



*Alaska's  
Threatened and  
Endangered Species*



*1996*



This publication was produced with funding from the Alaska Department of Fish and Game, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Bureau of Land Management, and U.S.D.A. Forest Service.

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Special thanks to those individuals who helped contribute or review information for this publication, including John Schoen, Phil Koehl, Sheri Hull, Carol Hepler, Mary Hicks, Chris Iverson, and John Lindell.

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# Why Save Endangered Species?

Since life began on this planet, countless creatures have come and gone—rendered extinct by naturally changing physical and biological conditions.

If extinction is part of the natural order, and if many other species remain, some people ask: “Why save endangered species? What makes these animals and plants so special that money and effort should be spent to conserve them?”



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*The California gray whale was removed from the U.S. endangered species list in 1994.*

Congress answered these questions in the preamble to the Endangered Species Act of 1973, stating that endangered species of fish, wildlife, and plants “are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people.” In this statement, Congress was summarizing arguments made by scientists, conservationists, and others who are greatly concerned with the disappearance of unique creatures.

Unfortunately, we cannot attribute the accelerating decline of the earth’s wild animals and plants to “natural” processes. Biologists know that today’s dangers to wildlife most often result from habitat degradation, environmental pollution, the introduction of nonnative organisms and exploitation—all generally as a direct result of human activities.

Although conservation efforts have begun in recent years, mankind is still exterminating entire species at an ever-increasing rate. Since the Pilgrims landed at Plymouth Rock in 1620, more than 500 species, subspecies, and varieties of our nation’s plants and animals have become extinct—lost forever. The situation is even worse in other parts of the world. By contrast, during the 3,000 years of the Pleistocene Ice Age, all of North America lost only about three species every 100 years.

*The number of Steller sea lions in Alaska has plummeted by about 70% in the last two decades.*



© Harold E. Wilson

## Natural Diversity

No creature exists in a vacuum. Each living thing is part of a complex, delicately balanced ecosystem. The removal of a single species within an ecosystem can set off a chain reaction affecting many other species. It has been estimated, for example, that a disappearing plant can take with it up to 30 other species, including insects, higher animals, and even other plants.

## Benefits to Mankind

Scientists have investigated only a small fraction of the world's species to determine, among other things, possible benefits to mankind. No matter how small or obscure a species, it could one day be of direct aid to all of us. For instance, it was "only" a fungus that gave us penicillin. Today, at least a quarter of all prescriptions written in the United States contain chemicals discovered in plants and animals.

Many seemingly insignificant forms of life are also beginning to show important benefits in agriculture. Some farmers are beginning to use insects and other animals that compete with or prey on crop pests as well as using plants containing natural toxins to repel harmful insects. These species are often a safe, effective, and inexpensive alternative to synthetic chemicals. Many plant species not commonly used for food could also help feed growing populations. It has been estimated that there are almost 80,000 species of edible plants, of which fewer than 20 produce 90 percent of the world's food.

Industry is also increasingly making use of wild plants. For instance, the jojoba plant produces an oil with unique properties suitable for a variety of industrial processes. In the past, the only comparable oil was derived from the sperm whale, but overhunting brought this great marine mammal to the brink of extinction.

## Environmental Monitors

Many species are important as indicators of environmental quality. The rapid decline in bald eagles, peregrine falcons, and ospreys was a dramatic warning of the dangers of DDT—a strong, once widely used pesticide that accumulates in body tissues. Certain plants, such as the eastern white pine, are good indicators of excess ozone, sulfur dioxide, and other air pollutants. Species like these alert us to the effects of contaminants before they cause significant damage.

## Intrinsic Value

Aside from the more utilitarian reasons for preserving endangered species, some people believe that every creature, after adapting for thousands or even millions of years to fit a constantly changing environment, has an intrinsic value. According to this philosophy, exterminating other forms of life is not only shortsighted, but wrong—especially since the species could never be replaced.



Robert Angell Alaska Division of Tourism

*Researchers conduct an Aleutian Canada goose survey on Little Kiska in the Aleutian Islands.*

## OVERVIEW

# ***U.S. Endangered Species Act***



### ***What is an "endangered" or "threatened" species?***

An endangered species is any species in danger of extinction throughout all or a significant portion of its range. A species' range is the geographic area it inhabits. A threatened species is one likely to become endangered in the foreseeable future. Species which are being considered for possible designation as threatened or endangered species are called "candidate" species.



### ***How does a species become listed as threatened or endangered?***

Generally, the federal government proposes "listing" those species facing the greatest threats. However, members of the public may also petition the government to add a species to the threatened or endangered species lists. If enough information exists to support the listing, a scientific review process is initiated. During this review, the government considers many factors, including the present or threatened destruction, modification, or curtailment of the species' habitat or range; overuse of the species for commercial, recreational, scientific, or educational purposes; the effect of disease or predation on the species; and the adequacy of existing protective regulations. Decisions regarding the listing of threatened and endangered species are made with input from the public.



### ***Once a species is declared threatened or endangered, how does the government help it to recover?***

Most activities involving threatened and endangered species are prohibited. These include hunting, trapping, possessing, harassing, harming, and selling listed species. The government also restricts activities that affect a species' critical habitat. Exceptions may be authorized by permit on a limited basis for recovery or other special purposes. The Act also provides for the taking of listed species if incidental to otherwise lawful activities. In addition, biologists and other experts may be appointed to "recovery teams." Members of the public, conservation organizations, and state and federal government officials work together to promote the recovery of listed species.



### ***Which federal agencies are responsible for protecting endangered species?***

The U.S. Fish and Wildlife Service (FWS) is responsible for administering the Act as it pertains to federally endangered and threatened species, except for most marine mammals, marine fish, and sea turtles. The National Marine Fisheries Service (NMFS) administers the Act with regard to these species. In addition, all federal agencies must consult with the FWS or NMFS when any activity they permit, fund, or conduct may affect a listed species or designated critical habitat.

## OVERVIEW

# *Alaska Endangered Species Act*



### *Under state law, when is a species considered endangered?*

A species or subspecies of fish or wildlife is endangered when its numbers have decreased to the point that its continued existence is threatened. This determination is made by the commissioner of the Alaska Department of Fish and Game (ADF&G).



### *What restrictions apply to the treatment of state endangered species?*

An endangered species may not be harvested, captured, or propagated, except under a special permit from the ADF&G. In addition, the law requires the commissioners of the departments of Fish and Game and Natural Resources to protect the natural habitat of endangered species on lands under their jurisdiction.



### *How does a species get placed on Alaska's endangered species list?*

Every two years, ADF&G reviews Alaska's endangered species list for accuracy and completeness, requesting advice and recommendations from experts and interested members of the public.



### *What are the major differences between the state and federal laws?*

Alaska's statute lists only species that are endangered. It does not have a separate designation for threatened species. The Alaska act also applies only to fish and wildlife species. It does not include plants.



### *What is a "species of special concern"?*

In 1993, the commissioner of ADF&G created a new category for species potentially at risk: species of special concern. Although there are no legal requirements for how species on this list are to be treated, this new designation draws attention to the status and needs of vulnerable species before they become critical and require more extreme and costly management actions. As of October 1, 1994, there were 15 species on this list (see table on page 24).

