Strategic Wolf Management Plan

Animals of the Arctic
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**Cover:** The wolf has been the subject of intense interest in North America. In late October, the Alaska Board of Game passed The Strategic Wolf Management Plan for Alaska. See our pull-out supplement. Photo: Michael Francis/The Wildlife Collection.

**Back Cover:** Male king eider. The king eider is one of four species of eiders which nest in Alaska’s arctic. Photo: John W. Warden

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North Slope Grizzlies

by Harry V. Reynolds III

It is early April in the mountains of the Brooks Range but the land is still locked in the hold of winter. During December and January the sun did not break above the horizon and temperatures plummeted to -50 degrees F. Now the sun shines for 18 hours and the air has warmed to -20 degrees F. In this cold desert-like environment, as little as 10 inches of precipitation may fall yearly, and most is dropped as snow; prevailing winds may pack this snow to such hardness that a man can walk on it without leaving tracks. Beneath the snow, low arctic vegetation covers the lower slopes of ridges and mountains protected from the winter wind while scattered patches of willows occur along the river valleys. There are no trees north of the range’s crest and many parts of the mountains are rocky and barren of all vegetation.

Beneath a 12 foot snowdrift, high on a steep mountain slope, a male grizzly bear (Ursus arctos) begins to move within his winter hibernation chamber. He has completed digging a tunnel through the snow but for another 10 days will continue to use the den chamber during periods when the temperature drops.

After emerging from his den, he travels northward along the frozen rivers. Unless he can find a moose which died during winter or the remains of a caribou killed by wolves, there will be little to eat that is not covered by last winter’s snow. Like other bears emerging from dens, he must depend largely on last summer’s fat reserves until the snow melts. This may be the most difficult time of the year for the grizzly to find nourishment. Although the majority of his food is made up of grasses, sedges, roots, and berries, he occasionally kills on his own but, more often, appropriates kills made by other animals.

The northern lands in which it lives provide only marginal habitat for this grizzly. Long winters and short cool summers limit the growth of plants which are the mainstay of the bear’s diet. When the snow begins to melt in May, the bear will dig for roots of vetch and Eskimo potato along the river valleys and...
There are relatively few bears in this vast wilderness of wetlands, rivers, and mountains which spans 640 miles from east to west and lies at only 21 degrees latitude south of the pole.

Harry V. Reynolds III

south-facing hillsides. Later in the month, the snow will begin receding from the mountain slopes and foothills but will not disappear from the northern coastal plain until mid-June. Like other grizzlies in the North Slope population, he has been shaped by the harsh environment and has adapted to it.

There are relatively few bears in this vast wilderness of wetlands, rivers, and mountains which spans 640 miles from east to west and lies at only 21 degrees latitude south of the pole. On the North Slope, the density of the population is dependent on the quality of the habitat, which is shaped by the area's climate, topography, and vegetation. In the eastern and western Brooks Range, the availability of caribou from the Porcupine and Western Arctic caribou herds, respectively, also affect bear density. In places of good bear habitat, densities may reach 63 bears for every 1,000 square miles, but in poor habitat of the wet coastal plain south of Barrow, only an estimated three bears are present for every 1,000 square miles. If all available habitat is considered, some of which is rarely or never used, densities are one bear per 100 square miles.

Grizzlies of the North Slope are smaller than their southern relatives. In early summer, adult males weigh an average of 400 pounds, while an unusually large bear can reach 600 pounds. Females are much smaller, weighing about 220 pounds. By comparison, adult male grizzlies in Wyoming weigh from 500 to 1,100 pounds and records indicate that exceptionally large bears on the Alaska Peninsula have reached 1,300 pounds.

By early May, snow is beginning to melt on exposed ridges and the sun shines 24 hours a day. Females with one to three cubs begin to emerge from their winter dens. The cubs, born in the den in January, weigh no more than one pound at birth. Now they weigh close to 15 pounds a piece. Their weight gain during the next three years will be slow. By the time they are weaned, perhaps as late as their fourth summer, they may approach three-quarters of their mother's weight.

By mid-June, arctic rivers are rushing through ice-choked channels and the first flowers are in bloom. The bears may move into Brooks Range valleys to graze on succulent shoots. Horsetails are an important food plant during this time of year, as is Richardson's saxifrage. In the foothills and coastal plain of the eastern and western Brooks Range, cows from the two largest caribou herds in the state migrate from their calving grounds each year during mid-June and early July. Grizzlies in those areas supplement their vegetative diets by scavenging or killing caribou cows and newly-born calves which move through their home ranges. The availability of caribou from the Western Arctic herd in the western Brooks Range and the Porcupine herd in the Arctic National Wildlife Refuge (ANWR) is responsible for the higher productive capacity that bears in these areas exhibit in comparison to other grizzlies of the North Slope.

June also marks the height of the grizzly breeding season which lasts from late May to early July. Adult males travel extensively during this period in search of receptive females. Whether females will accept the attentions of a male depends on several factors. Those females which have weaned their offspring during spring come into estrus, or breeding condition, shortly afterwards. In addition, males often attempt to stalk and kill the young accompanied by females; newly-born cubs are especially vulnerable. If a female is unable to protect her offspring and the cubs are killed by a male prior to the breeding season, she will come into estrus within three weeks. Although the advantage of this behavior to the population is unclear, it may provide the individual male greater opportunity to breed and a better chance that his genes persist in the population.

(Continued on page 10)
Local Harvest
On the North Slope

by Geoff Carroll

It's mid-October and my companions and I are chopping holes in the river ice so we can put sinking gillnets under the ice and catch some fish for the winter. We hear a sno-go approaching and look up to see my wife Marie and her uncle Whitlam Adams, known on the North Slope as Anugi, returning from a caribou hunt. There are legs and antlers sticking up from the freight sled Whitlam is pulling, so we walk over to see what they got. We roll a young bull, a cow, and a calf off the sled. They all look to be in good condition and promise to be fine eating.

We have lunch in a small cabin with Whitlam and his wife Mary on the bank of the Meade River. Most North Slope families have access to at least one hunting camp from which they base much of their inland hunting and fishing. These camps are usually a tent frame or cabin next to a lake or stream and are scattered across the entire coastal plain. People travel to the camps by boat, sno-go, and, occasionally, airplane.

We traveled about 40 miles to get to this camp. Hunters travel widely across North Slope lands. Most of the region is roadless and local hunters are very skilled at navigating without maps or compasses over what appears, to the uninitiated, to be featureless tundra. Experienced hunters often drive snogos to hunting areas that are between 10 and 150 miles from town. To be able to navigate to these places hunters must know the country very well, have a well developed sense for subtle changes in terrain, and use environmental cues, such as wind direction and orientation of snow drifts, to determine direction.

After lunch we go out to skin and clean the caribou. As we are cleaning the caribou, Whitlam keeps a sharp eye out for any other caribou coming into view. He has shot three, but he could still take two more before he reaches his daily limit of five.

Caribou regulations are liberal in this area (Game Management Subunit 26A), partly because there is an abundant resource and partly in recognition of local hunting practices. At last count there were at least 360,000 caribou in 26A and 4,585 residents. A common local hunting practice is that a skilled hunter often does the hunting for many people.

During the fall and spring, Whitlam is a whaling captain and, as with many North Slope providers, hunting, fishing, and trapping are year-round activities. While most people hold down steady jobs, hunting at least part-time throughout the year is an enjoyable necessity because most people prefer wild meat, and store-bought food is very expensive.

Yearly Harvest Cycle

During spring (April through June), when leads of open water develop in the sea ice, the primary emphasis in most coastal communities along the Chukchi Sea coast—Point Hope, Wainwright, and Barrow—is on hunting bowhead whales and other marine mammals, such as bearded seals, ring seals, beluga whales, and polar bears. King and common eider ducks are harvested during spring migration. Because spring leads are too offshore for whale hunting along the Beaufort Sea coast, the communities located there—Nuiqsut and Kaktovik—and Interior communities—Atqasuk and Anaktuvuk Pass—hunt and trap terrestrial animals during this time. During May and June, when whaling winds down, but before all the snow melts, coastal people travel inland and hunt geese, primarily white fronts, from the central flyway. Grizzly bears are occasionally harvested.

When the river ice melts and the sea ice moves away from the coast during July and August, people travel in boats to hunt...
Walruses, bearded seals, and ring seals are harvested in the ocean and people travel up rivers and along the coast to hunt caribou. In July, Point Lay villagers have their annual beluga whale hunt driving the animals into a lagoon to be harvested. People from Nuiqsut boat up the Colville River to hunt moose in August. Moose occasionally wander out onto the northern plains and are harvested by people from coastal villages. August is the prime time to hunt eider ducks as they migrate south. Using nets placed along the coast and in rivers people catch salmon, whitefish, burbot, char, and grayling.

From September through November, the first snow falls and rivers and lakes gradually freeze. Caribou are in prime condition and hunters travel by boat and snowmachine to harvest them. Dall sheep, moose, and grizzly bears are harvested by Anaktuvuk Pass people and coastal people who travel inland. Some muskoxen are harvested, mostly in the eastern North Slope. People ice fish using nets and jigging apparatus. The coast is generally still ice free and small coastal fish such as capelin, Arctic cod, tomcod, and smelt are also caught during this time. Bowhead whales are hunted during their fall migration by the villages of Kaktovik, Nuiqsut, and Barrow along the Beaufort Sea coast. During the winter (December through March), hunters harvest ring seals and polar bears on the sea ice. Arctic foxes are trapped both on the sea ice and on land. People ice fish, usually with hooks and lines. Wolves, wolverines, ptarmigan, and caribou are harvested across the North Slope. Some muskoxen are harvested in March.

**Relative Importance of Harvested Animals**

The number of various types of animals harvested varies from one community to another. Marine mammals are the most important subsistence resource in the coastal villages. For example, according to the North Slope Subsistence Study done by Steven Braund and Associates, during 1988, in Barrow 56 percent (329,296 lbs.) of edible subsistence food was from marine mammals, 32 percent (190,459 lbs.) from terrestrial mammals, 8 percent (58,825 lbs.) from fish, and 4 percent (21,434 lbs.) from birds. In Wainwright, 69 percent was from marine mammals, 25 percent from terrestrial mammals, 4 percent from fish, and 2 percent from birds. In Barrow, Wainwright, Kaktovik, and Point Hope, bowhead whales are the most important subsistence animals, with caribou second. In Point Lay, beluga whales are most important. There the beluga harvest generally takes place over a two- or three-day period and, according to an Alaska Department of Fish and Game Subsistence Division study, this hunt supplies up to 65 percent of the annual subsistence harvest. While some individuals from inland communities travel to coastal villages to hunt marine mammals, most of their harvest is terrestrial animals; and caribou are the most important subsistence species.

When we are done butchering the caribou, Mary takes some ribs to make a delicious caribou soup for dinner, with slices of frozen bowhead *maktak* on the side. Outside, the air is so clear we can see the lights of Barrow and Atqasuk as well as nearby camps, while the northern lights undulate overhead among the stars.

The next morning we rise at sunup, pull our nets, take the fish, and pack our sleds for the ride back to town. We are still hunting on the return journey, but see not a single caribou in an area where, last year at this time, there had been tens of thousands.

