaver, land otter, weasel, fox
Sockeye salmon	means	Sockeye salmon
Chinook salmon	means	Chinook salmon
Coho salmon	means	Coho salmon
Pink salmon	means	Pink salmon
Chum salmon	means	Chum salmon
Freshwater fish	means	Dolly Varden, trout (sp.), steelhead, grayling, whitefish, pike, smelt, burbot
	except	in the Kodiak Island subregion it means Dolly Varden, trout, steelhead
	except	in the Aleutian-Pribilof islands subregion it means Dolly Varden
Marine fish	means	Herring
	except	in the Aleutian-Pribilof islands and Kodiak Island subregion it means halibut, cod, flounder, sole, herring, sea bass, snapper, rock fish, sculpin, greenling
Marine invertebrates	means	Razor clams, butter clams, geoduck clams, horse clams, octopus, sea urchin, sea cucumber, gumboot chitin, cockles, mussels, king crab, Tanner crab, Dungeness crab, hair crab
Crab	means	King crab, Tanner crab, Dungeness crab
Land gathering	means	Food and medicinal plant species and berries

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SIX REGIONS OF THE ALASKA HABITAT MANAGEMENT GUIDE PROJECT

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South Cape DUCKS **General Distribution Known Seasonal Concentrations** Winter Spring Fall **Known Nesting Concentrations** シンシン Known Molting Concentrations conjunction with seasonal symbols. -55° Region. 10 0 -153° 152° 154° 158° 157° 155° 156°

DISTRIBUTION OF DUCKS AND SEABIRDS

Where nesting and/or molting coincide with seasonal concentrations, the appropriate color or pattern is used in

55°

Definitions for map categories can be found in the Atlas to the Alaska Habitat Management Guide: Southwest

SOURCES: <u>Ducks</u> — ADF&G 1979b; ADNR/USFWS 1983; Arneson, pers. comm.; Conant, pers. comm.; Dau, pers. comm.; Forsell, pers. comm.; Forsell and Gould 1981; MacIntosh, pers. comm.; Peterson, pers. comm.; Sellers, pers. comm.; R. Smith, pers. comm.; K. Taylor, pers. comm.; Trapp, pers. comm.; USFWS 1983b. Seabirds -ADF&G 1973 and 1978c; Nysewander, pers. comm.; Sowls et al. 1978; Trapp, pers. comm.; Trapp unpubl. data.

> STATE OF ALASKA DEPARTMENT OF FISH AND GAME HABITAT DIVISION 1985

> > 151°

150°

153°

154°

155°

156°

152°

151°

150°

158°

157°
























































153°

152°

151°

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156°

155°



This map portrays sportfishing for the following species: Chinook salmon, chum salmon, coho salmon, pink salmon, sockeye salmon, arctic grayling, char/varden, Pacific halibut, rainbow trout, steelhead trout.

For more detailed information on the species harvested and the target species for each location, see the atlas of reference maps in volume 4 of the guide for the Southwest Region.

Definitions for map categories can be found in the Atlas to the Alaska Habitat Management Guide: Southwest Region.



ALBERS EQUAL AREA PROJECTION

SOURCES: Andrews 1966; Curtis, pers. comm.; Gwartney 1975; Gwartney, pers. comm.; Harms, pers. comm.; Hod-son, pers. comm.; Mcmillan, pers. comm.; Meacham 1980; Mills 1979-1983; Murray, pers. comm.; Paddock 1964; Paddock 1968b; Russell 1977; Russell, pers. comm.; Shaul, pers. comm.

