

III. Overview of Alaska

With 365 million acres of land, Alaska is one fifth the size of the contiguous 48 states and includes more wetlands and coastline than other 49 states combined. Topography, climate, wildlife, vegetation, and human communities within this expanse are diverse, and the range of variation is dramatic. Contributing to this overall diversity is the position of Alaska between the cold Arctic Ocean and warmer North Pacific Ocean. Spanning roughly 20 degrees of latitude and 60 degrees of longitude, ecosystem types range from wet temperate rain forests in the south to vast boreal forests in the interior to polar deserts in the far north. Tall mountain ranges and major river systems dissect the state. Alaska has the fourth largest glaciated area in the world and the tallest mountain in North America. Range in the number of frost-free days is substantial, from more than 200 days in portions of southeastern Alaska and the Aleutian Islands to 40 days in the Arctic. Annual precipitation also ranges greatly, from approximately 200 inches in parts of southeastern Alaska to roughly 10 inches in the Arctic.



Brant at Izembek Lagoon

USFWS

Some of Alaska's habitats are recognized nationally and internationally. For example, with creation of the Kachemak Bay National Estuarine Research Reserve in 1999, Alaska now contains one of the nation's 26 National Estuarine Research Reserves (NERRs). Five sites of the 58 sites designated in the Western Hemisphere Shorebird Reserve Network (WHSRN) are located in Alaska (see <http://www.manomet.org/WHSRN/sites.php>). These include the Copper River Delta, a site identified as being of hemispheric importance ($\geq 500,000$ birds) and Kachemak Bay, a site of international importance ($\geq 100,000$ birds). Izembek Lagoon and its associated uplands are known for extensive eelgrass beds and extraordinary numbers and diversity of waterfowl. For this reason, the Convention on Wetlands of International Importance ("Ramsar") designated the Izembek State Game Refuge and adjacent Izembek National Wildlife Refuge as the United States' first Wetland of International Importance in 1986. The internationally recognized areas listed above are all critical stopover points for millions of shorebirds and waterfowl; for example, almost the entire world population of black brant (*Brant bernicla nigricans*) congregates at Izembek each fall and spring.

Approximately 53% of the state has been designated in federal or state conservation units. These units effect differing levels of protection, ranging from national parks, sanctuaries, and refuges with a heavy emphasis on landscape and species conservation to recreation areas, marine parks, state forests, and other lands often

designated for multiple uses, including resource extraction activities. Permanent ice and snow and alpine tundra and barrens cover about 15.7% of the state (Duffy et al. 1999), but make up 20% of the conservation units.

Alaska's diversity of marine habitats and landscapes makes it home to a rich and diverse fauna. Nearly 1,070 vertebrate species occur regularly in the state, and the efforts undertaken as a result of the CWCS planning process increase the likelihood of discovering even more species. It is thought that Alaska has many thousands of invertebrate species in habitats as diverse as subterranean karst caves, benthic marine and intertidal substrates, and countless rivers, lakes, and bogs. Overall physiographic and climatic differences across the state highlight the need for regional approaches to conservation.

Although colder climates are generally indicative of reduced biodiversity, Alaska's geographic location and largely undeveloped landscapes provide some of the largest and most productive areas of remaining habitat for many species. This is especially true for migratory species.

Overall, Alaska has been successful in sustaining its wildlife resources. However, as the human population increases and resources are developed, wildlife managers will face new challenges.

A. Sociological Framework: Demography and Use of Fish and Wildlife

People of the Land

Alaska's population of about 627,000 (2000 Census) is one of the lowest in the nation, and about 42% of its people live in Anchorage, the largest city. Alaska's population is not uniformly distributed: In 2002, 78% of the state's human population was concentrated in the Municipality of Anchorage (269,070), Fairbanks North Star Borough (84,791), Matanuska-Susitna Borough (65,241), Kenai Peninsula Borough (51,187), and City and Borough of Juneau (30,981) (Williams 2004). These five boroughs comprise 9.2% of Alaska's area. The highest population density is in the Municipality of Anchorage (411.3/km²), and the lowest density is in the Yukon-Koyukuk Census area (0.10 persons/km²). Appendix 9 provides Year 2000 Census numbers, together with 2004 Census-based estimates of Alaska's population by community name and within each ecoregion of the state. Sixty-nine percent of the 347 Alaska communities listed in Appendix 9 have fewer than 500 residents, many of whom are Alaska Natives.