It occurs to me that this variability is the essence of North Slope hunting. Animal movements and availability are not always predictable. Fortunately, there are many options. If one type of animal is not available a hunter can usually compensate by harvesting more of something else. In addition there is an extensive system of trading and sharing among and within villages. Through this system, inland villages receive such things as marine mammal products and coastal villages obtain wolf and wolverine pelts. Because hunters are versatile and because of this ancient sharing and trading practice people enjoy a variety of animal products and seldom need to do without.

**Geoff Carroll** is a wildlife biologist with the Division of Wildlife Conservation, ADF&G, Barrow.
Only my husband's legs protruded above the surface of the snow, the rest of his body having disappeared down the hole in the snowdrift. All around us stretched the vast, snow-covered tundra unbroken by any vegetation or any other signs of life. We were pursuing one of the rarest wildlife sights in Alaska—infant wolverines—and claustrophobia was a definite disadvantage in this pursuit.

Wolverines on the North Slope of the Brooks Range are born in snow dens, mazes of branching tunnels which can be more than 90 feet long and as much as 10 feet below the surface of the snowdrift. As part of the research for my doctorate, I was attempting to describe these dens and document the number of kits being born to radio-collared adult females. Finding the dens was often difficult because the drifting snow in this windy environment obliterated the den openings and the wolverine tracks leading to and from them. This den had been marked with a flag dropped from an airplane as we flew over the den while the radio-collared female was in it. Later, we returned to the den on the ground just after the female had left to go hunting and were able to find the freshly-opened entrance hole. Digging out the dens often took one or two days of strenuous shoveling and much crawling around in the tunnel system. Usually, my assistants and I dug up the dens after the wolverines had abandoned them in the spring. This one was being excavated to count the number of kits of a female that had been radio-tracked for four years and whose radio signal was weak and about to fail. The two small kits which we found in the den were returned to their snowy cave while the mother looked on from a hilltop nearby. Because this was her third litter in four years, I was confident the kits would be well cared for after we had left.

Though wolverine kits are not 'born until March, adult females start den constructions early as September when the first snows begin to form drifts along drainages on the tundra. All winter long the resident female will return to favorite places along these drainages where she will hole up during the winter storms. While strong arctic winds drift snow higher and higher above her, the wolverine lies curled in her snug white world from which she will dig her way out when the wind chill factor is more to her liking. The snow tunnel that results and several others like it that are distributed over her home range will be kept open and enlarged over the winter. When March arrives, she will have a number of snow dens from which to choose a natal den to give birth.

On the treeless tundra a wolverine's life starts out tough and remains that way for much of its life. Birth occurs while winter still grips the North Slope and the wolverine kit, usually with one or two siblings, is born in an enlarged portion of a snow tunnel that often has no bedding of any kind. There it will remain for up to two months until warmer temperatures in May begin to melt its natal home. The mother leaves the kits for short periods of time to hunt for food. Throughout much of its circumpolar range, the wolverine's late winter birth is believed to correspond to a period when winter-killed moose and caribou are most abundant and easily obtained by pregnant or nursing females. However, in my study area, food is often in short supply at this time. Moose are scarce and caribou do not overwinter in
Audrey McGowan

Audrey McGowan

Audrey McGowan

Audrey McGowan

Over the four years of my study, radio-collared females averaged only 0.6 kits per year, failing to produce any kits in some years.

For the more fortunate kits which manage to survive the first two months of their lives, food is usually plentiful during the short summer. In the spring, caribou pass through the study area in large numbers on the way to their calving grounds. Migrant birds arrive daily and arctic bound squirrels have emerged from hibernation. Voles and lemmings are exposed in their nests and runways as the snow melts away. Bird eggs and nestlings are added to the wolverine diet in midsummer. August is especially bountiful with dispersing juvenile ground squirrels an easy catch and caribou carrion available from wolf and grizzly kills made as the large Western Arctic caribou herd slowly drifts back through the study area on the way to its wintering areas.

From the time the wolverine family abandons the natal den in early May until early July, the adult female does most of the hunting for the young wolverines. Leaving the kits near a remnant snowdrift or rock outcropping where they can find cover from predators, she hunts in the surrounding tundra and carries her catch back to the waiting kits at the rendezvous site. As the kits grow older, she often caches some of the food under remnant snowdrifts during her hunting forays, returning to the caches in a few days with the kits. In this way the kits are moved from one area of their mother’s home range to another, learning her range and favorite foraging areas. Sometime during this period, the mother may disappear for a day or two because the peak of the breeding season is in June and the female will breed every year whether she has kits or not. A physiological mechanism referred to as delayed implantation allows the female to breed in the summer but delay the growth of the fetuses until midwinter. Pairing with a male lasts only one or two days, after which the female returns to her young. The male does not take an active part in raising the young.

By early July the kits begin to travel and hunt with their mother on a regular basis. I have watched the kits travel single file behind their mother in the distinctive mustelid lop e, carefully scent-marking every tussock their mother marks. This is a carefree time for the kits and much of it is spent lounging around the few short snowdrifts still remaining in their home range. Playfully stalking and wrestling with their mother is one of their favorite pastimes.
Well-used lounging areas are easy to recognize because the snowdrifts are covered by numerous tracks and slide marks and littered with parts of ground squirrels and caribou bones. By late July the siblings are hunting on their own and traveling together without their mother. Generally, the siblings remain together until late August. Occasionally, however, the family will regroup and play together.

Growth of wolverine kits in summer is rapid. Born as fuzzy white balls of fur, within a week of their birth the kits are developing the distinctive diamond pattern on their backs and the individualized throat pattern. Both will remain with them the rest of their lives.

Male kits may weigh as much as or more than their mothers by the time they are 5 months old. At 9 months of age, males may be close to the adult weight of 30-35 pounds and females 20-25 pounds.

The kits continue to use their mother’s home range at least through October but as early as November when the kits are only 9 months old, some may leave. Just what triggers a young wolverine to leave its mother’s home range is not known. Some kits, both male and female, may remain in the mother’s home range through their first winter dispersing about the time of their first birthday. One young female remained in her mother’s home range for at least two years. Though she and her mother appeared to have divided the home range between them, they would occasionally meet and play together. Some young wolverines which dispersed from my study area were trapped a few months later as much as 200 miles away.

As winter approaches, the wolverines spend more and more time catching and caching food. Much of their time is spent pursuing ground squirrels which are easily caught as they scamper across the still snow-covered ground. The large male squirrels that emerge in early part of winter, Ptarmigan, one of the few birds to winter on the North Slope, can provide a ready source of food for wolverines in years when the birds are abundant; but in the years when ptarmigan are scarce, food for wolverines may be severely limited in winter. By midwinter wolverines may have to depend on fat reserves and what little nutrition they find in caribou bones and hide that still remain after the summer. Wolverines have been known to starve to death during such periods of food scarcity and even resident adult animals may leave their familiar territories to search for food in new areas. Such a winter in my study area was believed to be responsible for near starvation in one adult female and the complete failure of all radio-collared adult females to produce young the following spring. How welcome must be the long March days that signal spring and the emergence of arctic ground squirrels from hibernation. The large male squirrels that emerge first are easy to capture as they scramble across the still snow-covered ground, tally preoccupied with defending their territories from interloping neighbors. As the days grow longer and longer, food becomes less of a problem for the young wolverine. Of more immediate concern is the approach of the breeding season. Though breeding will not occur until summer, spring means an upsurge in the wolverine’s social life.

As it approaches its first birthday, the maturing wolverine must decide whether to stay in the area where it was born or strike out on its own into new territory. Most of the young males will decide to leave as the resident adult males in the area become more belligerent towards them. Some of the young females will remain to share the area with other females who may be related to them. Here they may breed for the first time when they are nearing 1.5 years of age. Six to eight months later, these two-year-old females may themselves be mothers for the first time, curled around tiny balls of fur in the dark stillness of their snow dens. Before I began my study, it was difficult for me to imagine how the wolverine managed not only to survive but also to produce young in the bleak, lonely-looking winter landscape of the North Slope. Now that the study is finished, I may understand better. But I will always be awed by the image of a mother wolverine and her kits warm and content under that vast white expanse of the frozen tundra.

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*Their ability to find buried food is sometimes remarkable. One wolverine I was trailing in winter suddenly turned perpendicular to its line of travel and went directly to an undistinguished spot where it dug down through two feet of snow and one foot of frozen tundra to retrieve a duck carcass.*
North Slope Grizzlies (Continued from page 4)

After a breeding pair separates, each bear may continue to search for new mates. On the North Slope of the Brooks Range where population density is low, more than one female may be attracted to a male. In such cases, the male’s attention is usually focused on the most receptive female; the “rejected” female may move on in search of another male.

Although breeding takes place in midsummer, the embryo develops only for a short time and then undergoes a dormant phase until late November. This reproductive mechanism, called delayed implantation, allows fat reserves in females to increase throughout the summer season without the physiological drain of a developing embryo. Actual fetal growth lasts only two months until the cubs are born. Although the mother continues to maintain the low metabolic rate of winter dormancy within the hibernation den, she periodically awakens to suckle her helpless young.

The bears of the North Slope have a low reproductive rate. Females produce young for the first time at an average age of seven years, but some do not have cubs until they are 11 or 12. Also, on the average, they have litters every 4.2 years, so that even if a female is productive until the age of 22, she would have an average of fewer than seven young during her lifetime, if they all survived. This compares with a theoretical production of more than 13 young for female grizzlies from Wyoming or the Alaska Peninsula. In order to compensate for this low productivity, females often do not leave their offspring until their fourth spring. This long period of maternal care provides these young with better chances of survival: they are more familiar with the habitat within their mother’s home range; they have a better capability to avoid confrontation with larger, more aggressive bears; they have greater experience in den site selection and foraging strategies; and their period of greatest body growth has occurred so that more nutritional intake can be used to prepare for winter dormancy and sexual maturation.

Individual grizzly bears do not have territories which they protect from trespass by all other grizzlies. A grizzly’s home range, or the area in which it lives, is usually included in the home ranges of a number of other bears. However, excluding family groups, grizzlies are usually solitary except during the breeding season or at a food source. In these mountains, adult males have home ranges as large as 1,000 square miles. Females have ranges from 40 to 340 square miles. Sows with cubs of the year have the smallest ranges, but, as the young grow and food demands for the family increase, the size of the range increases.

Within any home range the actual area which a bear uses for foraging, denning, and breeding is relatively small and is often restricted to river valleys, a few tributary drainages, or ridge slopes. Because of the rugged and unproductive nature of much of mountainous country, only a fraction of such land can provide the types of habitat necessary for the grizzlies’ livelihood.

By late summer, ripening berries become a major food source for Brooks Range bears. Grizzlies are seen along the gravel bars of the river valleys feeding on soapberries. Another major food source during this season is arctic ground squirrels. Grizzlies move to river bars and well-drained ridges and excavate colonies of these rodents. Moose or caribou disabled by fighting during the rut may also be killed by bears. When a large mammal is killed, an individual grizzly will eat his fill, bury the remains with grass, willows, or other vegetation, and lie on or nearby the carcass to protect it from other bears or scavengers. If a grizzly makes such a kill late in the fall, he may stay with the remains until consumed, long after the usual time for hibernation.