# Humpback Whale

*(Megaptera novaeangliae)*

## Status

Federal endangered species

State endangered species

## Description

Humpback whales are baleen whales with stocky bodies and flat, broad heads. Full-grown males average 42 feet in length and weigh about 25 tons. Females are larger, averaging 45 feet in length and weighing about 35 tons. Grooves run along the underside of humpbacks from their chins to their navels. Their upper bodies are black or blue-black. Their flippers, grooved undersides, flanks, and underside of the flukes are white or black, depending on geographical race and individual variation. Their flippers are long and wing-like with bumps on the front edges on which barnacles grow. They have paired blowholes on the midline of their heads. Their tail flukes are large, notched, and have an irregularly shaped edge.



© ADF&G John Hyde

## Habitat and Habits

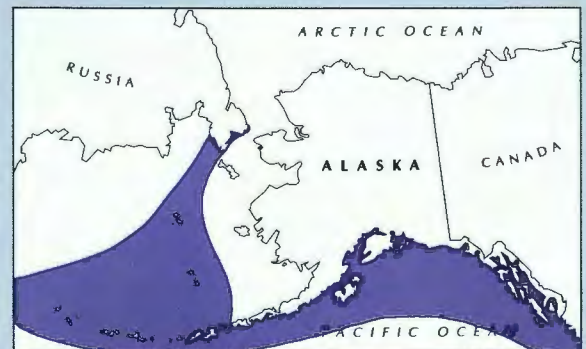
Humpback whales can be found in a wide range of ocean habitats from the waters surrounding tropical islands to shallow waters off continental coasts. In the summer, they inhabit waters from southern California throughout the Gulf of Alaska to the southern Chukchi Sea. In Alaska, humpbacks feed mostly on krill (tiny, shrimp-like animals suspended in the water) and small fish, such as herring or capelin. Some humpbacks feed in the same areas year after year. They are seasonal feeders, building up body fat reserves in the summer then migrating to warmer subtropical areas during the winter breeding season.

## Causes of the Decline

There were an estimated 15,000 humpback whales in the North Pacific prior to mechanized commercial whaling. Today scientists estimate there are 1,000 to 1,200. Humpbacks were taken throughout their range, depleting all populations. No other factors are known to have contributed to their decline.

## Research and Recovery

Research focuses on estimating population size and following individual whales over many years to gather reproductive and behavioral information. Scientists do not know whether the population is increasing or decreasing.





# Bowhead Whale

(*Balaena mysticetus*)

## Status

Federal endangered species  
State species of special concern

## Description

Bowhead whales are the only baleen whales that spend their entire lives in and around Arctic waters. They are robust-bodied, dark-colored animals with no dorsal fin and a strongly bowed lower jaw and narrow upper jaw. The baleen plates of bowhead whales, which are used to sieve prey from the water, are the longest of any baleen whale, exceeding 9.5 feet. Bowheads may reach lengths of up to 62 feet; females are larger than males.

## Habitat and Habits

The bowhead whales found off Alaska spend the winter months in the southwestern Bering Sea. They migrate northward in the spring, following openings in the pack ice, into the Chukchi and Beaufort seas. Their primary prey are krill and zooplankton. Bowheads are slow swimmers and usually travel alone or in small groups of up to six animals. They can stay below the water surface for as long as 40 minutes in a single dive. Scientists believe females produce a calf once every 3 to 6 years. Breeding has been observed from March through August.

## Causes of the Decline

In the North Pacific, commercial whaling of bowheads began in the mid-1800s. Within two decades more than 60 percent of the bowhead whale population had been killed. The stock off Alaska has increased since commercial whaling ceased. In 1990 it was estimated at about 7,800 animals, roughly 41 percent of the prewhaling population. Alaska Natives continue to take small numbers of bowhead whales in subsistence hunts each year. This level of harvest (25-40 animals annually) is not expected to affect the stock's recovery.

## Research and Recovery

Bowhead whales, along with the other large whale species, were declared an endangered species in 1973. Commercial whaling, the principal cause of the decline, has been discontinued. The bowhead whale population off Alaska's coast appears to be recovering but remains a fraction of its former size.



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# Blue Whale

*(Balaenoptera musculus)*

## Status

Federal endangered species

State endangered species

## Description

The blue whale is the largest living animal. In the northern hemisphere, they reach 75 to 80 feet in length and weigh up to 200,000 pounds. The largest blue whale taken was a 110-foot female from the southern hemisphere. They are mottled bluish-gray on their backs and sides. Growth of tiny plants called diatoms on their bellies gives them a yellowish color that has caused them to be called sulfur-bottom whales. Their heads are wide and flat, and their dorsal fin is very small (one foot high) and may not be visible except when they begin to dive.

## Habitat and Habits

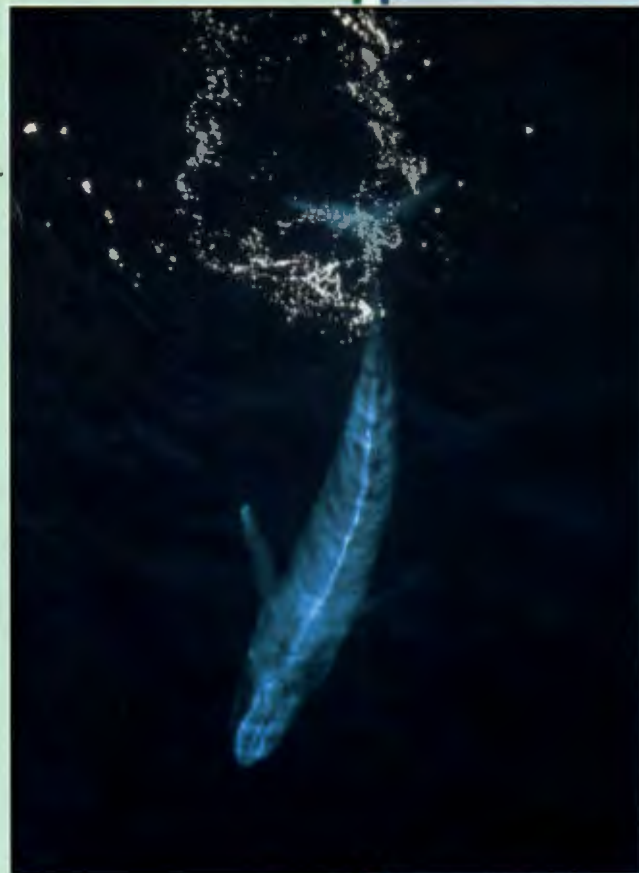
Blue whales migrate long distances between equatorial wintering grounds and high latitude feeding areas. In the eastern North Pacific, they winter off southern and Baja California. During the summer they may be found across the Gulf of Alaska, but they seldom enter the eastern Bering Sea. Historical areas of concentration include the eastern Gulf of Alaska, the eastern Aleutians, and the far western Aleutians. Blue whales spend most of their time along the edges of continental shelves and are seldom seen in coastal Alaska waters. Blue whales feed on krill, consuming several tons per day.