Land Status

Land ownership in the state is divided as follows: national parks and refuges, 40%; other federal lands, 19%; state and municipal lands, 28%; and private lands, the bulk of it owned by Native corporations, 12%. Multiple modes of travel are used across Alaska, with boat, snowmachine, off-road vehicle, and air travel being the primary

means of access outside of the relatively few heavily roaded regions of the state. Not surprising given Alaska's size, per capita ownership of small airplanes (private aircraft) is 14 times greater than anywhere else in the United States. Although airplane use is critical for commerce and enjoyed for recreation and tourism, air travel and the growing number of "backcountry" users increase some of our long-term conservation challenges, such as preventing introductions of invasive animal and plant species.

Use of Fish and Wildlife

A wide variety of people use the lands and waters of Alaska, and society's demands on the state's fish, wildlife, and habitat resources vary greatly. These demands include community growth, extractive industries, commercial and recreational hunting and fishing, trapping, gathering, wildlife-related tourism, and subsistence fishing and hunting.

Commercial Fishing

Commercial fishing is the largest use of the state's fish and wildlife, with commercial fishermen taking 97% of the resources harvested in Alaska, subsistence users taking 2% and sport users harvesting 1% (Wolfe 2000). In 2002, the commercial fishing industry (i.e., fisheries harvesters and crew, plus seafood processing employment) accounted for 17,090 jobs, or 6.3% of total private sector jobs in Alaska. This was second

only to the construction industry and greater than employment figures for the oil and gas industry (Alaska Department of Labor and Workforce Development 2004).

Commercial fisheries harvested about 5.4 billion pounds of fish and shellfish with an exvessel value (i.e., "raw fish" price paid to fishermen) of about \$1.2 billion. The wholesale (processed seafood) value was about \$2.6 billion in 2003. This activity generated about \$50 million in tax revenues for the State of Alaska; commercial fishing permits, and vessel and crew member license fees brought in another \$6 million. Revenue-sharing programs return a portion of these taxes back to the communities that generate them.



Processing sablefish on a longline vessel, Gulf of Alaska
J. Keaton, Fishery Observer

Major fisheries in Alaska include groundfish, salmon, herring, shellfish and halibut. Groundfish make up 82% of the harvest by volume and 49% by exvessel value. Salmon make up 15% of the harvest by volume, but 20% by exvessel value.

Sport and Personal Use Hunting, Trapping, and Fishing

Hunting, trapping, and fishing are also an important part of Alaska's heritage and economy. The opportunities fish and wildlife resources provide are a key reason many people choose to live in Alaska.

Hunting and trapping have been practiced for millennia in Alaska, and this tradition continues today. Enjoyed by nonresidents and residents, in both urban and rural areas, hunting and trapping enhance quality of life and provide direct economic benefits, such as jobs, food for the freezer, and pelt sale proceeds in the bank.

Revenues from hunting and trapping licenses and fees contribute directly to ongoing ADF&G management and research programs, while revenues generated through purchases of equipment and services spread through local economies. Approximately 12% of Alaska residents (age \geq 16 years) participate in hunting (USFWS and U.S. Census Bureau 2001). In 2001, resident and nonresident hunters spent 1.1 million days hunting and a total of almost \$217 million in hunting-related expenses to pursue Alaska's wildlife resources (USFWS and U.S. Census Bureau 2001). In 2004, resident hunting license sales generated \$1.7 million; nonresident hunting license sales generated \$1.1 million (ADF&G 2004). Approximately \$4.7 million in revenue was generated by Big Game Tag purchases; the nonresident contribution was \$4.5 million (ADF&G 2004), indicating Alaska remains a world-class hunting destination.



Fall caribou hunt, Interior Alaska

R. Lowell, ADF&G

The goal for many hunters, especially residents, is to fill the freezer with moose, deer, or caribou. Others want the challenge of stalking a trophy Dall sheep, mountain goat, or brown bear. An average of 7,552 moose, 33,815 caribou, 18,839 deer, 906 Dall sheep, 471 mountain goats, and 1,544 brown bears are taken annually in Alaska for food or trophy (ADF&G 2003).

The quest for winter income and sport sends trappers into the field in pursuit of wolves, wolverines, beavers, and other furbearer species. In accordance with state and federal sealing requirements, on average 13,246 furbearers are sealed annually

(Peltier and Scott 2003). Harvest of other furbearer and fur animal species, such as coyotes and hares, occurs but is not subject to sealing regulations. ADF&G Trapper Questionnaire (Peltier and Scott 2003) data shows that the number, age, and experience of trappers, the number of seasons in the same area, and fur disposition trends remain relatively constant. Out of 1,766 questionnaires sent for the 2002–2003 trapping season, 69% of respondents said they actively trapped during the 2001–2002 season; over 50% of respondents kept their furs, and of the trappers who sold their furs, most sold them in Alaska. This information suggests the trapping heritage remains strong, and that trapping continues to provide sustenance and sport for Alaskans.