Cold temperatures and snow arrive in the area by mid-September and following the first major storm in October, the bears begin to den. In the Brooks Range, grizzlies most frequently den on south-facing slopes after the top soil layers have frozen hard enough to provide support for the structure. Good den sites have certain characteristics: the soil must be well drained, the permafrost layer must be at least three feet below the surface, and there must be a supply of vegetation nearby. Dug dens consist of a tunnel sloping upward to a chamber about four feet in diameter. The bear scrapes vegetation from nearby slopes and drags it into the den to form a sleeping mat. Sometimes grass and woody shrubs are used to fill a portion of the den entrance. This construction serves to provide a warm microclimate for protection against wintry elements and helps to limit the energy expended by bears to maintain body functions and thus limits weight loss during hibernation. Because the den entrance is small and at a lower level than the bed, after the entrance is covered by snow, there is very little heat loss to the outside. In addition, the nest of vegetative bed material in the den chamber may be up to 16 inches thick, providing an insulative layer between the bear and the frozen earth.

New dens are constructed each year because old dens usually collapse during the spring thaw. Most grizzlies enter dens within a two-to-six-day period in early October. Pregnant females den earliest, followed by adult females and subadults of both sexes. A few bears, most likely adult males, are active until early

Grizzlies of the North Slope are smaller than their southern relatives. In early summer, adult males weigh an average of 400 pounds, while an unusually large bear can reach 600 pounds. By comparison, adult male grizzlies in Wyoming weigh from 500 to 1,100 pounds.
November. After the onset of denning, bears may occasionally leave their dens for short periods but most remain inactive throughout the long dark winter until the sun returns in the spring and another cycle of seasons begins.

In the Arctic, the sparse population density and low reproductive rates which are characteristic of all grizzly populations are even more pronounced. As a result, grizzly populations here are much more vulnerable to any changes affecting their ecosystem. Although healthy grizzly populations still exist within the remote mountain valleys, foothills, and coastal plain of the North Slope, they are no longer isolated from the presence of man.

Increased access to previously remote areas places bear populations at greater risk. Bear populations can be influenced by human development indirectly through habitat loss and fragmentation, or directly through increased mortality.

The actual area of habitat lost to grizzlies due to any one development is usually relatively small, but the potential of human-bear encounters associated with such development can be more serious. For example, the acreage occupied by a construction camp in a bear’s home range would have negligible effect on the amount of vegetation available to the bear. But many bears are attracted to camp odors, thus increasing their interactions with humans. This often leads to a situation in which a bear repeatedly endangers human safety and must eventually be shot. Similarly, the more extensive a network of roads or developments is, the more likely will be human contact with wide-ranging bears. Land managers and industry can reduce the possibility of such encounters becoming fatal to bears by requiring fencing of development sites to exclude bears, by completely incinerating refuse to reduce the attraction of dumps to bears, and by consolidating roads and development sites and placing them in least preferred habitats. Education of workers and recreational users about their responsibility to avoid conflicts is important; stringent enforcement of regulations against feeding bears is essential. In the Prudhoe Bay area, Alaska Department of Fish and Game (ADF&G) studies, supported by oil industry, are presently assessing the effectiveness of these and other measures in reducing conflict between humans and bears in the Prudhoe Bay oilfields.

Direct human-caused mortality includes those bears killed by hunters, those killed in defense of life or property, and those killed illegally. Bears are more vulnerable to hunters on the North Slope than in most other areas because visibility is good, there is a lack of hiding cover, and access along many of the river courses is relatively easy. Access has also increased as a result of construction of the Dalton Highway to Prudhoe Bay. The effects of hunting mortality have been kept within broad sustainable limits for North Slope populations through changes in harvest regulations, which are based on harvest records and information from grizzly bear population research. As access to the North Slope continues to increase, more intensive management may become necessary. Even so, of the threats to population well-being, hunting mortality is the easiest to deal with, since it can be managed by changing regulations.

Diminishing the number of bears killed by poaching or in defense of life or property is more difficult. Like humans, grizzlies are at the top of the food chain and often compete with man for the same resources or habitat. They travel over vast areas, use a wide range of foods, and are opportunists when it comes to taking advantage of food resources. This brings bears in conflict with man when bears attempt to take advantage of the good smells they detect, whether emanating from a berry patch, a hunter’s recently killed moose, or a mess hall at a highway camp. If bears are not rewarded by obtaining food during contacts with man, situations in which bears must be destroyed to protect human safety are less likely to develop. (An ADF&G brochure entitled “Bear Facts” outlines methods of avoiding confrontations with bears.)

Assuring that grizzly bear populations remain an integral part of North Slope ecosystems will be a challenge for Alaska’s future. As a society, we value all wild species and affirm the importance of maintaining them where they now occur. Since the early 1970s, ADF&G has conducted research on this region’s grizzlies. With cooperation and support from the National Park Service, Bureau of Land Management, private industry, and others, we have gained a greater understanding of basic biological facts about the workings of grizzly bear populations. However, in order to respond to the pressures which increasing human presence will place on North Slope grizzlies, we will need to know more. Explicit knowledge of the inner workings of specific populations will be necessary to avoid or mitigate the impacts related to development. By gaining a better understanding of what grizzly populations require from their environment, man can help to maintain the ecological system of which these bears are an integral part. Only with the commitment by the public and industry to minimize the effects of our presence can we assure that grizzlies continue to roam the North Slope for centuries to come.

*Harry V. Reynolds III is a wildlife biologist with the Division of Wildlife Conservation, ADF&G, Fairbanks.*
A Christmas Story

by Jack Jeffrey

The S.S. Alaska was in port. It was a few days before Christmas of 1951. It was miserably cold and snowing hard. My job was moving freight and passengers in the seaport of Seward, Alaska, and there were many things that needed attention. So it was with some irritation that I looked up at Mary’s interruption.

“Jeff, there’s a nice little old lady out there who says she wants to see you. I tried to talk to her but she insists that she must see you. Will you come out and talk to her please?”

My “customer” was about five feet tall, in her seventies, very thin, and obviously very upset. I asked what I could do for her and she replied, “I was sent to you. I am without funds. I have also been evicted from my room. I was sent to you for help.”

“Gosh,” I thought, “what a dirty trick for someone to sic this old gal onto me. What could I possibly do?” Obviously she was in desperate need but where could she go for help? The least I could do was listen to her story.

She told me something about herself. She had no family and a succession of menial jobs over the past years had left her penniless. Among the many places she had worked she mentioned the orphanage in Valdez. As she explained it, “They told me if I ever wanted work there again they would be pleased to re-employ me.”

This seemed like a possible lead, but, after all, that had been some time ago. Circumstances do change, and she was in Seward, not Valdez. I suddenly hit upon a possible solution and asked her, “Would you like to go to Valdez and work in the Home?”

Her reply was quick, “Oh yes, I’d dearly love that.” So I told her to sit down and take it easy and I’d see what could be done. We had a teletype hookup with Valdez so I punched out a message to the company agent.

“Hey John, I’ve got a little old lady here by the name of Ethel Swanson who claims she worked at the Children’s Home. She’s broke and needs a job, not to mention a roof over her head. How about checking with the Home?”

In a matter of minutes the teletype clattered back, “She’s hired. Send her on the Alaska. The Home is picking up the tab for a Minimum Room. Debit my office.”

Armed with this good news I prepared her ticket and called her to the counter. She moved slowly towards me, not knowing what to expect, and with that lost look still on her face. I explained to her, “Here is your ticket to Valdez. The ship leaves tonight. You have a job at the Home. Normal boarding time is after dinner; however, it will be arranged for you to board immediately. Plan on having lunch and dinner on the ship and your stateroom will be open, so feel free to use it. Possibly a nice long nap after lunch would be a good idea. You see, things aren’t really that bad and everything has worked out okay,” I concluded.

All this time her arms were resting on the counter and she was leaning forward listening intently. Much to my discomfort she suddenly started to cry. No sobs, no noise—just tears. They cascaded down her cheeks and splashed off the counter as she told me the following. “This morning I was at the end of my rope. I haven’t eaten since yesterday’s breakfast. When the landlord told me I had to leave I just didn’t know what to do. In desperation I got down on my knees and prayed to God. I told him my problems and the things I tried to do to myself. And I asked him, ‘What should I do? To whom can I turn?’ Suddenly, somehow, I knew what to do. My prayer had been answered and the Lord sent me to you. You have taken care of everything. I’ll have a job; my room and meals will be furnished; and best of all, I’ll be with friends at Christmas. Yes, the Lord truly answered my prayers.” Still silently crying, she gave me a long look and with a grand gesture toward heaven, said, “You, sir, are the Instrument of the Lord.”

By this time the pool of tears had enlarged beyond belief and I turned to Mary and Irene for help. Surely they could get me out of this uncomfortable situation. But they sat stiff in their chairs, listening to every word and nodding in agreement, tears streaming down their faces. “Come on,” I pleaded, “will you finish taking care of Mrs. Swanson? I have work to do.” And with that I hurried out the door.

As I headed for the dock I noticed that it had stopped snowing and the sky had cleared. Everything was covered with fluffy white flakes and the harbor was a brilliant blue jewel in a setting of sheer white mountains. What matter that work would be slowed while the snow was cleared away? It was beautiful!

As I boarded the ship, I thought, “There are Deluxe Rooms empty at this time of the year. Why not berth Mrs. Swanson in one of those . . . and the stewards’ department will want to put flowers and candy in her room and serve her breakfast in bed.” I found the purser and had him make the necessary arrangements, laughing to myself as I did so, because, when you are the Instrument of the Lord, you have to go first class all the way.

After dinner, Mrs. Swanson and I walked down the September flower lined aisles of the ship. We spent the evening talking and listening to the orchestra playing. Everyone was happy. It was like a fairy tale came to life.

Jack Jeffrey told us in our last issue about how he came to Alaska in 1935 and spent from 1939 to 1941 working as a special agent for the Federal Alaska Game Commission. Here, we pick up his story in Seward, where he moved in 1945 to work for the Alaska Steamship Co. He now enjoys retirement in Green Valley, Arizona.
Alaska’s Wolves
How to Manage for the 90s

Including the Strategic Wolf Management Plan for Alaska

Supplement to ALASKA’S WILDLIFE, January–February 1992
Alaska’s Wolves
How to Manage for the 90s
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Editorial
Biology of Wolves in Alaska
Strategic Wolf Management Plan For Alaska
Values and Public Involvement
Next Steps: Area-Specific Wolf Management Plan

Cover Photo by Michael Francis/The Wildlife Collection

GLOSSARY
Terms used in the planning process

Aerial Shooting: The practice of taking or attempting to take wildlife by discharging a firearm from an airborne aircraft. Aerial shooting is not legal under general hunting regulations, but may be conducted under an administrative permit as authorized by the federal airborne hunting act.

Area-Specific Management Plan: A plan detailing how wildlife, habitat and human uses will be managed in a portion of the state. These plans will identify population and human use objectives and management actions needed to achieve objectives.

Conservation: The care, protection, management, and wise use of wildlife and other national resources.

Land-and-Shoot Taking: Taking or attempting to take wildlife by landing a fixed-wing aircraft within shooting distance, exiting the aircraft, and immediately discharging a firearm at the wildlife. Such taking is not legal under general hunting regulations, but may be conducted under a permit as authorized by the federal airborne hunting act.

