

Managing Alaska's Wildlife



2010 Report
Division of Wildlife Conservation
Alaska Department of Fish & Game

Director's Message

In my nearly 25 years working as a wildlife professional with the Alaska Department of Fish and Game (ADF&G), I have had the incredible opportunity and pleasure of working with a variety of species in management and research efforts. From Sitka black-tailed deer, mountain goats, river otters, and black bears in Southeast Alaska, to caribou, moose, wolves, sheep, and brown bears in Northwest Alaska, the encounters have been phenomenal and memorable.

Today, as the director of the Division of Wildlife Conservation, I have the opportunity to see first-hand on a regular basis the diversity of responsibilities that face our staff as we seek to conserve and enhance the State's wildlife and habitats and provide for a wide range of public uses and benefits.

Management activities conducted by ADF&G include, among other things, surveying populations of moose, caribou, sheep, goats, bears, and wolves; assessing habitat conditions; regulating harvests of predator and prey populations; providing information and education opportunities to the public; and responding to a host of issues and concerns. We're extremely fortunate at the Alaska Department of Fish and Game to have skilled, educated, experienced, and dedicated staff to enable us to fulfill our mission.

Our job of managing wildlife is a public duty we take seriously and we appreciate involvement of the public in our work, through advisory committees, volunteer efforts, and other avenues of public input and participation. We welcome public feedback, recognizing that feedback sometimes means juggling and respecting completely contradictory viewpoints.

This publication offers a look at the range of wildlife we manage and the programs we offer to the public. I hope you enjoy this summary and I hope too that you'll seek further information about our wildlife programs by visiting our offices, talking with our staff, or checking out our website: www.wildlife.alaska.gov.



Doug Larsen, director of the Division of Wildlife Conservation, with a sedated mountain goat. Aerial darting is an important tool for wildlife biologists in Alaska, and Larsen's experience darting goats paid off in 2005 when DWC began an ongoing study monitoring mountain goat populations and the goats' seasonal movements in the coastal mountains north of Juneau.

Sincerely,

A handwritten signature in black ink, appearing to read "Doug Larsen".

Doug Larsen

Division of Wildlife Conservation

Many Alaskans experience wildlife every day. Alaskans eat wild game, watch birds, hunt and fish, and may encounter porcupines, moose, and even bears on the way to work or school. Wildlife is one reason why people live in Alaska, and a big reason why visitors come to Alaska. The people at the Division of Wildlife Conservation are charged with managing Alaska's wildlife.

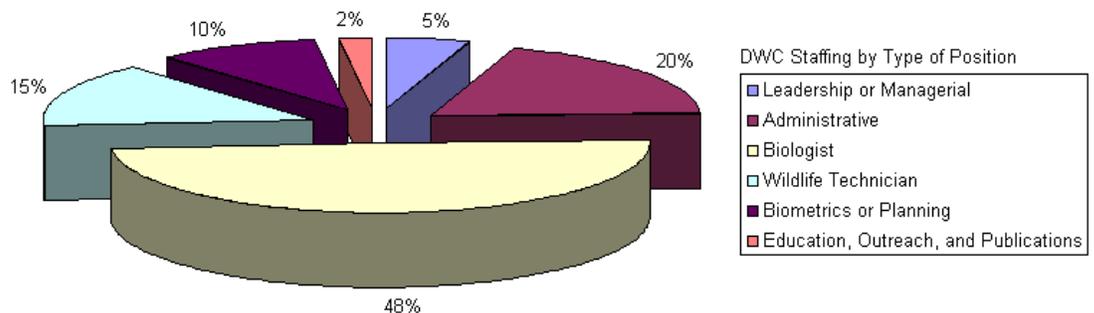


The Division of Wildlife Conservation (DWC) is one of seven divisions in the Alaska Department of Fish and Game (ADF&G) and is responsible for managing wildlife in Alaska. Although the division does not manage waterfowl and marine mammals, it provides significant assistance and input to the federal agencies that have management authority for these species.

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DWC employs about 230 permanent staff, 175 full-time and 55 seasonal. A rough breakdown of staffing includes about 5 percent in leadership or managerial positions, 20 percent in administrative positions, 48 percent are biologists, 15 percent are wildlife technicians, about 10 percent are involved in biometrics and planning, and 2 percent are involved in education, outreach, and publications. Staff

are located at the headquarters office in Juneau, in four regional offices in Douglas, Fairbanks, Anchorage, and Nome, and twenty-two area offices around the state.



The state is divided into 26 Game Management Units (GMUs) (many containing three to five sub-units) for the purpose of management and regulations. Twenty-three area biologists oversee the GMUs.

In fiscal year 2008, the division's budget was about \$36 million, with funding coming primarily from the State's Fish and Game Fund (revenue from the sale of licenses and game tags), the federal Pittman–Robertson program, the state's General Fund, and some grants and special projects funding.

Programs

Staff in regional and area offices are responsible for most of the wildlife research and management activities in their regions.

There are seven additional statewide programs: education, wildlife viewing, waterfowl research and management, wildlife diversity, marine mammal research, information management, and hunter information and training.

Small game and nongame species are also valued for their roles in the environment, and as animals important to hunters, wildlife viewers, and photographers. Small game includes ptarmigan, grouse, and hares. Animals such as porcupines, bats, voles, and marmots are not generally hunted, but along with songbirds, birds of prey, and seabirds are subjects of some study and much appreciation by biologists and the general public. There are four nongame biologist positions within the DWC.

ADF&G recently formed an Endangered Species Act (ESA) team, including a wildlife biologist within DWC, to increase communication within Fish and Game and with other agencies and organizations addressing issues related to threatened and endangered species.