Approximately 30 percent of Alaska residents participate in sport fishing each year. The Statewide Harvest Survey estimated that over 450,000 anglers fished in 2003. Residents spent 1.4 million days and nonresidents spent over 800,000 days fishing. Anglers harvest the five species of Pacific salmon, plus trout, char, grayling, halibut, rockfish and other species.

Based upon information from the 2001 National Survey of Fishing, Hunting and Wildlife Viewing, the American Sportfishing Association (2003) estimates that U.S. residents over age 16 spent approximately \$640 million on fishing trips and equipment in Alaska in 2003. This does not include equipment or supplies that nonresident U.S. anglers bought before arriving in the state or expenditures by foreign residents who came to Alaska to fish. These sport fishing expenditures in Alaska in 2003 generated 12,065 jobs and \$259 million in wages and salaries.



A popular fishing spot during salmon season
USFWS

Alaskans' increasing dependence on fisheries resources has caused new types of fishing opportunity, including personal use fisheries, to be created. Personal use fisheries arose from legal challenges to the state's subsistence priority law during the last decade. Usually administered through a by-household permit process, personal use fisheries allow the taking of fish or invertebrates if that take is in the broad public interest and will not negatively impact an existing resource or sustained yield of that resource.

Not surprisingly, whether small or large in scale, these additional fishing opportunities are popular and highly valued by Alaskans. As an example, approximately 35,000 permits are issued annually to dipnet for sockeye salmon in summer fisheries located in Upper Cook Inlet and on the Copper River; a few pink, coho and chum salmon are also taken in these fisheries. In 2004, over 450,000

sockeye salmon were harvested in Upper Cook Inlet and Copper River personal use fisheries. The 2004 sockeye harvest on the Kenai and Kasilof Rivers represents approximately 6 percent of the overall Cook Inlet sockeye harvest. The harvest of king salmon is allowed in several personal use fisheries, but on a very limited basis. Smelt and herring are also important personal use species in selected locales.

Subsistence Harvest

Subsistence fishing, hunting, and gathering are also important to the economies and cultures of many families and communities in Alaska. Subsistence uses are central to the customs and traditions of many cultural groups in Alaska, including Aleut, Athabascan, Alutiiq, Euroamerican, Haida, Inupiat, Siberian Yupik, Tlingit, Tsimshian, and Yup'ik.

State and federal law define subsistence as the “customary and traditional uses” of wild resources for food, clothing, fuel, transportation, construction, art, crafts, sharing, and trade. At present, these federal and state laws differ in who qualifies for participation in subsistence hunting and fishing. Under federal law, only rural residents qualify for subsistence preference on federal lands—about 20% of Alaska’s



Beluga muktuk at Elephant Point, Kotzebue Sound

G. Seaman, ADF&G

population (about 125,000 people) lived in rural Alaska in 2000. Federal laws apply to federal lands and decisions on subsistence management on federal lands (national parks, national wildlife refuges, national forests, and BLM lands) are made by the Federal Subsistence Board. Under state law, all state residents are eligible to participate in subsistence hunts and fisheries as established by the Alaska Board of Game and Alaska Board of Fisheries, with preference being based on an individual’s customary use of and dependence on a particular wildlife or fish population.

Subsistence harvests continue to provide a large portion of the food supply in rural Alaska. Based on studies by the ADF&G’s Division of Subsistence, an estimated 45 million pounds (usable weight) of wild foods are harvested annually by subsistence users. This harvest provides about 35% of caloric requirements and 242% of mean daily protein requirements for the rural population.

Families harvest wild foods with fish wheels, nets, motorized skiffs, rifles, all-terrain vehicles (ATVs), and snowmachines. Successful families in rural Alaska’s “mixed economy” combine wage-paying jobs (e.g., tourism, guided hunting, or the service sector) with subsistence hunting, fishing, and gathering. They share their harvests with households having members who cannot hunt or fish, including elders, small

children, and the disabled. The social bonds created by exchanges of subsistence foods are central to the survival of rural communities and traditional cultures.