Non-Consumptive Use: The use of wildlife which does not involve killing animals.

Wolf Population Reduction: The temporary lowering of wolf numbers to a level significantly below the pre-determined, long-term level, to prevent or stop undesirable declines in prey numbers or to stimulate increases in prey numbers.

Wolf Population Regulation: Maintaining the size of a wolf population at a pre-determined level below that which the prey could support to provide for higher human use of prey populations.

Zone: An area where a specific strategy for wolf management is applied. Zone boundaries will not necessarily conform to game management units or other boundaries in the state.
One of the more insightful recommendations of Alaska's citizen Wolf Management Planning Team was for the Alaska Department of Fish and Game (ADF&G) to focus more effort on dispelling misinformation and misconceptions about wolves through education. This supplement to Alaska's Wildlife magazine represents our initial attempt to implement that recommendation.

The department is uniquely qualified to conduct a wolf education program. Our biologists and technicians are recognized experts in the field of wolf management and research. Over 30 years ago ADF&G biologists called for the termination of widespread federal wolf poisoning programs in Alaska and led the campaign to have the wolf officially classified in law as both a big game and fur-bearing animal. The positive results of these actions are undeniable.

In sharp contrast to most other areas of former wolf range, wolves in Alaska remain numerous and still inhabit virtually all historic wolf range in the state. There are about as many wolves in Alaska today as populations of deer, moose, caribou, Dall sheep and other prey species can currently support. The future wolf conservation program in Alaska will depend upon the maintenance of high quality wildlife habitat, abundant populations of big game prey species, and the continued ability of department biologists to manage all of these environmental factors as well as human activities affecting habitat, prey, and wolves.

Successful wolf management would seem quite straightforward: (1) Keep important game ranges productive of plants needed by wolf prey species. (2) Ensure that big game prey populations remain healthy, abundant, and productive. (3) Regulate annual harvests of both prey and predators according to the sustained yield principle embodied in Alaska's constitution. The whole process becomes much more complex when one attempts to address all of the demands and values of a citizenry as diverse as Alaska's.

Living in the little community of Tok, Alaska (population about 1,000), as a working management biologist for the past 14 years gave me a somewhat distorted view of how Alaskans wanted wolves and other big species managed. Alaskans in the upper Tanana Valley tend to be longtime residents with a way of life heavily dependent upon harvesting moose, caribou, and sheep for food, and trapping marten, lynx and other fur-bearing species, including wolves, for a little cash income during long Interior winters. Alaskans like these have had direct interactions with wolves and pragmatically accept the value of managing wildlife to meet practical human needs.

My recent move to the relatively large and sophisticated city of Juneau has broadened my perspective on the values other Alaskans place upon wolves and other wildlife. Many people here and in other Alaskan cities have been long estranged from harvest-based societies and day-to-day dependence upon big game animals to meet basic needs for food and to preserve cultural identity. Loss of daily association with wildlife populations is balanced, however, with a greater public concern for worldwide ecological problems. It is a well documented fact that those people most distant from the realities of wolves and other species have developed highly protective attitudes toward them in a well meaning attempt to assure their future.

All human values, needs, and demands for wolf management in Alaska must be recognized and addressed to ensure a political climate in which the long-term conservation of wolves can succeed. The key to developing a workable wolf management plan and programs in Alaska is for all Alaskans to acknowledge and provide for the needs of all others. Even people who would prefer that no wolf ever be killed must accept the facts that wolf furs are an important resource for Alaskans and that wolves can have a great impact upon other animals needed for food by Alaskans. Conversely, hunters and trappers must accept the need to designate other areas in our state that afford the opportunity for wolves and their prey to exist in natural or nearly-natural association without significant human-caused impacts to meet the psychological needs of people worldwide to know that such areas do and will continue to exist.

To accommodate the wide range of uses and values, the Board of Game recently adopted a strategic wolf management plan. Applying this plan will build upon resource use decisions already made by the Congress of the United States and the Alaska Legislature. The last step will be the development of area-specific plans under the strategic management plan. Area-specific management plans will be addressed at the spring 1992 board meeting. This process will enable us to leave these controversies behind and concentrate on providing the best professional management possible to carry out the wishes of the people for wolf management in Alaska.

David Kelleyhouse is Director of the Division of Wildlife Conservation, ADF&G, Juneau.
Wolves have been present in Alaska for about 500,000 years and presently occur throughout most of mainland Alaska, on Unimak Island in the Aleutians and in most parts of southeastern Alaska. Before the end of the last ice age about 10,000 years ago, most of Alaska was covered with grasslands which supported a wide variety of animals including bison, horses, mammoths, caribou, muskoxen, Dall sheep, antelopes, yaks and elk. The wolf existed along with several other predators including the American lion, brown bear, short-faced bear and wolverine. As the glaciers receded, the climate became moderate and forests expanded. Many grazing animals and some predators became extinct. However, the wolf is adaptable and continues to thrive in the Alaskan environment. Wolves occupy nearly all of their historic range, and are common over about 85% of Alaska. They are well adapted to habitats ranging from rain forest to arctic tundra.

ADF&G annually estimates wolf numbers and in 1990-91 approximately 5,900 to 7,200 wolves in from 700 to 900 packs were believed to be in the state. Populations densities range from about 1 wolf per 25 to 75 square miles in southern and interior areas to 1 wolf per 150 square miles in the coastal portions of northern and western Alaska. Wolves are more scarce in some coastal areas for several reasons. They are vulnerable to man in open country, suitable prey populations exist at low numbers or are nonexistent, and rabies outbreaks in wolves are common. Wolf numbers are stable or increasing in all occupied habitat. In most areas wolf density is about as high as the food supply will allow. Wolf distribution and abundance in recent years have been about as great as at any time since the turn of the century. The wolf population is prospering and is connected to a large and similarly thriving population that extends across most of Canada.

Since 1975 several hundred wolves in about 150 packs have been radio-marked in various parts of Alaska and studied for periods of two to eight years. In addition to dramatically increasing our understanding of the movements, food habits and social behavior of wolf packs, these studies...
have shown that long-range dispersals of up to 500 miles by individual wolves occur regularly. Each year one or more wolves departs from most resident packs and travels to other regions in Alaska and Canada, sometimes joining or creating new packs. This probably explains why physical characteristics of wolves are similar over this vast area. It is also one reason why wolves quickly colonize suitable habitat.

Although most packs include 6-12 animals, packs as large as 20-30 wolves sometimes occur. In most areas packs remain within a home range used almost exclusively by pack members in winter. The home range of most Alaskan packs includes 200 to 800 square miles during the winter. The ranges of neighboring packs tend to overlap slightly in winter and substantially in summer. Wolves that depend primarily on migratory caribou may abandon their home range for a while and travel long distances.

Wolves normally breed in February and March and litters averaging about five pups are born in May or early June. Most female wolves first breed when 22 months old but usually have fewer pups than older females. Wolves have a high reproductive rate. Nearly all of Alaska's wolf packs raise at least one litter of four to seven pups successfully each year. Most mature females come into heat and breed each year and, in some cases, two or three females in a pack produce litters. Because they generally produce many pups, most populations can sustain harvests of 25-40% annually. With lower harvests most populations can increase, unless food is scarce. In Alaska most wolf populations sustain harvests of from 10% to 30%. In the past decade the annual harvest of wolves ranged from 675 to 1,097 and averaged 842, or about 11% to 14% of the estimated population. Because they produce many pups and commonly immigrate into new areas, Alaskan wolf populations can rebound quickly from relatively high harvest or other reductions in numbers.

In much of the state hunting and trapping are the major sources of wolf mortality. Death from natural causes, especially predation by other wolves, is also common and often accounts for more than 10% of the wolves in a given population each year. Disease does not appear to be a widespread cause of mortality except in some coastal areas where rabies acquired from foxes sometimes significantly reduces wolf numbers.

The diet of wolves varies according to season, location and prey species availability. Moose and caribou are their major prey over much of Alaska but Dall sheep are also taken. In
During winter, big game species constitute almost the entire diet of wolves. During summer, small animals such as beavers, snowshoe hares, voles, ground squirrels, and occasionally birds and fish can be important supplements to ungulates.

Southeast Alaska deer and mountain goats are important big game food sources. During winter, big game species constitute almost the entire diet of wolves. Snowshoe hares can be an important food source in years of hare abundance. During summer, young ungulates are often an important part of the diet, but adult animals are also killed. Small animals such as beavers, snowshoe hares, voles, ground squirrels, and occasionally birds and fish can be important supplements.

Predator-Prey Relationships

Although wolves eat a wide variety of animals, they are dependent on large hoofed mammals, such as moose, caribou, deer, sheep and goats to sustain their populations in Alaska. The number of different prey species available to wolves in an area, the abundance of each prey species and other factors such as winter weather play an important role in determining how wolves affect prey populations. In addition, if other predators such as black or grizzly bears or human hunters are taking prey animals, the interactions of wolves and prey can be dramatically different.

Wildlife studies show that where wolves are the only predator, wolves do not keep prey numbers low. Likewise, if bears are the only predator, bears do not keep prey numbers low. In contrast, studies show that the combination of wolf and bear predation (which occurs throughout most of the state) often keeps moose, deer and sometimes caribou numbers low for long periods of time when wolves and bears are lightly harvested.

When predation succeeds in keeping moose numbers much lower than the habitat could support, the moose population is often said to be in a "predator pit". This occurs where wolves and bears are only lightly harvested. Wolves and bears keep moose in the predator pit by killing many moose that would otherwise live and reproduce, especially calves.

Caribou herds may also remain at very low numbers when preyed upon by both wolves and bears. Caribou differ from moose, because caribou can sometimes escape the effects of wolf and bear predation without predator reductions by migrating, by selecting calving areas with few predators, and by greatly outnumbering predators. Predation has less effect on large caribou herds than it does on small herds.

A certain portion of any prey population must survive to reproduce and maintain the herd. The rest can be killed by wolves, bears, or people without causing declines in numbers. The size of this excess portion will vary over time in different areas and can be affected by wildlife management.

Naturally low prey numbers do not necessarily create a management problem. If people are satisfied with a small share of the prey, predator-prey relationships may not need to be altered to provide for desired harvests. On the other hand, if people want a larger portion of the prey, the level of predation by wolves and/or bears may have to be reduced. Balancing the allocation of prey between wolves, bears and people must be done on an area-specific basis.
Strategic Wolf Management Plan For Alaska

Adopted by the Alaska Board of Game-October 30, 1991

The Purposes Of This Plan Are:

1. To help the Alaska Department of Fish and Game (ADF&G), while working with the public and other agencies, provide for the conservation of Alaska’s wolves and their prey populations.

2. To establish a process to prepare and adopt measures to implement this plan consistent with Alaska’s constitution and with due consideration to public review and comment.

Findings

People place many different values on wolves because of their remarkable endurance, intelligence, sociability and keen hunting abilities. Wolves are an integral component of nature’s food chains. They share a special social and cultural relationship with people in rural Alaska. Wolves provide consumptive and nonconsumptive use to Alaskans and others around the world. They are a worldwide symbol of wilderness.