ADF&G manages 32 state wildlife refuges, critical habitat areas and wildlife sanctuaries known as special areas. These include popular and well-used places such as the Mendenhall Wetlands in Juneau, Potter Marsh in Anchorage, Creamer's Field in Fairbanks, the McNeil River and Pack Creek bear viewing areas and more remote areas such as Walrus Islands State Game Sanctuary.

Hair snares allow biologists to capture genetic samples without affecting the animals. Here, technician Al Keech pulls grizzly bear hair from a snare north of Tok, part of a study of bear numbers and predation on the Fortymile caribou herd.



Almost 4,000 students took hunter education in Alaska in 2008. Here, Maggie Lindsay works with a young shooter.

A variety of other education and outreach efforts include education programs to minimize human-wildlife conflicts, teaming with teachers and schools for science education, and providing information to Alaska's thousands of visitors, many of whom come to hunt and many others who come specifically to view wildlife.

A sedated wolverine equipped with a GPS tracking collar. This 20-pound young female was captured and released north of Juneau in spring 2008, part of an ongoing project to better understand the population and these animals' use of their habitat.

DWC also engages in hunter education and training, and operates three shooting ranges. A variety of other education and outreach efforts include education programs to minimize human-wildlife conflicts, teaming with teachers and schools for science education, and providing information to Alaska's thousands of visitors, many of whom come to hunt and many others who come specifically to view wildlife. The department also partners with other groups such as the Alaska Outdoor Heritage Foundation to offer outdoors skills clinics such as Becoming an Outdoors Woman.



More information on the Division of Wildlife Conservation, its programs, and publications can be found at www.wildlife.alaska.gov



A state wildlife biologist weighs a newborn caribou calf as the mother waits nearby.

Research and Monitoring

Research activities investigate the distribution, movements, habitat use, health, breeding status, numbers, and survival rates of species. This information helps with the determination of hunting seasons and bag limits, development issues, and the overall understanding of these animals and their environments.

Caribou, bison, moose, Dall sheep, and bear populations are also regularly monitored throughout the state, often using aircraft, radio collars, and other techniques to insure an understanding and conservation of these resources.

Biologists with the DWC are working to learn more about:

- Mountain goats and brown bears north of Juneau
- Mountain goats near Ketchikan
- Dall sheep in Southcentral Alaska
- Marten in southern Southeast
- Wolverines in Southeast
- Brown bears in southern Southeast
- Brown bears near Yakutat
- Black bears on Prince of Wales Island
- Black-tailed deer in Southeast
- Short-eared and boreal owls
- Moose throughout the state, specifically, improving methods of evaluating habitat, evaluating intensive management practices, looking at moose movements in relation to roads, and improving survey techniques
- Caribou on the Alaska Peninsula, Interior, and in the Western Arctic
- Brown bears in Anchorage
- Brown (Grizzly) bears in the Tok area
- Harbor seals, ice seals, Steller sea lions, bowhead whales, beluga whales, and marbled murrelets, often in cooperation with other agencies.

Who Harvests Alaska's Wildlife?

At the end of hunting season, who takes home Alaska's wildlife? Is it residents or out-of-state hunters? The answer depends on the animal—many brown bears head out of state, most moose and caribou are eaten by Alaskans.

Alaska is home to almost a million caribou and about 200,000 moose. In 2008, Alaskans took home 91 percent of the 7,500 moose harvested. About 6,800 moose were harvested by Alaskans and 700 by nonresident hunters.

Nonresident hunters harvested about 800 caribou in Alaska in 2008, out of a total harvest of about 22,000 animals. That's about three percent. Alaskans took home about 97 percent of the caribou harvested in the state—and probably more, since that estimate of resident harvest is conservative.

Alaska has an estimated 30,000 brown bears statewide. Nonresident hunters have in some years harvested more brown bears than Alaskans. In 2007, about 1,900 brown bears were harvested in Alaska and about 1,200 were taken by nonresidents—about 67 percent. In 2008 the take was about 1,500 and split almost exactly 50/50 between resident and nonresident hunters.

About one-third of all the brown bears harvested come from the Alaska Peninsula: 630 bears were taken from Unit 9 and more than half of those came from the southern half of the peninsula, Unit 9E, where 50 bears were taken by residents and almost 300 by nonresidents. Kodiak Island (Unit 8) and Southeast Alaska's Admiralty, Chichagof, and Baranof islands (Unit 4) are the other top brown bear producers.