Cape Mordvinof



STATE OF ALASKA DEPARTMENT OF FISH AND GAME HABITAT DIVISION 1985



Walrus Island

Cape

Unga

Island

bor

Squa

Deer I

Lagoon Pr

Cape Tolstoi

Island

PAVLOF ISLANDS

Outer Iliasik Island

Ukolnoi I

Poperechnoi I

Dolgoi Wosnesenski I

BAY

Strogonof Pt

Seal Islands

Perryville c

Paul I Jacob 1

Chiachi Islands

Bay

Kupreanof PI

Cape Thompson

Big Koniuji Island

Little Koniuji

Point

Cape Wedge

ØKarpa 1

Korovin Island

O Sand Point

Popul

Island

Andronica I



-57°

- 56°

- N-

55°-

579

Port Heiden

nignik Lagoo

Mitrofania Island

56°



Moffe

Thin PI

Amak Island

Otter Pt Cape Krenitzin

False Pass

Cape Glazenap,

Zhovoi
























1710 170° LEGEND 172° 176° 180° 176° 174° 171° 168° 165° 162° 159° 156° 153° 150° 147° AREAS OF SUBSISTENCE USE LOWER ALASKA PENINSULA / PRIBILOFS / ALEUTIANS EAST CARIBOU FRESHWATER FISH MARINE MAMMALS 176° 174° 171° 168° 165° 162° 159° 156° 153° 150° 147° COMMUNITIES MAPPED (WITH SOURCES): Akhiok, Karluk, Larsen Bay, Old * On Atka, St. Paul, and St. George islands, represents reindeer. Harbor, Ouzinkie, Port Lions (KANA 1983, Schroeder 1984). Aleknagik, Chignik, Chignik Lagoon, Chignik Lake, Clarks Point, Cold Bay, Dillingham, Egegik, - 55° Ekwok, False Pass, Igiugig, Iliamna and Newhalen, Kakhonak, King Cove, King Salmon, Koliganek, Levelock, Manokotak, Naknek, Nelson Lagoon, New Stuy-This map depicts areas where subsistence harvest and use of caribou, freshwater fish and marine mammals by residents of Southwest Region communities ahok, Nondalton, Pedro Bay, Pilot Point, Port Heiden, Portage Creek, South have been documented. The map includes data from communities where accu-Naknek, Togiak, Twin Hills, Ugashik (Wright et. al. 1984). St. George, St. Paul rate resource use mapping has taken place; see listing of communities covered. (Veltre and Veltre 1981). Unalaska (Veltre and Veltre 1982). Atka (Veltre and Use by other communities is not represented. Undocumented use of areas Veltre 1983). other than those depicted may occur; consult with local communities for definitive information. Mapped information represents use patterns occurring in St. George and St. Paul from 1970 through 1981, in Unalaska from 1970 through 1982, in Atka from 1970 Also note that subsistence economic systems are dynamic; subsistence use through 1983, and in all other communities from 1963 through 1983. areas may change through time as a function of the distribution and abundance of fish and game species, variable need for harvesting particular species, harvesting technology, fish and game regulations, and other factors. The subsistence harvest and use areas depicted are those used over the 1963 through 1983 time period, except for mapped data for Aleutian and Pribilof Island SCALE 1:1,000,000 communities where research focused on different time periods (see listing). 20 30 50 Miles 40 10 0 10 20 30 40 50 Kilometers SOURCES: This map was prepared from more detailed 1:250,000 reference maps that are on file with Division of Habitat, ADF&G, Anchorage. Original ALBERS EQUAL AREA PROJECTION research was conducted by Division of Subsistence, ADF&G. Community meetings, meetings with city councils and tribal councils, and expert interviews with local informants were used to collect raw data. In most communities mapping took place in conjunction with other ongoing research on subsistence use of fish and game. Draft maps were taken back to communities for final review and approval in almost all cases (refer to 1:250,000 reference maps and references listed on accompanying 1:1,000,000 community use area maps for more com-- 54° STATE OF ALASKA plete methodology). DEPARTMENT OF FISH AND GAME HABITAT DIVISION 1985 170° 176° ALASKA HABITAT MANAGEMENT GUIDE Southwest Region ALEUTIAN 52°





170° 171 0 56° LEGEND 172° 176° 180° 176° 174° 171° 168° 165° 162° 159° 156° 153° 150° 147° AREAS OF SUBSISTENCE USE 52° LOWER ALASKA PENINSULA / PRIBILOFS / ALEUTIANS EAST SALMON TRAPPING WATERFOWL 176° 180° 176° 174° 171° 168° 165° 162° 159° 156° 153° 150° 147° COMMUNITIES MAPPED (WITH SOURCES): Akhiok, Karluk, Larsen Bay, Old This map depicts areas where subsistence trapping and harvest and use of Harbor, Ouzinkie, Port Lions (KANA 1983, Schroeder 1984). Aleknagik, Chignik, salmon and waterfowl by residents of Southwest Region communities have Chignik Lagoon, Chignik Lake, Clarks Point, Cold Bay, Dillingham, Egegik, Ekwok, False Pass, Igiugig, Iliamna and Newhalen, Kakhonak, King Cove, King Salmon, Koliganek, Levelock, Manokotak, Naknek, Nelson Lagoon, New Stuy-ahok, Nondalton, Pedro Bay, Pilot Point, Port Heiden, Portage Creek, South Naknek, Togiak, Twin Hills, Ugashik (Wright et. al. 1984). St. George, St. Paul - 55° been documented. The map includes data from communities where accurate resource use mapping has taken place; see listing of communities covered. Use by other communities is not represented. Undocumented use of areas other than those depicted may occur; consult with local communities for definitive information. (Veltre and Veltre 1981). Unalaska (Veltre and Veltre 1982). Atka (Veltre and Veltre 1983). Also note that subsistence economic systems are dynamic; subsistence use areas may change through time as a function of the distribution and abundance of fish and game species, variable need for harvesting particular species, harvesting technology, fish and game regulations, and other factors. Mapped information represents use patterns occurring in St. George and St. Paul from 1970 through 1981, in Unalaska from 1970 through 1982, in Atka from 1970 through 1983, and in all other communities from 1963 through 1983. The subsistence harvest and use areas depicted are those used over the 1963 through 1983 time period, except for mapped data for Aleutian and Pribilof Island communities where research focused on different time periods (see listing). SCALE 1:1,000,000 50 Miles 40 10 20 30 40 50 Kilometers SOURCES: This map was prepared from more detailed 1:250,000 reference maps that are on file with Division of Habitat, ADF&G, Anchorage. Original ALBERS EQUAL AREA PROJECTION research was conducted by Division of Subsistence, ADF&G. Community meetings, meetings with city councils and tribal councils, and expert interviews with local informants were used to collect raw data. In most communities mapping took place in conjunction with other ongoing research on subsistence use of fish and game. Draft maps were taken back to communities for final review and approval in almost all cases (refer to 1:250,000 reference maps and references STATE OF ALASKA listed on accompanying 1:1,000,000 community use area maps for more com-- 54° DEPARTMENT OF FISH AND GAME plete methodology). HABITAT DIVISION 1985 170° 176° ALASKA HABITAT MANAGEMENT GUIDE Southwest Region 0 ALEUTIA 52°