Wolves are part of a complex ecological system. Throughout their worldwide range, wolves and their habitat are vulnerable to many pressures. A growing human population, disease, reduction in prey populations and excessive harvest can reduce wolf populations. Uncontrolled hunting and trapping and habitat loss due to fragmentation, development and agriculture threaten wolf survival. Wolf conservation depends on many factors including protecting, maintaining and enhancing habitat and prey animals. Alaska land ownership is complicated, and conservation and management must involve state, federal and private land owner/managers along with interested people and groups.

The wolf represents different things to different people.

The wolf is a symbol of northern wilderness but it is also a powerful predator capable of controlling prey populations, such as moose, caribou, Dall sheep, and deer that people use. In some situations they can cause prey populations to decline, accelerate declines caused by other elements, or keep prey populations at low levels for long periods. Management activities can speed recovery of the prey population in some cases.

Wolves are thriving throughout nearly all of their historical range in Alaska. Wolf densities vary greatly, but the current conservative statewide population estimate is approximately 6,000-7,000. Wolves in Alaska are not endangered. Wolf populations can sustain harvest, and sustainable harvest levels vary. Wolf populations are dynamic and vary over time due to factors beyond human control, but the future of the wolf in Alaska is secure.

Wolves and their prey are extremely important to the economic and nutritional needs of people in many parts of Alaska. Our state is large enough that many different human uses of wolves and their prey can take place at the same time in different parts of Alaska.
PRINCIPLES AND GOALS

Principles:
1. ADF&G will consider wolves and their prey as part of the total ecosystem rather than pursue single species management.

2. The genetic diversity of wolf populations in Alaska will be protected.

3. Research and monitoring of wolves and their prey will continue. ADF&G will pursue individual projects and work with land managers in cooperative efforts.

4. Short-term and long-term effects of wolf and prey habitat loss and fragmentation will be addressed.

5. Consumptive and nonconsumptive use of wolves and their prey will be provided for in management plans.

6. In areas managed for high consumptive use, certain prey populations will not be allowed to decline to a point where predation keeps them at low levels.

7. In areas managed for high consumptive use where predation is keeping prey at low levels, ADF&G may implement wolf population regulation or reduction to allow prey species to increase to population management objectives established in the area-specific plans.

8. This management plan allows ADF&G and the Alaska Board of Game to respond promptly to unforeseen situations. ADF&G and the Board must abide by approved management policies, procedures and objectives.

9. ADF&G will recognize the management goals and objectives of state, federal and private land owner/managers.

10. Conflict between user groups must be reduced.

11. Information and education efforts are important and ADF&G will pursue a variety of programs to help people understand more about wolves and their management.

12. Regulations relating to wolf management will be presented in plain and understandable language.

13. ADF&G will work with enforcement agencies to identify enforcement priorities, and to assist with and encourage adequate enforcement activities.

14. This plan will be subject to additional review and revision as needed.

Alaska law and federal law provide for ADF&G's management of wolves and other resident species in Alaska. Federal laws, regulations and policies apply to management of national wildlife refuges, national parks, preserves and monuments, national forests and other federal public land. This plan is consistent with all legal mandates and restrictions.

Federal law prohibits hunting and trapping in Alaska's original national parks and prohibits intensive management of wildlife on park and preserve lands. On the other hand, federal law guarantees subsistence hunting and trapping on many federal lands. This means ADF&G can neither manage wildlife intensively nor close all hunting for other than compelling biological reasons in new national parks and preserves.

The Goals of this Wolf Management Plan Are:

1. To ensure the long-term conservation of wolves throughout their historic range in Alaska in relation to their prey and habitat.

2. To provide for the broadest possible range of human uses and values of wolves and their prey populations that meet wildlife conservation principles and which reflect the public's interests.

3. To increase public awareness and understanding of the uses, conservation and management of wolves, their prey and habitat in Alaska.

For the purposes of this plan, conservation means “the care, protection, management and wise use of wildlife and other natural resources.”
History of Wolf Management in Alaska

Wolves and people have coexisted in Alaska for thousands of years. Aboriginal Alaskans hunted and trapped wolves, and occasionally took young wolves from dens to reduce populations in some areas. However, aboriginal use had little effect on wolf populations. Wolf numbers were controlled largely by the availability of prey.

Early in this century there was a period of indiscriminate, but largely unsuccessful, wolf control conducted by both the government and private individuals. Bounties also were paid for wolves, but there is little evidence that this reduced wolf numbers. During the 1950s, the federal government conducted systematic wolf control using poison and aerial shooting to reduce wolf numbers in many parts of the state.

When Alaska became a state, the newly formed ADF&G moved quickly to classify wolves as both big game animals and furbearers. All wolf control programs were suspended in the belief that predation by wolves was relatively unimportant in regulating prey populations. Bounty payments were stopped in the late 1960s, and ADF&G supported the repeal of the bounty system by the legislature. Depressed wolf populations rapidly recovered because of these protective measures and the abundant prey populations that resulted, in part, from the federal control efforts of the 1950s.

In the late 1960s and early 1970s a series of severe winters coincided with high numbers of wolves and bears and, in some areas, excessive harvests of moose and caribou by people. Prey populations declined rapidly over much of Alaska. In response to these declines, ADF&G reduced or eliminated hunting of moose and caribou, embarked on a cooperative program of wildland fire management to improve habitat and conducted limited wolf control programs to restore prey abundance in several important hunting areas. In some areas these programs succeeded in bringing prey and wolves back to abundant levels and benefitted people by allowing them more use of the wildlife populations.

ADF&G's use of wolf control in the late 1970s and early 1980s resulted in major public controversy and lengthy legal challenges. These challenges later were extended to include both department conducted control programs and regulations which allowed hunters or trappers to use airplanes to locate wolves and then land to shoot them. ADF&G was confronted with the problem of trying to manage wolves to satisfy increasingly polarized user groups.

To change the decision-making process from one of periodic confrontation between different interests to one of constructive dialogue and resolution, ADF&G initiated a citizens participation process involving a broad range of public interests. ADF&G identified several ways in which the public could be constructively involved in the problem-solving and decision-making process.

One example of involving the public was the Alaska Wolf Management Planning Team. This 12-member citizens advisory group represented a broad range of interests and values. The team was created in late 1990 and met monthly over a six-month period and made numerous recommendations regarding wolf management. ADF&G considered the team's final report along with comments, suggestions and ideas from hundreds of individuals and many organizations when writing this strategic plan.
Strategy for Producing a Fair System for Wolf Management in Alaska

Developing a Zone Management System

ADF&G may not be able to satisfy all legitimate demands for wolves in the same place at one time. As a result, this plan uses a zone system to manage different parts of the state in different ways to accommodate different public demands for protection and use of wolves, their prey and habitat.

This plan uses seven management zones. The goal of ensuring the long-term conservation of wolves, their prey and habitat applies to all zones. The zones provide a range of management systems from areas of complete protection for wolves and prey from human activities to areas of intensive management.

Applying a Zone Management System

ADF&G will work with the public and land owners/managers to develop options for zone boundaries. ADF&G will produce a map to illustrate the options of how and where wolves, their prey and habitat will be managed. The zones will be in place for up to ten (10) years to provide continuity to management. If it becomes necessary to modify management activities allowed within zones or zone boundaries because of unpredictable events, the public will be involved in the decision-making process.

Developing Area-Specific Management Plans

As preliminary zone options are identified, ADF&G will work with the public, local fish and game advisory committees and land managers to write area-specific management plans. (See the section on area-specific management plans for details.) These plans will contain specific population and human use objectives and determine the management activities that will be used to achieve those objectives.

The Alaska Board of Game, after due consideration to public review and comments, will establish zone boundaries and approve or amend the area-specific management plans.

The Zone Management System

Zone 1—Full Protection

Human use goals in this zone are:
1. to provide areas where wolves and prey are fully protected from hunting and trapping.
2. to provide opportunities to view, photograph, hear, enjoy and learn more about wolves and prey in an unaltered environment.
3. to provide opportunities for scientific study of wolves where human influence is minimal.

Conditions of use and management:
Hunting or trapping of wolves or prey is not allowed.
Human activities and developments are regulated to keep disturbance of wolves and prey to a minimum.

Zone 2—Wolf Protection

Human use goals in this zone are:
1. to provide areas where wolves are fully protected from hunting and trapping.
2. to provide opportunities to view, photograph, hear, enjoy and learn more about wolves where they are not hunted or trapped.
3. to provide opportunities for scientific study of wolves where they are not hunted or trapped.

Conditions of use and management:
Hunting or trapping of wolves or prey is not allowed. Hunting or trapping of other species may be allowed.

Zone 3—Minimum use/Minimum management

Human use goals in this zone are:
1. to provide areas where wolves and prey are not significantly influenced by people and are affected primarily by natural environmental factors.
2. to provide opportunities to view, photograph, hear, enjoy and learn more about wolves and prey in nearly unaltered environments.
3. to provide opportunities for scientific study of wolves where human-caused mortality and manipulations are not significant factors.
4. to provide opportunities to harvest a small portion of the wolf and prey populations to meet special needs.

Conditions of use and management:
Hunting and trapping of wolves and prey is allowed, but harvests will be very low in most areas. Wolf population regulation and reduction are not allowed.
Zone 4—Moderate use/Minimum management
Human use goals in this zone are:
1. to provide areas where wolves and prey are primarily affected by natural environmental factors, but some influence by people is permitted.
2. to provide opportunities to view, photograph, hear, enjoy and learn more about wolves and prey in an environment that may be slightly altered.
3. to provide for moderate harvests of wolves and prey by people.

Conditions of use and management:
Hunting and trapping of wolves and prey are allowed, but harvest rates will be kept low to moderate by hunting/trapping regulations or remote access. Wolf population regulation and reduction are not allowed.

Zone 5—Moderate Use/Moderate management
Human use goals in this zone are:
1. to provide areas where wolves are influenced by both natural environmental factors and by people.
2. to provide opportunities to view, photograph, hear, enjoy and learn more about wolves and prey under managed conditions.
3. to provide for moderate harvest of wolves and prey by people.

Conditions of use and management:
Hunting and trapping of wolves and prey are allowed and may be encouraged. Wolves and prey will be managed to provide for sustained high harvests. Land-and-shoot taking and aerial shooting of wolves as a regulation or reduction measure are allowed under permit. Wolf populations may be regulated at levels below those which would occur naturally. Wolf population reduction may be necessary.

Zone 6—High use/Moderate management
Human use goals of this zone are:
1. to provide areas where wolves and prey are managed for high human use.
2. to provide opportunities to view, photograph, hear, enjoy and learn more about wolves and prey under managed conditions.
3. to provide for high harvests of wolves and prey by people.

Conditions of use and management:
Hunting and trapping of wolves are allowed and may be encouraged. Wolves and prey will be managed to provide for moderate to high harvests. Land-and-shoot taking of wolves as a regulation or reduction measure may be allowed under permit. Wolf populations may be regulated at levels below those which would occur naturally. Wolf population reductions are not anticipated, but may be allowed.

Zone 7—High use/Intensive management
Human use goals of this zone are:
1. to provide areas where wolves and prey are intensively managed for human use.
2. to provide for high harvests of wolves and prey by people.

Conditions of use and management:
Hunting and trapping of wolves are allowed and may be encouraged. Wolves and prey will be managed to provide for sustained high harvests. Land-and-shoot taking and aerial shooting of wolves as a regulation or reduction measure are allowed under permit. Wolf populations may be regulated at levels below those which would occur naturally. Wolf population reduction may be necessary.