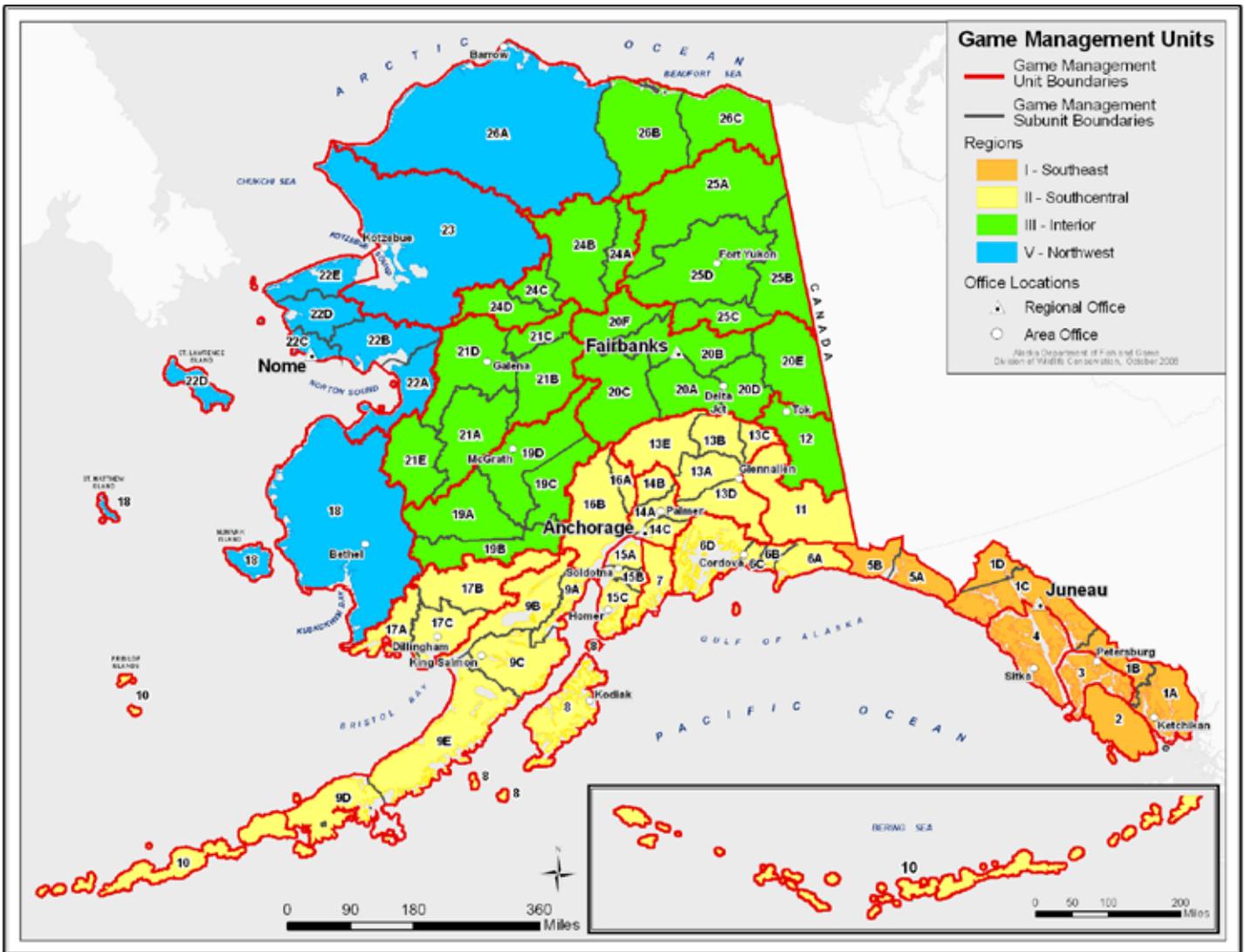
There are an estimated 100,000 black bears in the state of Alaska. Over the past five years, harvest has averaged about 2,800 each year. Statewide, harvest has increased steadily over the past five years, from about 2,500 in 2003 to about 3,300 in 2007. In 2008 the harvest dropped slightly, to about 3,000.

In general, about 60 percent of the statewide harvest of black bears is by resident and 40 percent by nonresidents. However, that varies tremendously from area to area, and some areas see considerable nonresident hunting. In Unit 2 in Southeast Alaska, Prince of Wales and adjacent islands, the five-year average (450 per year) shows that about 88 percent of the black bears are taken by nonresident hunters.



A Southeast hunter surveys a muskeg meadow on Admiralty Island.

Although nonresidents take less than ten percent of the game hunted in Alaska, they contribute almost 70 percent of all the hunting fees collected by Fish and Game.



Alaska's Dall sheep are popular with nonresident hunters. In 2008 nonresidents took 285 sheep, while resident hunters took 473, about 62 percent.

In 2008, 440 mountain goats were harvested in Alaska, 152 by nonresidents (about 36 percent) and 288 by resident hunters.

The Sitka black-tailed deer is the most-pursued species of big game in Southeast Alaska. During the 20 years from 1987 to 2007, there has been an average annual harvest of about 12,300 deer.

Other animals receive little attention from nonresident hunters. Only one muskox was taken in 2007 by a nonresident, and 257 were taken by Alaskans. In 2008, seven muskoxen were harvested by nonresidents and 230 by residents. Only three bison were taken by nonresidents, and 124 were harvested by residents.

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Wildlife Highlights

Bison

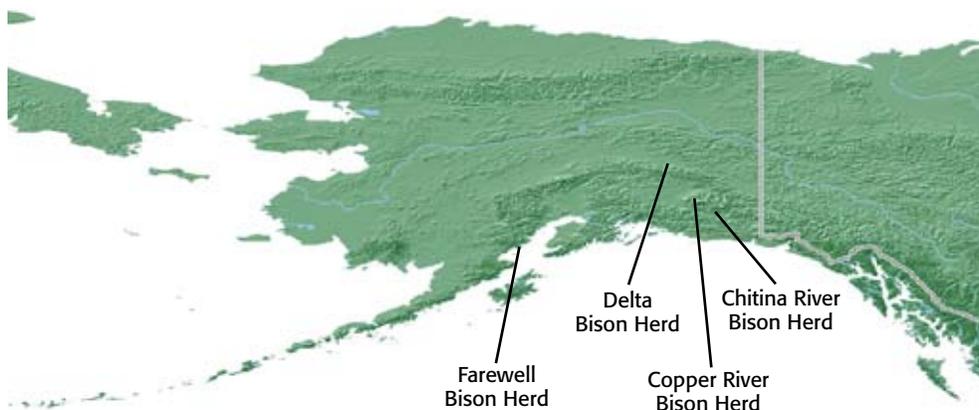
In 1928, 23 plains bison from Montana were introduced to the Delta River area. The herd grew to 400 animals over the next two decades and hunting began in the 1950s. Today, four herds totaling about 900 animals graze in Alaska. The largest herd is near Delta Junction, and smaller herds have been established by translocation from the Delta herd to Farewell, Chitina River, and the Copper River.