## Causes of the Decline

An estimated 4,900 to 6,000 blue whales inhabited the northern Pacific Ocean prior to whaling. Between 1910 and 1966, approximately 8,200 were killed in the North Pacific. As a result, the population was severely reduced. The North Pacific population is now estimated at 1,200 to 1,700 animals; the worldwide population is estimated at 8,000 to 12,000.

## Research and Recovery

Scientists do not know whether the number of blue whales is increasing or decreasing, but whale sightings have increased since the end of whaling. No human activities in the North Pacific, other than whaling, are known to have affected the species.



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# Sei Whale

(*Balaenoptera borealis*)

## Status

Federal endangered species

## Description

Sei whales have sleek, dark bodies with pointed jaws and pale undersides. Male adults average 46 feet in length; females average 49 feet. They have 32 to 60 short throat grooves that function as expandable pouches when the animal is feeding. Their flippers are relatively small, slender, and pointed. Their flukes are large with a central notch but are seldom seen even when the animal is diving.

## Habitat and Habits

Sei whales are the fastest swimming baleen whales. They have been recorded swimming at speeds up to 20 knots. They are an open-ocean species, rarely seen in coastal waters but distributed over the whole Gulf of Alaska. Sei whales usually travel in groups of two to five, though they concentrate in larger numbers in their feeding grounds. Sei whales undertake annual migrations from lower-latitude wintering grounds to higher-latitude feeding grounds. Sei whales are primarily skimmer feeders, feeding on zooplankton, krill, and small schooling fish near the surface. Little is known about sei whale reproduction, but females are known to mature between the ages of 8 and 11 and calve at two-year intervals.

## Causes of the Decline

Commercial whaling primarily from the 1950s to the 1970s resulted in steep declines in the number of sei whales. The present North Pacific population is estimated to be about 9,000 animals.

## Research and Recovery

Scientists do not know whether the population is increasing or decreasing. No human activities other than commercial whaling are known to have affected the species, and no direct recovery actions are being taken.



© Doug Allan, OSF/Animals Animals



# Fin Whale

*(Balaenoptera physalus)*

## Status

Federal endangered species

## Description

Among the earth's animals, only the blue whale exceeds the fin whale in size. Fin whales in the northern hemisphere can grow to 80 feet long. Fin whales are dark gray on their backs, grading into white on their undersides. The underside of the flukes and fins are white. The lower right side of the jaw is usually white, while the left side is dark. The dorsal fin is two feet high and is more prominent than that of the blue whale.

## Habitat and Habits

Eastern North Pacific fin whales breed and calve in the subtropical and temperate waters off California and Baja, Mexico. They migrate into Alaska waters in the spring and feed

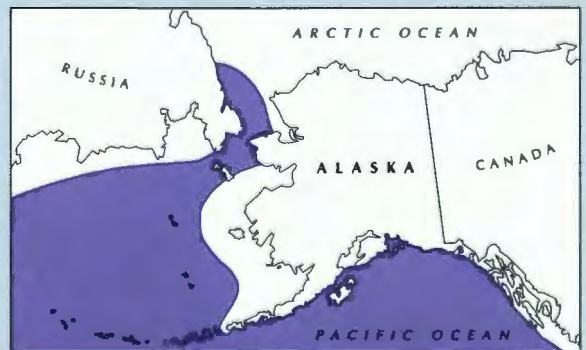
from the Gulf of Alaska to the Chukchi Sea. Fall migration begins in August with most animals moving south by September. Historically, fin whales in Alaska were most abundant south of Prince William Sound, around Kodiak Island, north of the Aleutians, and southwest of St. Matthew Island. Several recent sightings have occurred in the vicinity of the Pribilof Islands. Fin whales feed on a wide variety of species, including squid, krill and other zooplankton, and schooling fishes such as capelin, sand lance, herring, and lanternfish.

## Causes of the Decline

An estimated 25,000 to 27,000 fin whales inhabited the eastern North Pacific prior to whaling. Substantial numbers were taken by whalers, and the population was severely reduced. Since this animal was protected from whaling in 1976, estimates of the stock size in the eastern North Pacific have ranged from 8,500 to 16,000 animals. The worldwide population is estimated at 105,000 to 122,000 animals.

## Research and Recovery

The principal threat to the fin whale was commercial whaling. Protection by the International Whaling Commission reduced this threat, and no other human activity in the Northern Pacific is known to have affected this species.



# Northern Right Whale

(*Eubalaena glacialis*)

## Status

Federal endangered species

State endangered species

## Description

Northern right whales grow up to 56 feet in length and are mostly black with some white patches on their bellies. They have large heads with strongly arched jaws and wide bodies. Their spouts are V-shaped and they have no back fin. Light-colored, wart-like skin patches on their heads are called callosities.

## Habitat and Habits

Right whales are currently found in the northern and southern hemispheres, including both the Atlantic and Pacific oceans. Alaska right whales feed in the northern waters of the Pacific Ocean during the summer and probably migrate to lower latitudes to calve during the winter. They eat small animals called zooplankton. Right whales swim with their large mouths open through patches of zooplankton. When the mouth is closed the water strains out through the sides. The zooplankton is caught on fringed baleen plates and swallowed. Baleen is located in the same place as our teeth but is made of the same substance as fingernails. The especially long baleen of right whales provides more surface area for trapping tiny zooplankton than the shorter baleen of other kinds of whales that consume fish and larger zooplankton.

## Causes of the Decline

Right whales were hunted to near-extinction because of their valuable thick blubber and long baleen, slow swimming speed, and presence in coastal areas. They were considered the "right" whale to hunt, hence the common name. From 1835 to the early 1850s, Yankee whalers took large numbers in the "Kodiak Grounds," an area from the eastern Aleutians through the Gulf of Alaska. Whether the current population of 100 to 500 animals is increasing or decreasing is unknown.

## Research and Recovery

Right whales are so rarely sighted that little can be done on their behalf. Any reports of right whales verified with photographs, videotape, or other reliable means should be reported promptly to the National Marine Fisheries Service.



© Flip Nicklin—Minden Pictures



# Sperm Whale

*(Physeter macrocephalus)*

## Status

Federal endangered species

## Description

Sperm whales are the largest of the toothed whales. Males average 50 feet in length and weigh about 40 tons. Females average 36 feet in length and weigh about 22 tons. Even newborn calves are large, weighing about a ton and averaging about 13 feet in length. Sperm whales are easily distinguished from other whales by their large, blunt-shaped heads, which are about one-fourth to one-third of their total body length. Individual sperm whales have only one blow hole, which is located on the left side of the head. Their bodies are dark, and their skin appears wrinkled. They have no dorsal fin, although a hump, or a series of humps, is usually present on the dorsal surface.

## Habitat and Habits

Sperm whales inhabit all oceans of the world but are typically found offshore in deep water. Off Alaska, sperm whales may be found in waters of the Gulf of Alaska, Aleutian Islands, and Bering Sea south of Cape Navarin. In summer, they migrate to higher latitudes, with males typically moving farther north than females. Sperm whales are the deepest and longest divers of all whales. Large adult males can remain underwater for over an hour and have been observed diving to depths of nearly 10,000 feet. Deep water squids are the sperm whale's major food source, although they also eat large deep-sea sharks, skates, and fishes.