Area-Specific Management Plans

ADFG will work with fish and game advisory committees, land owner/managers, and the public to develop area-specific management plans to guide management activities. Draft area-specific management plans will be circulated for public review. Professional wildlife biologists from a pool designated by the Commissioner from outside ADFG will be asked to review the area-specific plans and comment on whether the affected wolf population will remain viable over time. Institutions and agencies such as the University of Alaska, federal resource agencies, Canadian wildlife agencies, local land managers, and the public, will be asked to nominate biologists to review and comment on the plan. Written comments will be available for public review at ADFG offices.

Public meetings will be held in conjunction with advisory committees and other organizations in at least one local community in the plan area and another meeting in a regional population center to discuss the draft. Area-specific management plans must be reviewed and adopted by the Board of Game, with due consideration to public review and comments, before being implemented.

ADFG will consider all relevant information about the ecology of wolves and prey which may affect management and use when area-specific plans are developed. The plans will be based on the best available information and will include:
- an area description (geographical area, vegetation, topography and land ownership);
- a summary of historical patterns of wildlife abundance, distribution and human use;
- current and projected patterns of wildlife abundance, distribution and human use;
Area-specific management plans will be drafted keeping the following concepts in mind:

Habitat Conservation

Productive prey populations such as moose, caribou, deer and Dall sheep are necessary to support wolf populations. These species fare best where habitat is diverse and productive. Human activities which degrade or destroy habitat will harm prey populations and, ultimately, the wolves and other large predators or scavengers which depend on them for food. Throughout about 200 million acres of Alaska (55 percent of the state), periodic wildland fires maintain diverse and productive wildlife habitat. Nutrients are recycled in the ecosystem primarily through wildland fires. ADF&G will continue to work closely with land owner/managers and fire suppression agencies to let wildland fires burn in those areas where human lives and property are not at risk. Techniques including such things as prescribed burning and mechanical disturbance to maintain or enhance habitat may be encouraged in those areas where naturally-occurring fires cannot be tolerated.

Development that harms habitat will be discouraged in areas critical to wildlife. Where development must occur, ADF&G will encourage the use of development practices that have the least effect on wildlife and wildlife users. The value of habitat for wildlife will carry more weight in future land development decisions if productive wildlife populations are present and are providing a variety of public uses.

Consumptive Uses of Wolves and Wolf Prey Species

ADF&G will provide for consumptive use of healthy wolf populations on a sustained yield basis. Harvest of wolves and prey species must not threaten long-term population survival. Management objectives must ensure prospering populations of all species in the long-term. If the wolf population in an area is below the objective level due to excessive harvest or reasons other than a shortage of prey, wolf harvest will be reduced at the discretion of the Board of Game. Wolf hunting and trapping seasons may be shortened or closed, or methods and means of taking restricted.

If the wolf population in an area is below its objective level because of a shortage of prey in Zones 5, 6 and 7, efforts will be made to increase prey populations.

If a wolf population in an area exceeds its objective level and is preventing prey populations from meeting population and/or human-use objectives in zones 5, 6 and 7, efforts will be made to increase wolf harvests. If wolf harvest by the public is not possible or does not increase, ADF&G may take action to reduce wolf numbers under a Board-approved implementation plan.

Nonconsumptive uses of wolves and prey species will be reviewed when area-specific management plans are being drafted and adopted.

Nonconsumptive Uses of Wolves and Wolf Prey Species

Nonconsumptive uses of wolves and prey species will be promoted. Even in the best of circumstances, wolves are one of the most difficult species to observe and photograph. Locations that offer unique opportunities to see or hear wolves will be identified, but disturbance to wolves should be minimized near dens and rendezvous sites. Habitatation of wolves to people will be discouraged. Such locations often change over time and developments to improve nonconsumptive use opportunities may alter wolf behavior. Wolf Population Regulation and Reduction

This plan recognizes that “wolf control” includes different types of management activities. As a result, when referring to control measures, we have used two other terms that more clearly say what is being done. “Wolf population regulation” means maintaining the number of wolves in an area at a level below what the prey could support without intervention, either through regular or temporary measures. “Wolf population regulation” may include liberalizing bag limits, lengthening seasons or implementing land-and-shoot taking under conditions approved by the Board of Game. “Wolf population reduction” means temporarily reducing the number of wolves to a lower level to allow a prey population to grow to objective levels. “Wolf population reduction” may include implementing land-and-shoot or aerial shooting under conditions approved by the Board of Game. Wolf population reduction is not intended to be a routine practice in Alaska.

Implementation Plans

If it is determined that regulation or reduction of wolf numbers in zones 5, 6 or 7 is needed to achieve management objectives, ADF&G will draft an implementation plan. Professional wildlife biologists from the pool designated by the Commissioner from outside ADF&G will be asked to review and comment on whether affected wolf populations will remain viable over time. Institutions and agencies such as the University of Alaska, federal resource agencies, Canadian wildlife agencies, local land managers, and the public will be asked to nominate biologists to review and comment on the plan.
IMPLEMENTATION PLANS

Written comments will be available for public review at ADF&G offices. The Board of Game, with due consideration to public review and comment, must adopt the implementation plan as a regulation before wolf numbers may be regulated or reduced. That Implementation Plan must be reviewed within five years by the Board of Game, and may be reviewed sooner if the Board sees fit.

Implementation plans are required by law to include:
• a statement of the proposed action;
• population and human use objectives to be met by the proposed action;
• a justification for the proposed action, including previous measures taken which failed to achieve wolf and prey objectives, and other alternatives considered;
• an area description; relevant information about wildlife populations and human use, including wolf and prey population status and trend, harvest information, habitat and estimates of the effects of wolf and bear predation on prey populations;
• an estimate of the time necessary to meet population and human use objectives;
• schedule for update and re-evaluation.

Implementation plans will identify measures that could be used to regulate or reduce wolf numbers. Not all options will work in some areas.

An implementation plan will include one or more of the following:
1. Trapper education or hiring professional trapper(s) to trap wolves.
2. Land-and-shoot permits issued and monitored by ADF&G under the conditions and guidelines described below.
3. Issuing aerial shooting permits under the guidelines listed below.
4. Wolf population regulation or reduction by department personnel using trapping and aerial shooting.
5. No prior convictions for hunting violations (other than bailable offenses) within the last five years and no prior convictions for hunting violations related to taking of wolves or involving the use of an aircraft.
6. Demonstrated capability and commitment to respond to ADF&G's decision to implement land-and-shoot in a timely manner.

ADF&G will implement land-and-shoot in a particular area by order of the Commissioner. The order shall specify when land-and-shoot will be conducted. Land-and-shoot permits will be valid for 30 days. Permits may be reissued. ADF&G will make every attempt to achieve the desired objectives in the shortest time possible. Each program will be administered by ADF&G staff in the area office nearest to the control area. ADF&G may monitor land-and-shoot activities from the air.

Permittees must obtain a numbered permit from designated ADF&G offices. Land-and-shoot permits are subject to the following conditions:
1. Permittees may only use fixed-wing aircraft.
2. Permittees may not use the aircraft to help any person on the ground locate, track, pursue or take wolves. (Permittees may help someone on the ground locate and dispatch a wounded wolf.)
3. Permittees must report the number and location of wolves taken, and must have the hides sealed no more than five days after taking. Locations of wounded wolves must be reported to ADF&G as soon as possible.
4. Permittees may be required to carry a transmitter (provided by ADF&G) to allow ADF&G to locate the permittee during land-and-shoot efforts.
5. Any person riding with or helping the permittee during land-and-shoot must be an Alaska resident.
6. Permittees may not use shotguns to take wolves.
7. Permits are not transferable.

Aerial Shooting

ADF&G will implement aerial shooting in a particular area by order of the Commissioner. The order shall specify when aerial shooting will be conducted. Aerial shooting permits will be issued by ADF&G. Only qualified individuals will be selected to obtain permits. Minimum qualifications and conditions for aerial shooting permits are the same as those for land-and-shoot permits except that shotguns may be permitted for aerial shooting. Aerial shooting of wolves will be administered by ADF&G staff in the area office nearest to the control area. ADF&G may monitor aerial shooting from the air.
Emergency Situation Plan

Despite the best efforts of ADF&G and the Alaska Board of Game to plan for the future, unforeseen developments will occur. The Commissioner may find that an emergency situation exists in zones providing for wolf population regulation or reduction. (An emergency is one that threatens a precipitous biologically unacceptable decline in prey populations, or biologically unacceptable conditions in a wolf population.) If so, ADF&G will draft an emergency situation plan. Notice of the Commissioner's finding will be published in the affected area and in regional population centers.

The emergency situation plan will contain all of the elements of an implementation plan. In most cases, if wolf population reduction is included in the plan, those measures will be limited to aerial shooting by ADF&G personnel. The goal of any population reduction effort would be to begin a temporary reduction of wolf numbers within 60 days of notice of the Commissioner's finding.

Preparing an emergency situation plan will include at least one public meeting in or near the affected area and another meeting in a regional population center. Copies of the draft plan will be made available to the public, local fish and game advisory committees, landowners in the affected area and the news media.

ADF&G then will submit the draft emergency situation plan to the Alaska Board of Game to review and adopt as soon as possible. Public notice of the Board of Game meeting will be given through newspapers and public service announcements in the affected area as well as in regional population centers in the state. The Board of Game first will consider a finding that an emergency situation either threatens a precipitous biologically unacceptable decline in prey populations, or threatens a biologically unacceptable condition in a wolf population. If the Board adopts such a finding, the Board then will review and adopt or amend the plan. After the Board adopts an emergency situation plan, ADF&G could begin the proposed management actions as detailed in the plan.

An implementation plan for the affected area will be drafted by ADF&G and considered at the next scheduled board meeting with the same public review and comment processes provided for in this Strategic Wolf Management Plan.

Professional wildlife biologists from the pool outside ADF&G designated by the Commissioner for commenting on area-specific and implementation plans will be asked to review the emergency situation plan and the implementation plan and comment on whether the affected wolf population will remain viable over time. Written comments will be available for public review at ADF&G offices.

Research Program

ADF&G will continue research into wolf ecology, predator-prey and habitat relationships, and nonlethal methods for reducing predation. Where appropriate, ADF&G will cooperate in research efforts with other agencies. Research findings will be reported in a timely fashion and presented in a form that is easily understood by the public.

Information and Education Program

ADF&G recognizes that conservation and wise management of wolves depends on public awareness and appreciation of wolves. The public must also possess an accurate knowledge of wolves, their ecology, natural history and population status. ADF&G will expand efforts to provide information on these aspects of wolf ecology.

ADF&G will work with fish and game advisory committees, other organizations and interested people to identify information and education needs and to fulfill principles #11, 12 and 13 and goal #3 found in the introduction of this Strategic Wolf Management Plan.

Information and education materials must be presented in plain language understood by the diversity of cultures and interests in Alaska, as well as interested parties in the rest of the country and the world.