Herd size is managed by hunting and bison hunts are among the most popular drawing hunts in Alaska (drawing hunt means hunters apply for a limited number of permits, drawn in a random lottery, in contrast to general season hunts which are less restrictive and open to most people). For example, with the Delta bison hunt, about 15,000 hunters apply for about 100 permits, and about 74 animals are harvested in that area each year. Statewide, bison harvest in Alaska has averaged 92 animals per year.

The Delta bison herd ranges in the central Tanana Valley near the town of Delta Junction. The pre-hunt herd size in 2009 was 435 animals. The management objective is to maintain a herd size of about 360 bison at the pre-calving count.



Captive plains bison at the Alaska Wildlife Conservation Center near Whittier in Southcentral Alaska. Wood bison, the largest land mammal in North America, are also housed at the center, and plans are underway to re-introduce wood bison to parts of their former range in Alaska.



The Copper River herd inhabits the area between the Dadina River and the Kotsina River in northern GMU 11. It originated from 17 animals taken from the Delta herd in 1950. The herd size has ranged from 51 bison in 1967 to a high of 143 in 2009. Management objectives are to maintain a herd size of 60 overwintering animals. Harvest has been about eight animals per year. About 24 permits are issued, out of about 1,100 applications.

The Chitina River herd inhabits the area around the Chitina River from the confluence of the Tana River and the Chitina Glacier in GMU 11. In 1962, 35 bison were translocated from the Delta herd to May Creek. The herd grew to about 50 in 2003. A large die-off occurred in 2004 because of winter mortality and only 25 bison were observed during the summer of 2005. Hunts for these animals have been held sporadically depending on population size.

The management objective is a minimum of 50 overwintering adult animals. The last count, in 2009, was 41 animals.

The Farewell herd lives primarily along the south fork of the Kuskokwim River (in

Today, four herds totaling about 900 animals graze in Alaska. The largest herd is near Delta Junction, and smaller herds have been established by translocation from the Delta herd to Farewell, Chitina River, and the Copper River.

GMU 19C and 19D). It numbered about 350 animals in the late 1990s and declined to 100 to 150 animals by 2006. The most recent count in June 2009 indicated 204 animals, which includes calves of the year. The management objective is to maintain a minimum population of 300 bison, allowing for an annual harvest of up to 40. The annual harvest has averaged about 20 animals. In 2007, about 2,100 hunters applied for 10 permits. Harvest is low with seven bison taken in 2007 and seven in 2008.

As of fall 2009, 20 bison in this herd are radiocollared, which assists in locating the herd for monitoring and assessment.

Brown Bear



Brown bears in Interior and northern Alaska are often called “grizzlies.” Biologists estimate there are about 30,000 brown bears in Alaska. Bear numbers vary considerably and are very high in areas with abundant food (especially salmon), such as Kodiak Island, much of the Alaska Peninsula, and parts of Southeast Alaska; and much lower in parts of the Interior. In 2008, about 1,500 brown bears were harvested in Alaska. In 2007, about 1,900 brown bears were harvested in Alaska. About 700 were taken by Alaska residents and about 1,200 were taken by nonresident hunters.

Alaska is home to about 30,000 brown bears, also known as grizzlies.

Black Bear

There are about 100,000 black bears in the state of Alaska. Statewide, harvest has increased steadily over the past five years, from about 2,500 in 2003 to 3,250 in 2007. Harvest dropped slightly in 2008, to about 3,000.

Two areas are particularly noteworthy because of high abundance and high harvest of bears. On Prince of Wales (GMU 2) and adjacent islands, black bear harvest has been steadily increasing and is currently at a record level. On islands in the Petersburg, Kake, and Wrangell areas (GMU 3) estimates indicate a population of about 1,000 bears with a density of 1.51 bears/km² on northern Kuiu Island, which is among the highest in

the world. Harvest increased at a rate of seven percent annually from 1990 to 2000 before peaking at 309 bears in 2000–01. Since implementation of the 120-bear nonresident harvest guideline in 2000, the Kuiu harvest has stabilized and averaged 112 bears annually.

Bear Viewing

Viewing brown and black bears is popular and has become an additional management objective in some areas. In the summer of 2005, 1,235 visitors viewed bears at Pack Creek in the Stan Price State Wildlife Sanctuary on Admiralty Island. Other bear viewing areas in Southeast Alaska include Kalinin Bay on Kruzof Island, the Mendenhall Glacier near Juneau, Lake Eva on northeast Baranof Island, and Spasski Creek near Hoonah. The Alaska Peninsula is a premier area for brown bears, and bear viewing, hunting, and guided hunting activities are significant. Visitors to McNeil River State Game Sanctuary Refuge are limited to 257 per year, and more than 1,000 people apply annually. Bear viewing is also popular at Katmai National Park and at Lake Clark National Park, and other areas along the coast.



Wildlife watching in Alaska ranges from bear viewing at sites such as Pack Creek and McNeil River to casual birding at backyard feeders.

Intensive Management

The Alaska Legislature passed the Intensive Management Law in 1994. This law requires the Alaska Board of Game to identify moose, caribou, and deer populations that are especially important food sources for Alaskans, and to insure that these populations remain large enough to allow for adequate and sustained harvest.

Intensive management is a process that starts with investigating the causes of low moose or caribou numbers, and then involves steps to increase those numbers. This can include restricting hunting seasons and bag limits, evaluating and improving habitat, liberalizing harvest of predators, and predator control. Predator control occurs in specific areas totaling about 10 percent of the state. It is conducted only by authorized personnel and is managed differently than hunting.