## Causes of the Decline

Commercial whaling by several nations beginning in the mid-1800s caused this species to decline. Sperm whales were sought primarily for sperm oil, a high-quality oil found in the animal's head, as well as the lower grade oil produced from their blubber. The remainder of the animal was usually processed into animal feed, fertilizer, and, to a lesser extent, human food and other consumer products. About a million sperm whales were harvested by commercial whalers prior to the cessation of commercial whaling in 1987.

## Research and Recovery

Sperm whales were declared an endangered species in 1973. Today scientists estimate there are about two million sperm whales, roughly 69 percent of the estimated preharvest population. Their numbers have increased since the end of whaling, and no other threats to the population are known to exist.



© Pip Neeklin-Minden Pictures

# Steller Sea Lion

(*Eumetopias jubatus*)

## Status

Federal threatened species  
State species of special concern

## Description

Steller sea lions are the largest of the "eared" seals. They are light brown with darker undersides and flippers. Pups are much darker at birth. Males average 1,700 pounds and have enlarged necks and noticeable manes. Females are much smaller, averaging about 570 pounds. Sea lions are at home both on land and at sea.

## Habitat and Habits

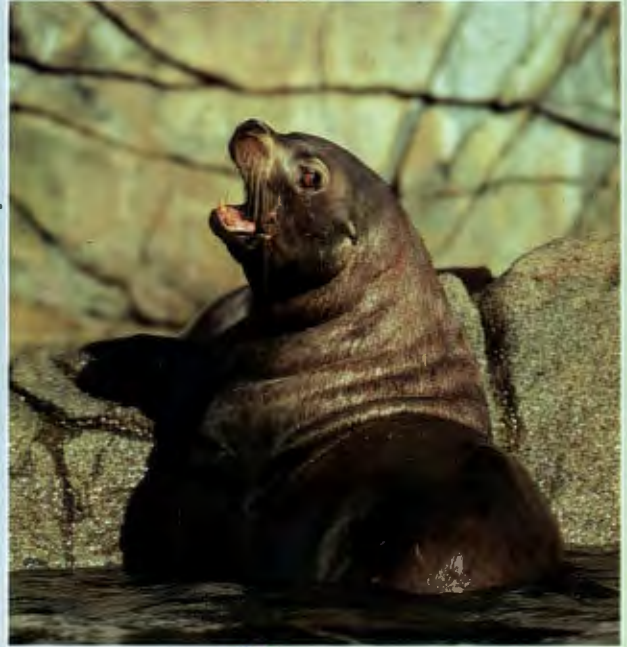
The most well-known Steller sea lion habitats are rookeries, where adult animals gather to breed and give birth from late May to early July, and haulouts, where sea lions rest and take refuge throughout the year. Both are usually located on relatively remote islands where access by predators is limited. Steller sea lions prey primarily upon schooling fishes, such as pollock and herring, as well as invertebrates, such as squid and octopus. They can be found throughout the North Pacific Ocean from the Kuril Islands and Okhotsk Sea, through the Aleutian Islands and Bering Sea, and south along the North American coast to central California. About 70 percent of the worldwide Steller sea lion population resides in Alaska.

## Causes of the Decline

Counts of Steller sea lions between the mid-1970s and the present indicate about a 70 percent decline in the Alaska population. The causes of the decline are unknown, but may include disease, environmental change, and the effects of commercial fisheries, including direct mortality and reduction in the availability of sea lion food. The 1989 estimate for the Alaska portion of the Steller sea lion population is about 64,000 animals. The decline is continuing.

## Research and Recovery

Since 1990, steps have been taken to reduce sea lion mortality and restrict disturbance of sea lions. These steps have included prohibitions on shooting at or near sea lions by any other than Alaska Native subsistence hunters, restrictions on vessel distance from rookeries, limits on the unintentional harvest of sea lions by commercial fishers, and fishery closures around some rookery sites. Research on the causes of the decline is ongoing.



Alaska Division of Tourism



## **Leatherback Sea Turtle** (*Dermochelys coriacea*)

© Jaladaglan/Greenpeace



**Status**—Federal endangered species

**Description**—The largest sea turtle, this species reaches lengths of 6 feet and weights of 6,000 pounds. Leatherbacks do not have a hard shell; instead they are enclosed by a leathery black skin with seven lengthwise ridges.

**Habitat**—Leatherback sea turtles are found in ocean waters worldwide. Although nesting occurs in the tropics, they roam into temperate latitudes to feed. The extent of this ranging is greater than any other living reptile. Alaska appears to be on the edge of their range as only 10 have been reported during the past 30 years.

## **Green Sea Turtle** (*Chelonia mydos*)

© Frans Luiting-Minden Pictures



**Status**—Federal threatened species

**Description**—This sea turtle reaches lengths of 5 feet. The hard shell on its back, called a carapace, ranges from light to dark brown and has darker mottled markings.

**Habitat**—Green sea turtles are found in ocean waters worldwide and nest in the tropics. Green sea turtles cannot tolerate cold water temperatures, and only two sightings have been documented in Alaska.

## **Loggerhead Sea Turtle** (*Caretta caretta*)

© 1990 Fred Bavendam/Peter Arnold, Inc.



**Status**—Federal threatened species

**Description**—Loggerheads reach up to 3.5 feet in length and have an oval carapace (shell) that is reddish brown.

**Habitat**—Loggerhead sea turtles are found in subtropical and temperate waters worldwide. Loggerhead sea turtles cannot tolerate cold temperatures and only two sightings have been documented in Alaska waters.

### **Causes of the Decline**

All three species of sea turtles have been reduced in number due to commercial hunting, loss of nesting beaches, and entanglement in fishing gear. In the case of green sea turtles, increased disease in recent years is also a factor.

### **Research and Recovery**

In the subtropics, efforts are underway to protect nesting beaches and reduce hunting and entanglement. Because of the rarity of sea turtle sightings in Alaska, any observations should be reported to the National Marine Fisheries Service.





# *Snake River Fall Chinook Salmon*

*(Oncorhynchus tshawytscha)*

## **Status**

Federal endangered species  
State species of special concern

## **Description**

Chinook salmon are the largest species of Pacific salmon, commonly exceeding 30 pounds in weight. They have small black spots on both lobes of their tail fins and black pigment along the base of their teeth. In the ocean, chinook salmon are bluish-green on the back, fading to a silvery color on the sides and white on the belly. When spawning in fresh water, chinook range from red to copper to almost black.



© Marion Stirrup

## **Habitat and Habits**

Snake River fall chinook salmon spawn in the Snake River in Idaho and in the lower reaches of several of its tributaries. Spawning occurs from October through November; fry emerge from March through April. Downstream migration generally begins within several weeks of hatching. Most of the fish spend three years at sea before returning to their birth streams. During this time, a few range into Alaska waters.

## **Causes of the Decline**

During the 1940s, about 70,000 fall chinook spawned in the Snake River. Then in the 1960s and 1970s, a series of dams were constructed in the river, blocking access to and from spawning habitat. Since the mid '70s, about 500 fall chinook have returned to the Snake River. Harvests by fishers, operation of hatcheries, and habitat degradation also may be contributing to the decline.