Subject to budget constraints ADF&G will make its best efforts to provide information and education to the public as follows:

Wolf and prey education materials will be prepared and included in the Alaska Wildlife Curriculum. “Hands on” training designed to show teachers how to use the materials effectively will be offered in teacher workshops around the state. Department staff will be encouraged to make appearances before student classes about wolf behavior, natural history and predator/prey relationships. Multimedia materials will be investigated, and traveling displays, static displays and exhibits will be researched. Hunter and trapper education programs will include information about predator/prey relationships.

Information efforts to be investigated and used when appropriate include (but aren’t limited to): leaflets and flyers; the Wildlife Notebook Series, Alaska Wildlife Magazine; newspaper columns; news, local programs, public service announcements and advertising on public and commercial radio and television stations; contacts with the Legislature; programs presented to civic organizations and other groups by department staff and technical and scientific contacts between department staff and other wildlife management agencies and scientists around the world.
Values and Public Involvement

by Cathie Harms

"Buck" moved his family to Alaska because they enjoy wildlife. He and his family take several trips each year just to watch and learn about wildlife. They feel that wildlife should never be killed by humans, and wolves, specifically, should be "left alone." "Heather" was born in Alaska. She and her family depend on hunting and fishing to put meat in the freezer. She likes wolves and wants them in Alaska in the future, but favors wolf management which will allow moose and caribou populations to prosper. "Chris" is building a small tourism-oriented business. Wildlife has always been a big part of Chris's life, and now the business depends on showing wildlife to people. Chris wants to be able to count on showing moose, caribou and, hopefully, wolves to his clients.

"Buck," "Heather" and "Chris" are fictitious examples based on real people in the state. People in Alaska value wolves and other wildlife in many different ways. One thing is certain—when it comes to wolf management, we can't please everyone. The Alaska Constitution requires the Department of Fish and Game to conserve and manage wolves and other wildlife for the benefit of Alaskans. Twenty-five years ago, most people in Alaska agreed that wolves should be managed to maintain high numbers of prey species such as moose and caribou. Wolf management and control programs weren't very controversial. Demographics have changed, and now many Alaskans do not hunt. The morality of killing wildlife is questioned in some circles. The range of values placed on wildlife in Alaska has broadened.

We knew we needed to learn these values to write a wolf management plan. Before we drafted it, we talked with interested individuals and groups in person, on the phone and through the mail. We also created the "Alaska Wolf Management Planning Team," twelve people with different interests in wolves, and asked them to give us recommendations for wolf management. Members of the public were involved more than in any other project we've tackled. Now that the "blueprint" Strategic Wolf Management Plan has been accepted, the next step is to draft area-specific management plans which will detail exactly how wolves will be managed in each specific area. Again, we need to consider people's values, and to do that, people must be involved. We've come a long way, but we still need your help. You'll be hearing from us soon!
Next Steps:
Area-Specific Management Plan

1. ADF&G chooses plan area.
2. ADF&G gathers public input.
3. ADF&G drafts plan package composed of zone boundaries and area-specific wolf management plan and, if wolf population regulation or reduction is included, an implementation plan.
4. ADF&G distributes draft plan package to public.
5. ADF&G gathers public review and comment on draft plan and package. (Includes one public meeting in plan area and one public meeting in regional center.)
6. ADF&G re-drafts plan package to reflect public comment.
7. Revised plan package submitted to Board of Game for consideration.
8. Board of Game gathers public review and comment on revised plan package.
9. Board adopts or amends package.
Bosworth Appointed
Commissioner Carl L. Rosier has appointed Robert G. Bosworth director of the Division of Subsistence. Bosworth, 41, has been serving as acting director since last March. Prior to that, he served as acting deputy director, regional supervisor of the Southeast region, and subsistence planner for the division.

"Whatever the future state subsistence law looks like, there will be a continuing need for objective subsistence information, gathered through a professional research program," Bosworth commented. "I consider my appointment to be an affirmation by the commissioner of the continuing value of such a program. I also feel my appointment represents a continuing commitment by the Department of Fish and Game to bringing a sensitivity to rural issues and fish and wildlife management."

Board Meetings
The Alaska Boards of Fisheries and Game have recently completed meetings in Anchorage and Fairbanks, respectively.

Among other decisions, the Board of Fisheries voted to continue to allow dog mushers to use subsistence-caught fish to feed their teams; took action to protect herring stocks around Nelson Island in western Alaska; and turned down a proposal to limit the number of sport caught fish that could be transported within the state or exported.

The Board of Game adopted the Strategic Wolf Management Plan, which is presented in this magazine; froze the harvest of brown bears north of the McNeil River State Game Sanctuary until a management plan can be developed with public participation; refused to shrink the protected area around thePack Creek viewing area on Admiralty Island; and deferred action for 16 months on a request by Togiak villagers to hunt walrus on Round Island.

The next Board of Fisheries meeting will be completed just before we go to press. Future meetings will take place in Dillingham (January 4-14), Bethel (February 4-14), and Juneau or Anchorage (March 5-16).

The Board of Game will hold its spring meeting in Anchorage from March 18 to April 10. For any questions on board schedules, please call (907) 465-4110.

Orphaned Bears
Although Juneau suffered a serious problem this past summer with garbage bears, resulting in the destruction of 15 black bears, there were some happy endings. In one fairytale episode, a very small and undernourished female bear cub opened the door to the emergency room at Bartlett Memorial Hospital and was found hiding under a table in the cast room. ADF&G wildlife biologist Tom McCarthy, whose comments on garbage bears you have read in the last several issues, cared for her at his house until he found a permanent home for her, at Bear Country USA in South Dakota, where she now resides. Named Bartlett by hospital administrators, she has become the hospital mascot. Her image will be used to entertain and encourage young patients. Bartlett may be the sister of the female cub taken to Vladivostok as a gift to Juneau's sister city in October. The cubs are believed to be the offspring of a sow struck and killed by a car.

While Bartlett was being cared for in Juneau, another orphaned black bear cub was captured in Wrangell. This cub, too, was accepted by Bear Country USA and traveled there with Bartlett, compliments of Delta Airlines.

Hunter Education Grows
The number of students who successfully completed an Alaska Education Hunter Education course increased substantially last year. As of June 30, 1991, 595 students completed basic Hunter Ed, 862 completed Bow Hunter Ed, and 350 completed a steel shot workshop.

New Subsistence Publications
The Division of Subsistence has released two new publications in its Technical Paper Series: "Historic and Current Use of Musk Ox by North Slope Residents, with Specific Reference to Kaktovik, Alaska" by Sverre Pedersen, Terry L. Haynes, and Robert J. Wolfe; and "Subsistence Herring Fishing in the Nelson Island and Nunivak Island Districts, 1991," by Mary C. Pete. To receive copies, or for more information, call the Division of Subsistence at (907) 465-4147.

Crab Symposium
The International Crab Rehabilitation and Enhancement Symposium will take place in Kodiak January 21-24. The purpose of the meeting is to facilitate the exchange of scientific information regarding crab rehabilitation and enhancement technology. Presentations will be made by participants from Alaska, Japan, and Chile. For more information, contact Tom Kron, Regional Supervisor, FRED Division, Anchorage (907) 344-0541.

Alaska Loon Festival
It's not too early to start planning for the 1992 Alaska Loon Festival, planned for East High School and Goose Lake, Anchorage, May 8 and 9, 1992. The annual event celebrates the spring arrival of loons in Anchorage, the largest city in North America to still have nesting loons. For more information, please call (907) 278-5891.

Erratum: We made a mistake with two captions in "Alaska's Shorebirds" (November-December 1991), page 13: The bird names should be: "Lapland Longspur" (top, middle); and "western sandpipers" (lower right). Thanks to some sharp-eyed readers who brought this to our attention.

Note to Subscribers
We really want you to get your magazines! Please help us by letting us know, as early as possible, of any change of address. Recently, we have had a number of magazines returned to us for lack of proper address. Please remember, for any circulation problems or questions, call (907) 862-478-4286; or (outside Alaska) Collect (907) 465-4286.
Willow Mountain Critical Habitat Area

Mountain of the Moose

by Debra Clausen

The Willow Mountain Critical Habitat Area lies on the western slopes of Willow Mountain in the Talkeetna Mountain Range, east of the Parks Highway and between Willow Creek and the Kashwitna River. The area was established by the Alaska legislature in 1989 to protect the area’s exceptional fish and wildlife habitats and populations and to provide opportunities for hunting, trapping, and dispersed recreational opportunity. The area contains some of the highest quality moose habitat in the lower Susitna Valley and supports some of the largest concentrations of moose found anywhere in the state. Moose are the featured attraction along the mid-level slopes of Willow Mountain throughout the summer, fall, and early winter. A combination of high-quality willow browse, mixed forest cover, and relatively shallow winter snowpack attracts over 1,000 moose to the area.

Moose come from as far as the Deshka River to the west, Wasilla to the south, and Brownie Mountain to the north to breed in the area, making it an important link in maintaining the region’s moose populations. Beginning in late October every year, particularly large concentrations of moose gather in alpine portions of the critical habitat area for the post-rut period. Moose remain in this alpine habitat area until migrating to lower elevation winter range. Onset of migration to winter range and number of moose that remain in the post-rut area during winter are closely related to snowpack depth. When snowpack is shallow, many moose remain in the meadows during winter. An early and deep snowpack will, however, initiate an early migration of most moose to lower elevations.

Ranging in elevation from 1,000 to 2,600 feet, the area is vegetated with mixed stands of birch, white spruce, cottonwood, and aspen at lower elevations and willow and alder at higher elevations. Willow and alder mixed with grasslands cover the ridgetops. Wetland communities of black spruce are scattered throughout. It is the extensive stands of willow which attract moose, both for the browse and the cover they provide.

Moose share the higher elevations with small numbers of caribou. The slopes of Willow Mountain also support populations of both brown and black bear with black bear favoring the lower, forested elevations. Red fox, coyote, mink, ermine, and least weasels range throughout the area. Beaver are present along the creeks. Marten and porcupine can be found in the forested portions of the area. Arctic ground squirrels inhabit the subalpine shrublands. Lynx and their prey, snowshoe hare, are uncommon and subject to cyclic fluctuations. Wolves are infrequent visitors, and wolverine occasionally wander through.

Ptarmigan and spruce grouse are common residents of the area. Spruce grouse favor the mixed forests of the lower elevations while ptarmigan feed on willow on the higher slopes. Frequently seen birds include ravens, magpies, jays, rosy finches, white-crowned sparrows, Wilson’s warblers, Swainson’s thrushes, and downy woodpeckers. Dippers can be found along the creeks. The abundance of these birds attracts raptors such as goshawks, sharp-shinned hawks, merlin, red-tailed hawks, and an occasional gyrfalcon during fall and winter.

Little Willow Creek and Iron Creek support populations of rainbow trout, Dolly Varden, Arctic grayling, and whitefish within the critical habitat area. King and coho salmon can be found in portions of these drainages downstream from the critical habitat area.

The remote character of the area and the scant use by other competing interests have served to limit use of the area to hunters, trappers, and other outdoor enthusiasts. The critical habitat area is popular with mussel and ptarmigan hunters from Anchorage, Palmer, Wasilla, and Willow areas. Trapping occurs throughout the area. Dog mushers, cross country skiers, and snowmachine enthusiasts visit the area in the winter. Snowmachining is a popular activity in late winter and early spring as well. Incidental sport fishing occurs along Little Willow and Iron creeks but not in the numbers found farther downstream near stream mouths.