Caribou

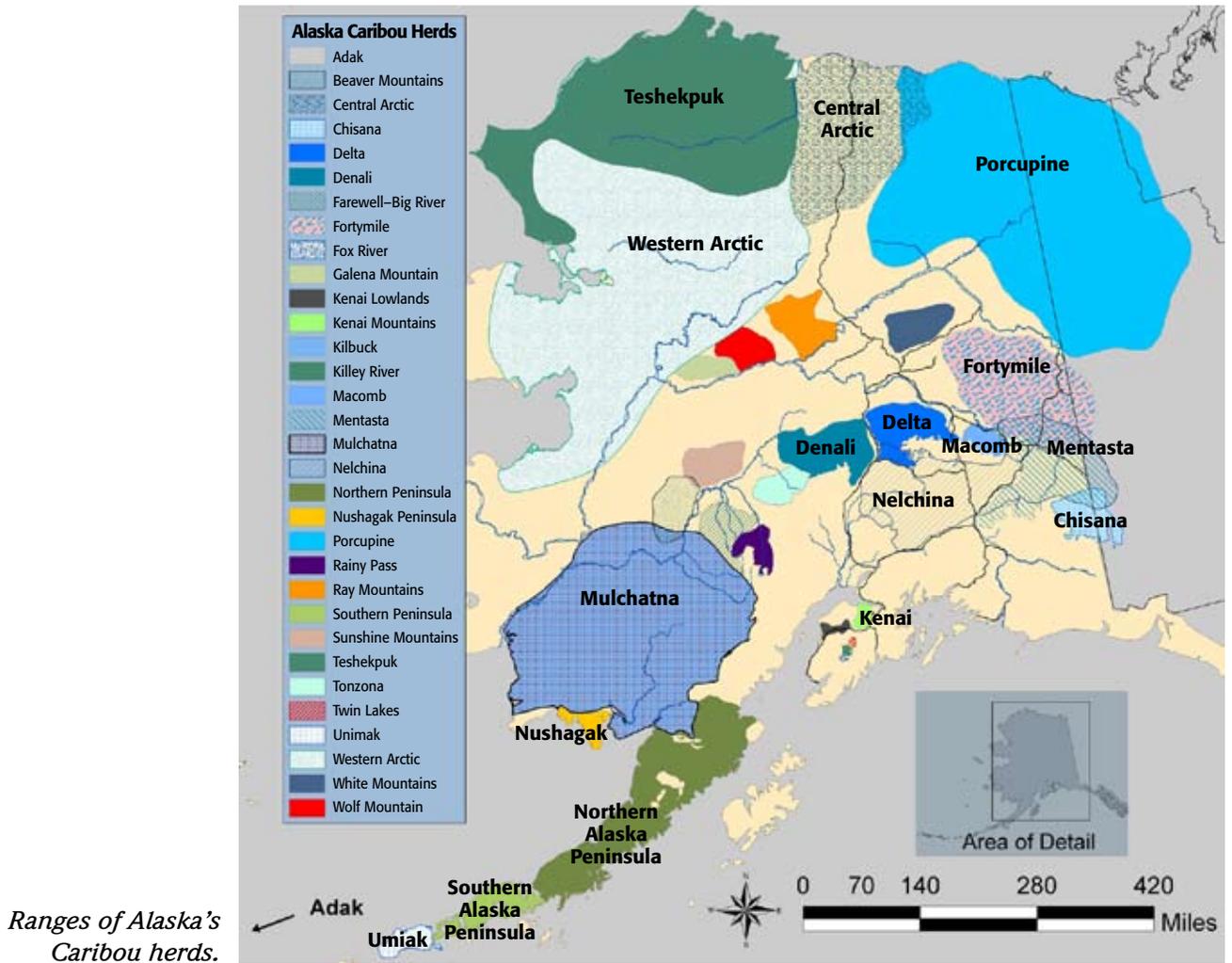
There are approximately 950,000 wild caribou in Alaska, including some herds that are shared with Canada's Yukon Territory, in 32 herds (or populations). A herd uses a distinct calving area that is separate from the calving areas of other herds, but different herds may mix together on winter ranges.

About 22,000 caribou are harvested in Alaska each year. Based on information gathered from community harvest assessments, local knowledge, and general patterns, biologists in some areas estimate the annual harvest statewide is probably even higher than 22,000.

Northern Alaska is home to most of the state's caribou. About half the caribou in Alaska belong to the Western



Caribou in many of Alaska's 32 herds are counted by air. In some cases the herd is photographed, and animals are counted from the aerial photos, and in some cases the animals are counted directly. Smaller herds are often directly counted by aerial surveys in autumn, late winter or mid-summer.



Arctic and Porcupine herds. Four caribou herds use Alaska's North Slope in summer: the Teshekpuk herd, the Western Arctic herd, the Central Arctic herd, and the Porcupine herd. In most years, the Teshekpuk herd spends winters on the coastal plain of the North Slope, while the three other herds migrate south each fall to the shelter of timber.

The Western Arctic caribou herd has been the largest caribou herd in Alaska since at least the mid-1980s. As of 2007, this herd numbered 377,000 caribou, less than its maximum size in 2003 at 490,000 caribou. It ranges from the North Slope to eastern Norton Sound, and the Chukchi Sea to the Koyukuk River.

The Porcupine herd numbers about 123,000. It ranges through eastern portions of the Arctic Slope, the Brooks Range, northeastern Interior Alaska, and Canada's Northwest Territories. The herd typically calves on the coastal plain of the Arctic National Wildlife Refuge. Management and research is coordinated between state and federal agencies in both countries, and with a variety of user groups.