## **Research and Recovery**

Fisheries that incidentally harvest Snake River chinook have been closed or curtailed, including some fisheries in Southeast Alaska. One challenge the recovery team faces is that there is no way externally to tell if an individual chinook salmon caught at sea is from the Snake River.



# Arctic Peregrine Falcon

(*Falco peregrinus tundrius*)

## Status

Formerly Federal threatened species; delisted in October 1994  
State species of special concern

## Description

Arctic peregrine falcons are medium-sized falcons, about 14-18 inches long, with long, narrow wings that commonly span 43 inches. Adults have blue-gray backs with white chests and heavily-barred bellies. Younger birds (less than 1 year old) have brown backs, heavily streaked underparts, and buff-colored chests. Both adults and immatures have dark heads with a distinct mustache mark below the eye.

## Habitats and Habits

Arctic peregrine falcons nest in the treeless tundra areas of Alaska, Canada, and Greenland and migrate south through Canada and the United States. They spend the winter in warmer climates from the southern United States to southern Argentina and Chile. In Alaska, arctic peregrine falcons nest mostly along rivers in northern and western Alaska. An extremely powerful flier, the arctic peregrine falcon mostly eats birds that are caught in midair chases of breathtaking speed. Nests are on cliffs or bluffs usually near rivers or lakes that provide habitat for the shorebirds, songbirds, and waterfowl upon which the falcons prey.

## Cause of the Decline

The use of DDT and other toxic pesticides was the primary cause of the decline of peregrine falcons. Restrictions on the use of these pesticides since 1972 have allowed arctic peregrine falcons to recover. About 250 pairs nest in Alaska and thousands nest throughout arctic North America.

## Research and Recovery

Research on arctic peregrine falcons has focused on monitoring changes in pesticide levels, breeding success, and population size. Cooperative efforts between land management agencies and resource exploration and development interests have allowed arctic peregrine falcons to reproduce without disturbance at their remote nesting areas.



Ted Swern U.S. FWS

# American Peregrine Falcon

(*Falco peregrinus anatum*)

## Status

Federal endangered species  
State species of special concern

## Description

American peregrine falcons are medium-sized falcons, about 14-18 inches long, with long, narrow wings that span up to 46 inches. Adults have blue-gray backs and white chests with dark barring. Young falcons (less than one year old) have brown backs and white chests with brown streaks. American peregrine falcons look similar to arctic peregrine falcons but tend to be slightly darker than the northern subspecies.

## Habitat and Habits

American peregrine falcons range from Mexico to Alaska. In Alaska, they nest throughout the forested interior, mainly on cliffs along rivers or near lakes. American peregrine falcons that nest in Alaska winter from the southern United States south to Argentina. Peregrine falcons feed primarily on other birds, often catching their prey in spectacular midair dives of up to 200 mph. Since peregrine falcons are predators that feed on other birds, they occupy a position at the top of the food chain. As such, peregrine falcons are often the first to show signs of environmental problems.

## Causes of the Decline

The use of pesticides such as DDT was the primary cause of the decline of peregrine falcons. Restrictions on the use of these pesticides in 1972 have allowed American peregrine falcons to recover in most of their range. About 300 pairs nest in Alaska.

## Research and Recovery

Research on American peregrine falcons has focused on monitoring population size, breeding success, and pesticide levels. Additional research includes banding studies to determine migration routes, wintering areas, dispersal and mortality. Satellite telemetry has just recently been used to study migration and wintering ecology. Information on wintering areas is especially important because some foreign countries continue to use chemicals harmful to peregrine falcons and other birds that nest in Alaska and winter in other countries. Recovery has been enhanced through careful protection of nest sites.



© S.J. Krasemann/Peter Arnold, Inc.

# Aleutian Canada Goose

(*Branta canadensis leucopareia*)

© Lon E. Lauber/Alaska Stock Images



## Status

Federal threatened species  
State species of special concern

## Description

The Aleutian Canada goose is one of five subspecies of white-cheeked Canada geese that inhabit Alaska. It is distinguished by its smaller size, abrupt forehead with short bill, and usually by a pronounced ring of white feathers around the base of the neck.

## Habitat and Habits

The Aleutian Canada goose nests on treeless islands in areas densely vegetated by grasses, sedges, and ferns. Populations may have wintered from British Columbia to northern Mexico, and in Japan. The geese use pastures and grain fields along the coasts of Oregon and northern California and in California's Central Valley. It is presumed that the geese migrate between the Aleutian Islands and their wintering grounds by flying non-stop over the North Pacific Ocean, a distance of nearly 2,000 miles.

## Causes of the Decline

The Aleutian Canada goose began to decline early in this century after arctic foxes were brought to most of their nesting islands by fur farmers. They were listed as endangered in 1967, with a population of fewer than 800.

## Research and Recovery

Aleutian Canada geese were reestablished through transplants on several of their former nesting islands following the eradication of introduced foxes. Sport hunting for the geese is prohibited, and areas traditionally used by this subspecies have been closed to the hunting of all Canada geese to prevent loss through misidentification. In 1990, the goose was reclassified from "endangered" to "threatened," and today the population numbers approximately 15,000 birds.



# *Eskimo Curlew*

*(Numenius borealis)*

## **Status**

Federal endangered species

State endangered species

## **Description**

Eskimo curlews are medium-sized shorebirds that closely resemble their slightly larger relative, the whimbrel. Eskimo curlews are about 12 inches long and have a slightly downcurved bill. Their underwing linings are cinnamon in color and spotted or barred; their primary and secondary feathers are solid in color.

## **Habitats and Habits**

In the mid-1800s, huge flocks of Eskimo curlews migrated from South America to their nesting areas in the Alaskan and Canadian arctic. They fed in open natural grasslands and tundra, burned prairies, meadows, and pastures. During the fall, they traveled down the east coast of North America and then in the spring returned through the central United States and prairie provinces of Canada. Eskimo curlews wintered in the grasslands of southern South America from southern Brazil and Uruguay to middle-eastern Argentina.

## **Causes of the Decline**

The evidence is overwhelming that unrestricted market hunting drastically and rapidly reduced the Eskimo curlew's numbers. This decline occurred mainly between 1870 and 1890, following the virtual disappearance of the passenger pigeon (also hunted for the market). Habitat loss, primarily to cultivation and grazing, also may have contributed to the curlew's decline, and has prevented its recovery. No population counts were ever made for this species, and a current population estimate is not possible. This species may be extinct.

## **Research and Recovery**

The last documented sighting of an Eskimo curlew was in Texas in 1962. Research efforts in recent years have focused on documenting the continued existence of the species. Surveys in historical breeding areas, migration routes, and wintering areas have failed to observe a single curlew. This bird has not been documented in Alaska since 1886.



Don Bleitz, 1961, Texas

# Spectacled Eider

*(Somateria fischeri)*

## Status

Federal threatened species  
State species of special concern

## Description

Spectacled eiders are large-bodied sea ducks. The adult male spectacled eider has a black chest and white back, a green head with a long, sloping forehead, and distinctive white eye patches. Young birds and females are brown with pale brown eye patches.