The composition of subsistence wildlife harvests across Alaska differs from region to region based largely on the relative abundance of key species. Particularly along Alaska's western and northern coasts, marine mammals play a major role, while in portions of Interior Alaska, big game species and fish are especially important. Herds of caribou are highly valued throughout their ranges. In most communities along the coast and the major rivers, salmon are the dominant fish resource in annual harvests. In the state overall, about 60% of the annual subsistence harvest is fish, about 20% is land mammals, and 14% is marine mammals. Birds (2%), shellfish (2%), and wild plants (2%) make up the rest.

Although abundant resources such as salmon, halibut, moose, caribou and marine mammals make up a large portion of Alaska subsistence harvests, a key element in subsistence is the use of a wide variety of wild foods. For example, families in coastal communities in Southcentral and Southwest Alaska use many marine invertebrate species, such as chitons, octopus, snails, clams, crab, and sea urchins. In addition to halibut and salmon, they harvest other kinds of marine and freshwater fish, including herring and herring roe on kelp, eulachon, rockfish, whitefish, blackfish, grayling, pike, char and trout. A variety of birds and their eggs are used, such as multiple species of ducks and geese, marine birds, and gull eggs. Trading for coastal and inland species between regions is common.

Another key feature of the subsistence way of life is learning by doing and observing, as well as absorbing the knowledge passed down through the traditions of one's community. Through interacting with the environment in subsistence activities across generations, a large body of traditional ecological knowledge has developed in rural Alaska. This traditional knowledge is not confined to what one needs to know in order to harvest fish or wildlife, but also includes detailed knowledge of animal behavior, habitat, diet, condition, and population trends, as well as cultural values that shape relationships with the natural world.

Increasingly, Alaska's fish and wildlife management plans acknowledge the essential role of subsistence harvests in supporting the economies and cultures of Alaskan communities. The plans also recognize the detailed ecological knowledge held by rural subsistence hunters and fishermen. Management plan goals are more likely to succeed when subsistence perspectives, as well as urban-based recreational, academic, or management agency perspectives, are included. Planning efforts that tap both traditional and scientific knowledge promote resource stewardship and encourage effective communication between all groups with a stake in conservation of fish and wildlife resources.

The Division of Subsistence maintains a Community Profile Database that includes the results of systematic household harvest surveys conducted periodically in communities throughout the state (Scott et al. 2001). A list of the animal and plant

resources that are currently used for subsistence purposes in Alaska communities and additional readings about subsistence can be found at:

<http://www.subsistence.adfg.state.ak.us/>.

Finding and Viewing Wildlife

Opportunities to view and photograph wildlife in their natural habitats are important to both Alaska residents and visitors. Wildlife viewing enhances quality of life and economies across Alaska. In a survey of Alaska voters, 96 percent agreed that wildlife adds a great deal to their enjoyment of living in Alaska (80 percent strongly



Photographing wildlife

ADF&G

agreed), and 78 percent wanted to know more about how to find and watch wildlife. Visitor studies show that wildlife viewing is second only to scenery as the most important reason that tourists come to Alaska.

Many Alaskans and most visitors travel to view wildlife. Using a strict “primary purpose” definition, the USFWS estimates that 420,000 U.S. residents aged 16 and

older participated in wildlife viewing in Alaska in 2001, spending \$499 million, including \$358 million in expenditures by nonresidents. The economic impact of wildlife as a draw for international tourists has not been measured. However, Alaska’s unique and abundant wildlife makes it a world class viewing destination. The Alaska Travel Industry Association estimates annual in-state visitor expenditures at \$1.8 billion, with a significant portion attributed to Alaska’s wildlife viewing opportunities.

Demand for quality wildlife viewing opportunities exceeds existing capacity in Alaska and is expected to continue to rise with increasing population, growing tourism (Fay 2000) and rising education levels. More and more travelers are seeking “life enriching experiences” such as guided tours, group educational tours and learning activities such as wildlife viewing (Eagles 2002). Travelers also expect more sophistication and higher standards in professional guides, tours, interpretive facilities, and information (Eagles 2002). Maintaining Alaska’s position as a national and global wildlife tourism destination will require cooperative efforts among resource agencies, nongovernmental organizations and the visitor industry.

Legal Basis for Conservation of Fish and Wildlife

ADF&G’s legal framework for managing fish and wildlife in Alaska is derived from the Alaska Constitution, Article VIII, and implementing statutes. Article VIII, Section

3 states: “Wherever occurring in their natural state, fish, wildlife, and waters are reserved to the people for common use.” Additional guidance appears in Article VIII, Section 4: “Fish, forests, wildlife, grasslands, and all other replenishable resources belonging to the State shall be utilized, developed, and maintained on the sustained yield principle, subject to preferences among beneficial uses.”