The Teshekpuk herd numbered about 45,000 animals in 2002, and the most recent photocensus, concluded in 2008, indicates the herd has grown to 64,000. The herd had only 11,800 animals in 1984 but has grown rapidly since then. This herd sustains a harvest rate of up to 10 percent of its population, about 4,500 caribou a year end up in the freezers or drying racks of North Slope villages.

Dall Sheep

In 2008, 758 Dall sheep were harvested in Alaska, less than the five-year average of about 900. Sheep populations in parts of Southcentral seem to be on the decline, especially in the Kenai Mountains and parts of the Chugach Mountains. Elsewhere, most populations are fairly stable at present, although densities seem to be generally less now than 20 years ago (especially in the western Brooks Range, where sport hunting has been halted). Biologists are researching and monitoring sheep in the Chugach Mountains and the Brooks Range, and working to educate hunters to distinguish full-curl rams.



Dall sheep are sometimes confused with mountain goats. Dall sheep are not found in Southeast Alaska and prefer drier environs. But like mountain goats, they frequent steep slopes, ridges, and high meadows adjacent to rugged “escape terrain,” where their sure-footedness and agility enable them to elude pursuers.

Dall sheep are found in the Kenai Mountains, the Tok area, the Chugach Mountains, Mentasta, Nutzotin, northern Wrangell Mountains, and the Delta Controlled Use Area; also on the north side of the Alaska Range east of the Nenana River, west of the Delta River, and south of the Tanana River; in Tanana Hills, in the White Mountains area, and in the Central and Eastern Brooks Range.

Deer

Sitka black-tailed deer are native to Southeast Alaska, and have been introduced to the Yakutat area, Prince William Sound, and Kodiak Island. Deer are the most-pursued species of big game in Southeast Alaska. Over the past 20 years, hunters have harvested about 12,300 deer each year.

Deer populations are prone to dramatic population swings, largely attributable to severe winter weather. The 2006–07 and 2007–08 winters had exceptional high snowfall persisting on the ground late in the spring in Southeast Alaska, and evidence indicates population declines of varying severity, depending on the area.

As of 2009, testing on hunter-submitted tissue samples showed no evidence of chronic wasting disease in Alaska deer.

Prince of Wales and adjacent islands (GMU 2) are productive, but this is likely to change. During the next 5 to 10 years, large tracts of previously logged areas will reach the closed canopy stem exclusion stage; large tracts of land will convert to extremely poor deer habitat, and consequently, habitat capability and deer numbers are expected to decline. At this time, the population is stable. The population goal is 71,000 deer with an annual harvest goal of 2,700 deer.

Prince of Wales Island likely has the highest level of illegal or unreported harvests, estimated to be equal to the reported harvest due to an extensive and increasing road system, lack of law enforcement personnel, and high unemployment. In addition, ac-



About 12,000 Sitka black-tailed deer are harvested each year in Alaska. Deer are native to Southeast Alaska and have been introduced to Southcentral Alaska and to Kodiak Island.

tual hunter kill could be 38 percent greater than total estimated harvests from hunter reports because of crippling loss.

On **Admiralty, Baranof, and Chichagof Islands** (GMU 4) recent snowy winters resulted in some declines, particularly in the northern and eastern parts of Chichagof and Admiralty. The goal is to maintain a population of 125,000 deer while maintaining an annual harvest of 7,800 deer. The average annual harvest is about 8,500 deer. Northeast and northwest Chichagof Island, with its extensive road system, has frequent reports of spotlighting and poaching turned in to state and federal enforcement officers. In addition, crippling loss, unreported kills, and illegal kills are difficult to accurately determine, but are estimated at about 25 percent of the reported harvest.

As of 2009, testing on hunter-submitted tissue samples showed no evidence of chronic wasting disease in Alaska deer.

Kodiak and adjacent islands (GMU 8): Deer were introduced to Kodiak Island in three transplants, totaling 25 deer, between 1924 and 1934. The population in the area is stable to increasing. The management goal is to maintain a population of 70,000–75,000 deer and an annual harvest of 8,000–8,500. Wounding loss and illegal kills outside the hunting season have been common, resulting in an estimated additional kill of about 20 percent of the reported harvest.

Elk

Elk have been introduced to a few locations in Alaska. Eight Roosevelt elk calves captured on Washington State's Olympic Peninsula were introduced to Afognak Island (near Kodiak Island) in 1929, and some elk later moved to nearby Raspberry Island. In Southeast Alaska, 33 Roosevelt elk and 17 Rocky Mountain elk from Oregon were transplanted to Etolin Island near Wrangell in 1987. Some elk later swam across Stikine Strait and became established on neighboring Zarembo Island.



Southeast (Unit 3): Elk hunting began in Southeast Alaska in 1997. A precise population estimate is not possible due to the rugged terrain and dense vegetation, but the population is believed to be at least 250 and is considered to be growing. The harvest has averaged about ten elk per year.

Afognak Island and Raspberry Island (Unit 8): From the original eight transplanted animals, Afognak elk expanded to a peak population of 1,200 to 1,500 animals by 1965. A series of hard winters with heavy snow accumulation during the late 1960s and early 1970s resulted in extensive natural mortality and reduced calf production and survival. By the mid-1980s the population had recovered to about 1,200 animals. The Afognak and Raspberry islands elk population is estimated to be about 890 to 950 animals in nine separate herds. Harvest in the 2008–09 season was 88.

Captive elk at the Alaska Wildlife Conservation Center. Elk are not native to Alaska but have been introduced to several locations. Statewide, harvest of elk averages about 100 each year.