## Habitat and Habits

Spectacled eiders nest in wet tundra near ponds on the Arctic coasts of Alaska and Russia and on the Yukon-Kuskokwim Delta coast in Alaska. Nesting pairs arrive together each spring, but the males leave after egg incubation begins. In late summer, the females and young go to sea where they feed on small clams and other marine animals. In March 1995, dense flocks totaling nearly 140,000 birds were discovered in nearly continuous ice between St. Lawrence and St. Matthew Islands in the Bering Sea.

## Causes of the Decline

Spectacled eiders have declined dramatically in Alaska since the 1960s. Causes for this decline are not known but may include some combination of reduced food supplies, pollution, overharvest, lead shot poisoning, increased predation, or other causes.

## Research and Recovery

Major research projects are underway to find out where spectacled eiders spend the winter and why they are declining. By tracking these large ducks with state-of-the-art satellite transmitters, biologists are discovering eider molting and feeding areas in the Bering Sea. Other studies are investigating problems from lead shot poisoning and environmental contamination. Educational materials and meetings in coastal villages encourage subsistence waterfowl hunters to protect spectacled eiders.



© Gary Shultz/Alaska Stock Images

# Steller's Eider

(*Polysticta stelleri*)

## Status

Proposed as threatened, (federal)  
State species of special concern

## Description

Steller's eiders are the smallest of the four eider species, averaging 17-18 inches long. The male has a white head with a greenish tuft, and small black eye patches, a black back, white shoulders, and a chestnut breast and belly; females are mottled dark brown. Adults of both sexes have a blue wing speculum with a white border.

## Habitat and Habits

Steller's eiders are diving ducks that feed on mussels in marine waters during the winter and insect larvae in freshwater ponds during the breeding season of spring and summer. In Alaska, as few as 1,000 may nest on the arctic coastal plain. The majority of the birds breed in northern coastal areas of Russia, where they nest in the tundra near small ponds. During the winter, most of the world's population of Steller's eiders inhabit protected marine waters of the Alaska Peninsula and eastern Aleutian Islands. The world population estimate is 150,000 to 200,000 birds; but some scientists believe the population may have declined by as much as 50 percent between the 1960s and 1980s. More study is needed.

## Causes of the Decline

Unknown.

## Research and Recovery

Steller's eiders were formerly common in Alaska. Research has focused on surveys to document remaining nesting areas and to estimate population size. Additional research has focused on reproduction, mortality, migration, and behavioral studies. Little is known about this species. Studies are underway to determine causes of the decline.



Animals Animals © Leonard Lee Rue III



# Short-tailed Albatross

*(Diomedea albatrus)*

## Status

Federal endangered species  
State endangered species



© Hiroshi Hasegawa

## Description

The short-tailed albatross is a very large seabird with narrow, seven-foot-long wings adapted for soaring low over the ocean. Young birds are chocolate brown, gradually turning white as they grow older. Adult short-tailed albatrosses have an entirely white back, white or pale yellow head and back of neck, and black and white wings. They have a large pink bill with a blue tip.

## Habitat and Habits

Short-tailed albatrosses mate for life, returning to the same nest sites in the breeding colony for many years. Single eggs are laid in October or November and are incubated for 65 days. After five months in the nest, chicks go to feeding grounds across the North Pacific. They begin breeding at ages 6 to 9. Adults also spend the summer nonbreeding season at sea, feeding on squid, fish, or other organisms. Most summer sightings of the “coastal albatross,” as short-tails were known historically, are in the Aleutian Islands, Bering Sea, and Gulf of Alaska.

## Causes of the Decline

During the late 1800s and early 1900s, feather hunters killed an estimated five million short-tailed albatrosses, stopping only when these large birds were nearly extinct. Then nesting habitat on the last nesting island in Japan was damaged by volcanic eruptions in the 1930s. Yet, due to protection on their nesting grounds, short-tailed albatross numbers have increased from fewer than 50 birds in the late 1940s to over 600 birds in 1993.

## Research and Recovery

Japanese biologists study short-tailed albatross at their two nesting colonies in Japan. Japanese conservationists have planted grass to improve the nesting habitat and may try to start nesting colonies on other islands to avoid losing the entire population to another volcanic eruption. Reducing plastics pollution from trash thrown into the ocean is another important measure for protecting marine birds. In Alaska, the U.S. Fish and Wildlife Service has a program to teach commercial fishers how to identify short-tailed albatrosses, so they can avoid accidentally catching these rare birds in their fishing equipment.





# Aleutian Shield-Fern

(*Polystichum aleuticum*)

## Status

Federal endangered species

## Description

The Aleutian shield-fern is a tufted fragile fern. It has purplish-brown to brown stems that arise from an underground stem, called a rhizome. The leaves or fronds are dark green and somewhat brittle. Individual fronds can be a few to 100 centimeters long. Each leaflet of the frond is toothed and has a bristle at the tip. Straw-colored flaps of tissue called scales occur along the stem and on the underside of the leaflets. Like all ferns, the Aleutian shield-fern reproduces by spores, not seeds. The spores occur in tiny "packets" on the back of each leaflet and are covered by a little flap of tissue called an indusium.



© Brian Anderson, U.S. FWS

## Habitat and Habits

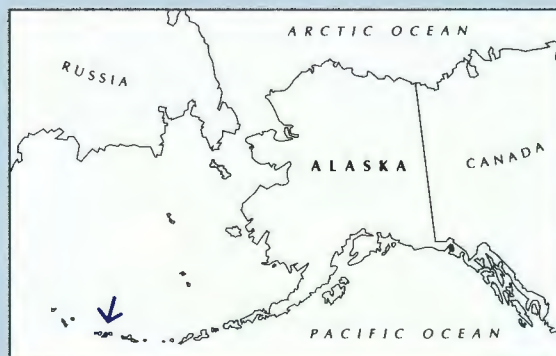
This species is now known to exist only on Adak Island in the Aleutian Island chain. The population of approximately 130 "clumps" is located on the steep cliff faces of the Mount Reed ridge system. The shield-fern grows only in sheltered spots and tight crevices and may also grow in thick mats of moss and other plants. Winds atop Mount Reed can be quite strong, and biologists believe that these places provide protection to the fern.

## Causes of the Decline

The Aleutian shield-fern may never have been very abundant. Some scientists consider this species a "living fossil," leftover from the Pleistocene. Others speculate the shield-fern could be a recent arrival to the Aleutians. Still others believe construction activity that occurred on Adak during World War II may have caused a decline in the species, although this is not likely due to the fern's remote location.

## Research and Recovery

Currently, the Adak population appears to be stable and possibly even increasing. To guard against threats to the population, however, scientists are cultivating shield-ferns in greenhouses to ensure that reserve populations exist. Scientists are also developing plans to limit the impacts of caribou on island vegetation and are continuing their search for the shield-fern on Adak and other islands.