The department, the Alaska Board of Fisheries, and the Alaska Board of Game work within a legal framework formed by the Alaska Constitution, statutes enacted by the state legislature, and administrative rules, or regulations. Alaska Statute Title 16 is the primary statute governing management of Alaska’s fish and wildlife resources. This statute directs the commissioner of ADF&G to “manage, protect, maintain, improve, and extend the fish, game, and aquatic plant resources of the state⁹ in the interest of the economy and general well-being of the state.” In addition, it assigns primary responsibility for allocation of resources by user group or gear type to the Alaska Board of Fisheries and the Board of Game. One statute, AS 16.20.185, directs the commissioners of ADF&G and DNR to “take measures to preserve the natural habitat of species or subspecies of fish and wildlife that are recognized as threatened with extinction.” Other sections of AS 16.20 codify the purposes for state wildlife refuges, sanctuaries, and critical habitat areas, and designate particular places for these purposes.

The department’s fish and wildlife management activities include inventorying and, monitoring populations, researching health parameters and other aspects of biology, protecting public access, monitoring and rehabilitating habitat, determining sustained yield, actively managing populations, and participating with DNR in review and issuance of water rights, including instream flow reservations. ADF&G also manages the lands that have been legislatively designated as state game refuges, game sanctuaries, or critical habitat areas (see Section IVD of the CWCS); unit-specific guidance regarding allowable uses and incompatible activities is common.

The Boards of Fisheries and Game allocate harvest through regulations for trapping, subsistence and recreational hunting, and subsistence, commercial, recreational, and personal use fisheries. The boards with input from the department establish seasons, quotas, bag limits, harvest levels, and means and methods employed in the pursuit, capture, transport, and related uses of fish and wildlife.¹⁰

The Alaska Constitution and Statutes recognize the authority and responsibility for management of Alaska’s public trust doctrine resources. The doctrine provides that public trust lands (those below mean high tide and within ordinary high water

⁹ The Alaska Statutes define the “fish, game, and aquatic plant resources” managed by the Department as follows: “*fish*” means any species of aquatic finfish, invertebrate, or amphibian, in any stage of its life cycle, found in or introduced into the state, and includes any part of such aquatic finfish, invertebrate, or amphibian; “*game*” means any species of bird, reptile, and mammal, including a feral domestic animal, found or introduced in the state, except domestic birds and mammals; and “*aquatic plant*” means any species of plant, excluding the rushes, sedges, and true grasses, growing in a marine aquatic or intertidal habitat.

¹⁰ The Federal Subsistence Board also sets regulations for subsistence harvests by rural residents on certain federal lands.

boundaries), waters, and living resources are held by the state in trust for the benefit of all the people and establishes the public's right to use these lands, waters, and resources for a wide variety of public uses. The public has a right to use all waterways in Alaska regardless of ownership of the underlying land.

The state's wildlife and fish conservation laws and regulations apply across all land ownerships, unless superseded by federal law (e.g., the Marine Mammal Protection Act, Migratory Bird Treaty Act, Endangered Species Act and federal subsistence regulations promulgated pursuant to Title VIII of Alaska National Interest Lands Conservation Act [ANILCA]). On federal lands, the department and the federal agencies share responsibilities for fish and wildlife resources and their habitats and cooperate in conservation and management programs.

Enforcement

Law enforcement is a critical element of effective wildlife management plans. In Alaska, with a varied and extensive resident and nonresident user group, enforcement of fish and wildlife regulations helps ensure that wildlife and fish populations remain robust and that people can enjoy the many use opportunities provided under law through actions of the department and the boards. Programs that educate the public about fish and wildlife regulations are important for gaining voluntary compliance; however, enforcement is needed to deter those who would violate regulations for personal gain or profit, such as through poaching.

The Alaska Department of Public Safety, Division of Alaska State Troopers, Bureau of Wildlife Enforcement, is the primary enforcement agency for state laws protecting wildlife. The USFWS also enforces federal wildlife and fish laws and regulations. ADF&G does not provide enforcement services per se. Instead, with appropriate training, ADF&G provides support to these enforcement agencies by supplying technical and professional management information and by passing on violation reports as appropriate.

Effective enforcement of wildlife-related laws helps reduce unlawful harvest or harassment of wildlife. In so doing, it also decreases the need to further restrict activities being conducted within the law. A coordinated and fully funded enforcement effort is important to the success of Alaska's CWCS and other fish and wildlife management plans.

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