Furbearers

Marten are the most economically important furbearer in Alaska, followed by wolf, river otter, wolverine, beaver, lynx, fox, mink, coyote, and ermine. Fur prices fluctuate and may double or triple one year to the next, and prices vary within species by quality. For example, a lynx pelt fetched about \$60 in 2001, jumping to \$250 in 2004, and averaged about \$150 in 2006.

There is a wide range of trappers. The majority trap relatively few animals recreationally, and a small number of individuals trap a lot of animals as a source of income. Many of Alaska's trappers keep most of their fur, but overall, trappers sold more than two million dollars worth of fur in the 2005–2006 season, and more than half of that was for marten.

Wolves are managed as both a big game animal and a furbearer, and are hunted and trapped in Alaska. Alaska has 7,000 to 11,000 wolves. About 1,150 wolves are harvested each year on average. Fur values vary considerably year-to-year, a pelt fetched \$600 in 2004 and \$211 in 2006.

In recent years about 150 to 250 additional wolves have been taken each year as part of the state's intensive management program to increase numbers of moose and caribou. This occurs in specific areas. It is conducted only by authorized personnel and is managed differently than hunting.



Marten, cat-like weasels, are Alaska's most important furbearer. Their fur is called sable.

Moose

About 175,000 to 200,000 moose are widely distributed throughout Alaska. At least 7,000 moose are harvested annually in Alaska, amounting to about 3.5 million pounds of meat.

Population density, habitat, and harvest vary from area to area. Moose are found only in limited areas of Southeast Alaska, and are essentially absent from the major Southeast islands. Moose are relatively recent arrivals to some areas of Southeast Alaska. Moose densities are much greater in Interior and Southcentral Alaska and on the Kenai Peninsula.

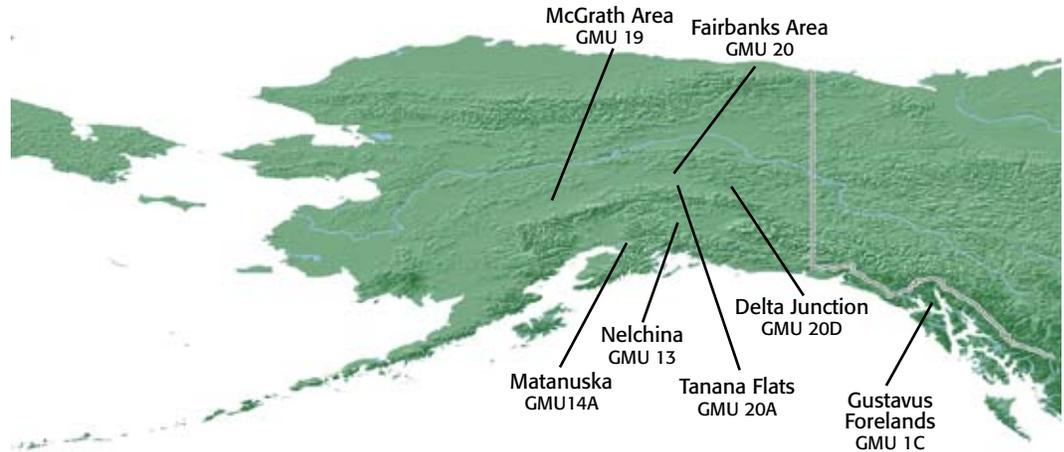
In some areas, habitat limits the potential size of moose populations, in others, predation by bears and/or wolves limits population growth. Moose mortality due to vehicles is significant in some areas; the number of moose killed by trains seems to be related to snowfall and varies widely from year to year. Land clearing activities associated with agriculture, development, and road construction have been responsible for the increase in moose browse that attract moose to highways.

Wildlife viewing is important in Alaska. In a questionnaire completed by users of the Koyuk Controlled Use Area, moose is the species people want to see the most. While the majority of respondents reported they were hunting only, an increasing number of people were both hunting and viewing, or only viewing. Moose viewing is particularly important along the road system.



In 2008, Alaskans took home 91 percent of the 7,455 total moose harvested. About 6,797 moose were harvested by Alaskans and 659 by nonresident hunters.

Gustavus Forelands (GMU 1C): This area was buried under glaciers and ocean just 300 years ago and has only recently emerged. Moose colonized the Gustavus area in the 1960s, probably by moving down the Chilkat Peninsula from the Haines area. This has provided an opportunity to study moose and their impact on habitat as the population has established and grown. Managers and researchers continue to gather data to guide the management strategy. Population estimate was 329 in 2006, and harvest averages about 42 per year.



Nelchina and Upper Susitna River (GMU 13): This has been one of the most important moose hunting areas in the state. The population and harvest has fluctuated widely in this area over the past 50 years, due to severe winters, predation, and human harvest. Harvest has ranged from about 500 per year to as high as 1,250 per year. Intensive management is taking place in most of the unit, and evidence indicates the decline in moose numbers over the past 20 years has stopped and the population is growing. The moose population has averaged about 4 percent annual increases since the intensive management program was initiated in 2001. The objective is to increase the moose population to 20,000 to 25,000 moose, and to increase the yearly moose harvest to 1,200 to 2,000 animals and provide for a subsistence harvest of 600 moose per year.

Wildlife viewing is important in Alaska. In a questionnaire completed by users of the Koyukuk Controlled Use Area, moose is the species people want to see the most.

In the 2008 season, the total harvest was 736, and the subsistence harvest about 120. About 70 animals are killed each year by cars and trains. Habitat enhancement projects have been conducted in this area in the past decade, including browse crushing and controlled burns.

Matanuska Valley (GMU 14A): The population estimate is about 6,600. The annual harvest has been about 400. Non-harvest mortality is high in this area, and about 185 moose per year are killed by vehicles and 16 moose per year killed by trains (10-year average). The Point MacKenzie winter population exceeds 10 moose per mi², one of the highest densities in the state.