# Other Species of Concern

Mammals	Status	Note
Beluga whale (Cook Inlet population)	SSC	Isolated, sm. pop.; subj. to human pressures.
Harbor seal	SSC	Major pop. decline near Kodiak Is./PWS.
Montague tundra vole	S	Restr. to 1 island. Pot. hab. loss to logging.
Northern fur seal	D	Major pop. decline since 1950s.

Birds	Status	Note
Blackpoll warbler	SSC	Significant population decline in N. Am.
Dusky Canada goose	S	Habitat loss through natural changes.
Gray-cheeked thrush	SSC	Significant population decline in N. Am.
Northern goshawk (Queen Charlotte)	SSC, S	Potential habitat loss from logging.
Olive-sided flycatcher	SSC	Habitat loss on winter grounds.
Osprey	S	Alaska is at edge of range.
Peale's peregrine falcon	S	Rare, limited coastal nesting habitat.
Townsend's warbler	SSC	Significant population decline in N. Am.
Trumpeter swan	S	Population stable or increasing.

Plants	Status	Note
Aphragmus escholtzianus	S	Found in fewer than 20 locations.
Calder lovage	S	Found in two Alaska sites; also in B.C.
Choris bog orchid	S	Rare; found in bogs in Alaska and Asia.
Circumpolar starwort	S	Rare; south coastal Alaska.
Davy mannagrass	S	Known from only 2 sites in AK.
Edible thistle	S	In Alaska, found only near Hyder.
Goose-grass sedge	S	Few collections known.
Kamchatka alkali grass	S	Rare; possibly more common.
Kamchatka rockcress	S	Found in 5 locations worldwide.
Loose-flowered bluegrass	S	Rare; found in coastal forest.
Norberg's arnica	S	Found only in Southern Alaska.
Northern rockcress	S	Found in fewer than 10 sites worldwide.
Pale poppy	S	S. coastal Alaska; possibly more common.
Pretty shooting star	S	Found in about 10 locations.
Queen Charlotte butterweed	S	Rare in Alaska and B.C.
Slender bog orchid	S	Rare; found in bogs in Alaska, B.C.
Smooth alkali grass	S	Rare; S.E. Alaska.
Straight-beak buttercup	S	Rare in S.E. Alaska and B.C.
Truncate quillwort	S	Rare; but possibly hybrid.
Tundra whitlow-grass	S	Known from only 2 sites worldwide.
Unalaska mist-maid	S	Rare in south coastal Alaska.
Wright filmy fern	S	Rare in Alaska; more common in Asia.

Amphibians/Fish	Status	Note
Fish Creek chum salmon	S	Genetically distinct population.
King Salmon River/Wheeler Cr. king salmon	S	Small island runs of king salmon.
Northern pike	S	Relict population from glacial refugium.

## Key

S = Sensitive Species (U.S.FS designation)

D = Depleted Species (NMFS designation)

SSC = Species of Special Concern (ADF&G designation)

The Fish and Wildlife Service does not maintain an official list of species of concern, other than its candidate species list. The Service is cooperating with The Nature Conservancy, other State and Federal agencies, and professional organizations to identify and evaluate species that may be imperiled or vulnerable and warrant special attention.

## HIGHLIGHTS

# Other Species of Concern

As of November 1994, only 19 species were listed by either the state or federal government as threatened or endangered in Alaska. However, the status of many others is uncertain. Among them are the following three species.

### Northern (Queen Charlotte) Goshawk

© Craig J. Flatten



The Queen Charlotte goshawk is a blue-gray, raven-sized bird of prey with a long tail, rounded wings, and a distinctive white eyebrow. It is darker and slightly smaller than the more common northern goshawk found across North America. An uncommon bird, the Queen Charlotte goshawk lives in the coastal rainforests of Southeast Alaska and British Columbia. Goshawks nest in mature forests with an open understory, allowing flight beneath the enclosing canopy.

They feed primarily on Steller's jays, grouse, and thrushes. Goshawks may never have been abundant in Southeast Alaska. Because they are associated with forested landscapes, they are vulnerable to habitat loss due to logging.

### Marbled Murrelet

Jeff Hughes, ADF&G

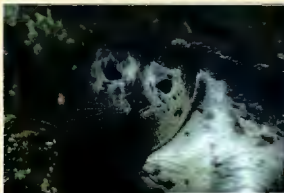


Marbled murrelets are small seabirds, 7 to 8 inches long. Both sexes are mottled brown during the summer breeding season. In the winter, the belly, breast, and neck feathers of adults and young-of-the-year are mostly white. In Alaska, marbled murrelets can be found along the Pacific coast from the U.S.-Canada border through portions of the Aleutian Islands. Their southern range extends to central California. They feed and rest in coastal areas during the summer, moving further offshore during the winter. Their food is primarily small fish and invertebrates. Marbled murrelets typically nest in large trees within mature forest habitat, up to 43 miles from the ocean. The current

population size and status of marbled murrelets is not known in Alaska. However, severe population declines have been documented in California, Oregon, Washington, and British Columbia, where they are listed as a threatened species. The primary cause of their decline is removal of nesting habitat by logging. Losses are also caused by oil pollution and entanglement in fishing nets used by commercial fishers.

### Harbor Seal

Kathy Frost, ADF&G



Adult harbor seals average about 6 feet in length, have torpedo-shaped bodies, and short forelimbs. They range in color from mostly gray to mostly black with contrasting light or dark spots, rings or blotches. Harbor seals inhabit coastal waters from Baja California, and Hokkaido, Japan, north to Alaska. Occasionally they travel up rivers and live in freshwater lakes.

Since the 1970s, harbor seal numbers in the Kodiak Island area have declined by about 90 percent. In Prince William Sound, seal numbers have declined by about 60 percent since the 1980s. The causes of these declines are largely unknown, although the *Exxon Valdez* oil spill contributed to losses at oiled haulouts in the sound.

# *Alaska Species Now Extinct*

**N**ot all species are as fortunate as the arctic peregrine falcon and Aleutian Canada goose, whose numbers have increased as a result of protection provided by the Endangered Species Act. At least two species were hunted out of existence before Alaska became part of the United States and endangered species acts were passed. For these species, there is no second chance.

One such species is the spectacled cormorant, a large, nearly flightless seabird that lived on a few remote islands at the western end of the Aleutian chain. This species was first identified in 1741 by the naturalist Georg Steller, who traveled with the explorer Vitus Bering. Steller discovered the large, black birds while shipwrecked on a tiny island in the western Aleutians, where Bering and many of his crew died. The stranded sailors killed the slow-moving and unwary cormorants for food.

The population of spectacled cormorants declined quickly as whalers, fur traders and Aleut Natives (brought to Bering Island by the Russian-American Company) killed the birds for food and feathers. By 1850, fewer than 100 years after Steller first saw these seabirds, the spectacled cormorant was extinct.



Spectacled Cormorant

Another species Steller discovered is also extinct: the Steller's sea cow. Far larger than the largest male walrus, Steller's sea cows measured up to 25 feet long and 22 feet around. A single animal weighed up to 8,800 pounds. They had two stout forelimbs and a whale-like tail.