Kuskokwim River drainages upstream from Lower Kalskag (19A, 19B, 19C, and 19D): Intensive management is taking place in 19A and in a 500 square mile area around McGrath in 19D, an area of particular scrutiny. This area has seen predator numbers reduced (wolves and bears) and an increase in moose numbers. The moose population in 19D East has approximately doubled since predator management began in 2003.

In Unit 19A, the moose population also likely increased. Most of the increase was in the eastern portion of the unit where control efforts were most effective.

Fairbanks area (GMU 20): This area accounts for about 30 percent of the entire Alaska moose harvest. Unit 20 is divided into six subunits, and three are highlighted here.

Tanana Flats, Central Alaska Range (GMU 20A): The population objective for the area immediately south of Fairbanks (20A) is 10,000 to 12,000 animals, and the current population estimate is about 13,000.

In the 1970s, moose numbers were a fraction of what they are today. The population in 20A dropped from about 23,000 in 1970 to just 2,800 in 1975. A series of severe winters, increased predation, and an ill-timed liberal harvest contributed to the steep decline. The population in 20A grew over the next 30 years to about 16,000 to 18,000 moose by 2003, exceeding the population objective, and was about 13,000 in 2008. The recovery of this population highlights the combination of factors that work together to benefit moose.

The harvest in 20A for the 2008 season (preliminary estimate) was about 815, with an additional estimated 215 human-caused mortalities due to Native Alaska harvest for cultural purposes (potlatch, stickdance), defense of life and property, illegal take, and estimated wounding loss. About a dozen moose are killed each year by trains.

Nelchina and Upper Susitna River has been one of the most important moose hunting areas in the state. The population and harvest has fluctuated widely in this area over the past 50 years, due to severe winters, predation, and human harvest.

Drainages into the north bank of the Tanana River between Banner Creek and Manley Hot Springs (GMU 20B): The population was estimated to be 18,000 moose in 2008. The recent five-year average harvest was about 984 per year. Biologists estimate that additional human-caused mortality is about 160 animals per year.

The number of moose killed by vehicles and trains has been substantial in past years in this area. About 125 to 150 moose per year are killed on highways in the Fairbanks area and about 20 moose per year are killed by trains.

This is an intensive management area, with a population objective of 12,000 to 15,000 moose. These goals have been met or exceeded in recent years. The population has increased from an estimated 9,800 in 1990 to about 18,000 in 2008. In 2008, the harvest was about 850 moose in 20B.

Central Tanana Valley near Delta Junction (GMU 20D): Intensive management is taking place in this area. 20D is divided into four distinct areas for management purposes, and the north and south portions of the unit are very different in terms of habitat, predators, moose density, and hunter access. The management goals are to increase the fall moose population to 8,000 to 10,000 with a sustainable harvest of 500 to 700 moose per year. The population estimate for the south portion of the area is about 6,000 and about 2,400 in the north portion of the area. The total harvest in 2008 was 684.

The southwestern portion of Unit 20D has been affected by land clearing and wildland fire, and this, combined with relatively low predation rates, contributes to the current high-density moose population.

Mountain goats are found on the Southeast mainland, and north and west along the Coast Mountains to Cook Inlet. In Southcentral they're found in the Chugach and Wrangell mountains, and a few in the Talkeetna Mountains. They've been introduced to Kodiak, Baranof, and Revillagigedo islands.

Mountain Goat

Mountain goats are native to Southeast Alaska, and their range extends north and west along the Coast Mountains to Cook Inlet. In Southcentral, goats are found in the Chugach and Wrangell Mountains, and a few occur in the Talkeetna Mountains. Goats have been successfully introduced to Kodiak Island, and in Southeast to Revillagigedo and Baranof islands.

In 2008, 440 mountain goats were harvested in Alaska, 152 by nonresidents and 288 by resident hunters.

The population in the Ketchikan area is estimated to be 7,300–10,200. The population, about 1.27 goats per square mile, is believed to be high and stable, except on the Cleveland Peninsula, which remains closed to hunting. The introduction of 15 goats in 1991 to the Upper Mahoney Lake area near Ketchikan was a success, and in fall 2005 the population was estimated to be at least 140.



Muskox

With their long shaggy coats, stout bodies, and dense wool undercoat, muskoxen are well adapted to life in the Arctic. Hunters harvested 237 muskoxen in Alaska in 2008, and only 7 were taken by nonresidents. As of 2009, there are about 4,000 muskoxen in Alaska.

Muskox were found across northern Europe, Asia, Greenland, and North America by the close of the last ice age, but predation by wolves, bears, and humans led to their decline. By about 1880 muskox had disappeared from Alaska. In 1930, 34 East Greenland muskoxen were brought to Fairbanks,

and eventually relocated to Nunivak Island, where they thrived. Muskoxen from the Nunivak herd were then used to establish new herds on the Seward Peninsula, Cape Thompson, Nelson Island, in the Arctic National Wildlife Refuge, and Russia's Wrangel Island and Taimyr Peninsula. In recent years herds in the Arctic Refuge and adjoining areas have declined, but other wild populations are stable or growing.

Muskoxen are also valued for wildlife viewing, for the artwork made from their horns, and for their soft underwool called qiviut, considered the world's warmest wool for its weight. A cooperative of Native Alaska knitters produces exquisite garments from qiviut shed from a domestic herd in Palmer, and a herd at the Large Animals Research Station in Fairbanks.

The name muskox is misleading as they don't produce musk nor are they in the same family as oxen. There are about 4,000 muskoxen in Alaska.