Some scientists think the entire population of sea cows was fewer than 2,000 when Steller first described the giant creatures. This small population was wiped out quickly by the sailors, seal hunters, and fur traders that followed Vitus Bering's route past the islands to Alaska. In 1768, just 27 years after Steller had first seen the sea cow, the species was extinct.

The fate of the spectacled cormorant and the Steller's sea cow illustrates the importance of the Endangered Species Act. Without the steadfast commitment to species protection embodied in the act and aggressive protection programs, entire species can disappear when the needs of people come

face to face with the needs of individual species.



Steller's Sea Cow

© Peabody Award Fisheries, 1992

# Alaska's Nonendangered Species

Excluding marine species, Alaska has the shortest list of endangered and threatened species of all the states. Many species that are rare, endangered, or have been extirpated elsewhere in the United States are thriving in Alaska. For example, the grizzly (or brown) bear was once common throughout the western United States. Today threatened populations persist only in remote areas of Idaho, Montana, Wyoming, and Washington. In contrast, Alaska has a healthy population of approximately 31,000 grizzly bears.

The **gray** (or **timber**) **wolf** was once among the most widespread mammals in North America. As civilization pushed westward and the wilderness was tamed, habitat loss and conflicts with livestock interests led to the extermination of wolves in most states. Today the wolf survives as an endangered species in only a handful of states; however, an estimated 7,500 wolves populate Alaska—from the most remote wilderness regions to the suburbs of our largest cities.



© ADF&G, John Hyde

© ADF&G, John Hyde



Although the **bald eagle** is well on its way to recovery, this uniquely American bird is still classified as threatened in 48 states. Today, of the estimated 50,000 bald eagles found in the United States, approximately 80 percent soar in Alaska skies.

While Alaska was a Russian possession, **sea otters** were aggressively exploited for their superior fur—possibly the finest in the world. The Russian czar sold Alaska to the United States when sea otter populations crashed and the fur industry was no longer profitable. Today, sea otters are still threatened in California, Oregon and Washington, but this “Old Man of the Sea” has made a dramatic recovery in Alaska and now numbers nearly 150,000.

**Caribou** once inhabited most of the states along the Canadian border. About two dozen animals, a single small band that ranges into the Idaho panhandle and northeastern Washington from Canada, are all that remain in the contiguous United States. Nearly one million of these northern nomads, in twenty-five recognized herds, migrate across Alaska and easily outnumber the state’s human population.

When it comes to preserving its plants and animals, Alaska’s advantage over the rest of the country—indeed, over most of the world—has been the state’s remoteness and isolation. Alaska was still a scarcely populated Russian territory when many wildlife species elsewhere were hunted to extinction or lost due to industrial and agricultural development and a lack of knowledge about habitat requirements, ecological relationships, and scientifically-based wildlife management. Thanks to advances in science and more enlightened attitudes toward the natural world, modern-day Alaskans have avoided many mistakes of the past.



Alaska Department of Fish and Game

# *The Benefits of Acting Early to Prevent Declines*

**T**he U.S. Endangered Species Act of 1973 stands as one of the world's landmark conservation laws. One well-known example is the recovery of the bald eagle. In general, however, endangered species management has been a high-cost, last-resort approach to conservation. Few of the species listed as threatened or endangered have

recovered to the point of removal from the list. Clearly, the time for cost-effective conservation measures is while wildlife and their habitats are still common, *not after* they have become significantly reduced or isolated.

Habitat loss and habitat fragmentation (the breaking up of habitat into small, unconnected pieces) are two of the most significant causes of species extinctions throughout the world today. As local populations within a species decline in number and become separated from one another, species become more vulnerable to extinction, and recovery becomes increasingly difficult and costly. Another important cause of extinction, particularly on islands, is the introduction of exotic species, which often prey on or out-compete native species.

Prevention is the best strategy for endangered species management. Early detection of species at risk provides managers with more options and greater flexibility in designing and conducting successful recovery programs. Quick action and flexibility also reduce the need for costly crisis management and its potential for adversely affecting human activities and disrupting local or regional economies.

Unlike most of the world, Alaska's ecosystems still remain largely intact with little loss or fragmentation of habitat. An early warning system, emphasis on habitat protection, and an ecosystem perspective on natural resource management will strengthen our ability to maintain healthy populations of Alaska's native species and minimize the need for costly reactive management. Close evaluation and monitoring of federal candidate and sensitive species and identification of state species of special concern offer wildlife managers a good opportunity for heading off future problems before they reach crisis proportions.

Alaska's biological diversity—the abundance and variety of plants, animals, habitats, and the ecological relationships that connect them—are essential to Alaska's economic well-being and peoples' quality of life. Effective conservation in Alaska will require long-term planning and cooperation among wildlife managers, land management agencies, and resource users. The old adage “an ounce of prevention is worth a pound of cure” is clearly an appropriate model for conserving Alaska's rich biological diversity.



*Biologists attach a radio collar to a brown bear on Admiralty Island to monitor its habitat use and reproduction.*

© Glory Beiler

# *How You Can Help Protect Endangered Species*



## **Learn more about threatened and endangered species.**

Contact your local U.S. Fish and Wildlife Service or state Department of Fish and Game office for a list and description of the threatened and endangered species that inhabit your area.



## **Volunteer with your local wildlife agency.**

Does bird banding interest you? Helping to search for a rare plant? Counting seabirds from a boat? All these activities and more use the services of volunteers. Contact your local state and federal wildlife offices for opportunities to volunteer.



## **Raise money for threatened and endangered species.**

There are many groups whose efforts go toward saving threatened and endangered species. What are the agencies and environmental groups in your area doing, and would fundraising help them meet their goals?



## **Reduce, reuse, recycle!**

By the year 2000, the world population will be at nearly 6 billion. The demand on the planet to provide our raw materials and services will only continue to increase. Wise use of our natural resources will take some of the burden off habitats that may be suffering from destruction caused by industrial development or population growth.



## **Obey signs in parks and refuges.**

When you see signs that an area is closed or access is restricted, realize the signs are there for a reason! The area may need to recover from heavy use or a threatened or endangered species in the area may need special protection.



## **Report harassment of protected species.**

Harassing wildlife is cruel and illegal. Shooting, trapping, or forcing a threatened or endangered animal into captivity is also illegal and can contribute to its extinction. Don't participate in these activities. Report violations to your local state or federal wildlife enforcement office.

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*For more information on Alaska's threatened and endangered species, contact one of the following agencies:*

**U.S. Fish and Wildlife Service**  
Division of Endangered Species  
1011 E. Tudor Road  
Anchorage, AK 99503-6199

**National Marine Fisheries Service**  
Protected Resource  
Management Division  
P.O. Box 21668  
Juneau, Alaska 99802-1668

**Alaska Department  
of Fish and Game**  
Division of Wildlife  
Conservation  
P.O. Box 25526  
Juneau, AK 99802-5526

*"To keep every cog and wheel is the first precaution of intelligent tinkering."*

*— Aldo Leopold*



*The last documented sighting of an Eskimo Curlew in Alaska was in 1886.*

*"When man interferes with the Tao  
the sky becomes filthy,  
the equilibrium crumbles,  
creatures become extinct."*

*— Lao Tzu,  
Tao Te Ching  
About 500 BC*