Public access into the critical habitat area is gained from the south via the Peters-Purches Creek Trail off of Hatcher Pass Road and the Willow Creek Mountain Trail off of the Willer-Kash Road. Winter use of snowmachines is currently allowed by the department under a general permit. Off-road vehicle (ORV) use on existing trails has occurred in the area in the past, primarily during the September-October moose hunting season. The Department of Fish and Game office in Palmer can be contacted to learn about current restrictions on ORV use in the critical habitat area that are designed to prevent disturbance and displacement of moose and damage to their habitat.

Every Alaskan hunter knows the value of maintaining healthy moose populations in the Susitna River Valley. Now, thanks to the foresight of the Alaska legislature, Willow Mountain Critical Habitat Area is making a vital contribution toward that goal.

Debra Clausen is a habitat biologist with the Division of Habitat, ADF&G, Anchorage.
**Parvo: No Threat to Alaska’s Wolves**

by Randall Zarnke

With long-distance and sprint sled dog races being held in every corner of the state, Alaska might well lay claim to the title of Dog Capital of the World. If we include all the hunting dogs and family pets, that title might be even more appropriate. Most dog owners are interested in the health of their animals. It stands to reason that residents in the Great Land may be more concerned about dog diseases than people elsewhere. Canine parvovirus, or “parvo,” is a good example.

“Parvo” first appeared in domestic dogs during 1978. By 1979-80, the disease was killing large numbers of dogs and causing near-hysteria among dog owners around the world. Parvo is an altered form of another virus which normally infects cats but not dogs. The altered virus can cause disease in dogs whereas the original virus could not. Parvo can cause two distinct types of symptoms: (1) vomiting and diarrhea, or (2) heart failure. Either form can be fatal. Symptoms are most common and most severe in pups. The disease is spread by contact with contaminated feces. Parvo can be transmitted from dogs to other canine species such as foxes and coyotes. Presumably, wolves in Alaska could be exposed in a similar manner. We conducted a project to address that specific point.

During the period from the mid-1970s to the mid-1980s, Warren Ballard, a biologist from the Alaska Department of Fish and Game (ADF&G), conducted a project on moose and wolves in what we call Game Management Unit (GMU) 13 in southcentral Alaska. As part of this project, he captured and released over 100 wolves. Blood tests on these animals indicated that wolves had been exposed to the parvo virus.

As you might expect, there was a time lag between the first appearance of parvo in the domestic dog population and when it was first found in wolves. Evidence of exposure in wolves did not appear until 1980, but then quickly spread to approximately 50 percent of the wolves tested.

We know that parvo can kill dogs and we now know that the disease has been transmitted to our wolf population. What is the impact of that disease on the wolf population? Can we conclude that parvo is killing large numbers of wolves? Dogs have the benefit of veterinary care to help prevent the disease and even to help them recover if they do become infected. Without such veterinary treatment, are large numbers of wolves dying from parvo?

The apparent answer is...NO. There has been only one laboratory-based study where wolf pups were purposely exposed to parvo and then observed closely by humans. Most pups got sick, but only 1 of 12 died. This low death rate was a surprise to most wildlife disease researchers.

Once the laboratory-based study was complete, it seemed prudent to ask if the results could be extended to wild, free-ranging wolves. Most researchers agreed that the results were not directly applicable. Therefore, it seemed necessary to investigate the impact of parvo on free-ranging wolves in the wild. That’s not as easy as it sounds. We spent many long hours with colleagues from around the world trying to design a field-oriented experiment to answer this question. Most experimental designs were rejected because of logistical problems, excessive cost, or complications caused by wolf behavior. Unless there are some major technical breakthroughs which would make some of these experimental designs more feasible, I can’t foresee such a project being conducted in the near future.

However, all is not lost. We have Mother Nature conducting what amounts to a natural experiment for us in GMU 13. We have good data on pack size and productivity (numbers of pups) over a period of 10 years. We know that parvo was introduced into GMU 13 wolf packs during the middle of this study. There were no significant changes in either the pack size or productivity. We suspect that a few pups may be lost, but the number is apparently pretty small.

Parvo is still a concern for domestic dogs, but the hysteria of the late 1970s has vanished. Dogs can be vaccinated to prevent infection. If infection does occur, symptoms can often be treated and the dog can be saved. Parvo is also a concern for wolves, but apparently they have adapted to this new health threat. All indications are that we don’t have to worry about this disease decimating the wolf population in Alaska.

Randall Zarnke is a wildlife biologist with the Division of Wildlife Conservation, ADF&G, Fairbanks. He specializes in research on wildlife diseases.
Alaska Highway Celebration: Calendar of Events

by Stanton H. Patty

A full calendar of events is being organized for the 50th anniversary of the Alaska Highway. The following schedule is an excerpt of more than 175 events throughout western Canada and Alaska beginning in January 1992.

Feb. 14: Alaska Challenge Snowmobile Safari. About 40 snowmobilers will depart Tumbler Ridge and Dawson Creek, B.C., for Fairbanks, traveling alongside the Alaska Highway with daily laps of 200 miles. Temperatures are expected to fall at least 40 degrees below zero at times.

Feb. 15, 16: Opening ceremonies in Dawson Creek—milepost 0 of the Alaska Highway for the year-long 50th anniversary celebration. The Canadian Forces Band and Canada's National Color Guard will be featured.

Feb. 22-29: Yukon Sourdough Rendezvous, an annual winter carnival in Whitehorse, capital of Yukon Territory.

May 15-24: Alcan Festival, Whitehorse. The 10-day northern jubilee will kick off the Yukon's Alaska Highway 50th anniversary events with parades, concerts, art exhibits, and entertainment.

May 17: Alaska Highway Trailblazers. A convoy of about 100 mules and horses will depart Dawson Creek for Fairbanks, recalling how pack animals helped survey the highway route. Local groups are expected to join the wagon train for parts of the trek. Participants will gather around camp fires each night for storytelling programs.

June 10-29: Army Motors Convoy. A convoy of 74 former military vehicles will travel from Edmonton to Fairbanks as a tribute to U.S. Army Corps of Engineers units that built the Alaska Highway in 1942. The military Vehicle Preservation Association is coordinating the event. Stops are planned in Grande Prairie, Alberta; Dawson Creek, Fort St. John; Fort Nelson, B.C.; and Watson Lake and Whitehorse, Yukon Territory, on the nine-day drive to Fairbanks, at a date to be established. Crews will pause in communities along the way to join in local parades and to meet with World War II veterans.

June 22: Float Plane Rally and competition begins in Dawson Creek, with 75 float planes departing for Fairbanks. The pilots will follow waterways adjacent to the Alaska Highway during the 1,500 mile, six-day flight. Stops are planned in Fort Nelson, B.C.; Watson Lake, Whitehorse; in Burwash Landing—all in Yukon Territory; and at Tok, Alaska. The rally will end June 26-27 in Fairbanks.

July 4: First of a series of international air shows, beginning July 4 in Great Falls, Mont. Other shows are planned in Edmonton, Alberta; Fort St. John, B.C., on July 19; Whitehorse, Yukon Territory, on July 26; and in Fairbanks. Other dates are to be announced. The series follows the World War II Northwest Staging Route over which almost 8,000 American built warplanes were ferried to the Soviet Union by way of fields along the Alaska Highway. The Soviet air force is being invited to participate.

July 4-12: Airmada '92, with military aircraft, past and present, re-enacting the ferrying of World War II combat planes along the Northwest staging route. About 30 crews and planes will assemble in Great Falls July 4 to begin the 14-day journey. Dates for stops and air displays: Edmonton, July 5-6; Grande Prairie, Alberta, July 5-6; Dawson Creek, B.C., July 7-8; Fort St. John, B.C., July 7-8; Fort Nelson, B.C., July 9-10; Watson Lake, Yukon Territory, July 9-10; Whitehorse, July 10-11; Fairbanks, July 11-12.

July II: Northwest Staging Route Re-enactment Ceremony, Fairbanks. American, Canadian, and Soviet dignitaries and war veterans will gather at Fort Wainwright, formerly Ladd Field, where thousands of American fighters and bombers were turned over to Russian crews for flights to Siberia and then to battle fronts in Russia. A World War II U.S.O. style stage show is scheduled that evening.

Sept. 17-27: Rallye Alaska Highway '92. Professional and novice drivers will compete for prizes in a run from Dawson Creek to Fairbanks. Several categories of vehicles, from antique cars to trucks, will be entered.

Nov. 20: Soldier's Summit Rededication Ceremony, at Kluane Lake, Yukon Territory. It was at Soldier's Summit on November 20, 1942, that a ribbon was cut by United States and Canadian officials to open the Alaska Highway to military traffic.

Meanwhile, from about June 1 to September 1, Haines Junction, Yukon Territory, is planning to offer visitor trips in surplus military vehicles along an abandoned stretch of the original Alaska Highway.

Delta Junction, at the northern end of the Alaska Highway, plans to spread a World War II-style tent city on the state fairgrounds to show visiting veterans and their families how the highway workers lived in 1942.

And Festival Fairbanks, a nonprofit community organization, is making arrangements to fly 150 banners on highway routes into the city.

Additional information:

For Alaska:

Alaska Division of Tourism, P.O. Box 110801, Juneau, AK 99811-0801. Phone: (907) 465-2010.

Alaska Marine Highway (for ferry information and reservation), P.O. Box 25535, Juneau, AK 99802-5535, or call toll free 800-642-0066.

Great Alaska Highways Society, P.O. Box 74250 Fairbanks, AK 99707, Phone (907) 452-8000.

For Yukon Territory:

Yukon Anniversaries Commission, Bag 1992, Whitehorse, Yukon Territory, Canada Y1A 5L9, Phone (403) 668-1992.

For British Columbia:

Alaska Highway Rendezvous '92 (B.C.), Suite 14-9223 100 St., Fort St. John, B.C., Canada V1J 3X3, Phone (604) 787-1992.

Stanton H. Patty is the retired assistant travel editor of the Seattle Times.
ADF&G Celebrates Alaska Highway’s 50th Anniversary

In recognition of the growing public interest in wildlife viewing, the importance of tourism to Alaska’s economy, and the fiftieth anniversary of the Alaska Highway, the Division of Wildlife Conservation has committed $30,000 for enhancing wildlife recreation and interpretation along Alaska’s highways and on state refuges during Fiscal Year 1992. This funding will enable the division to work cooperatively with other agencies in inventorying and selecting key highway turnout sites for identification and interpretive signing. The division also anticipates developing brochures to describe those sites and their associated wildlife recreational opportunities. Key refuges slated for expanded wildlife interpretation include Creamer’s Field in Fairbanks, Mendenhall Wetlands in Juneau, and Anchorage Coastal. Expanding wildlife recreational and educational opportunities in Alaska will increase the public’s enjoyment of their valuable wildlife resources, promote conservation, and benefit the Alaska economy.

ALASKA WATCHABLE WILDLIFE CONSERVATION TRUST

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Start your New Year with a tax-deductible contribution to the Alaska Watchable Wildlife Conservation Trust. This newly created fund will be managed by the Alaska Conservation Foundation, in cooperation with the Alaska Department of Fish and Game. Proceeds will be used to enhance wildlife watching opportunities, support wildlife education and research, and acquire critical wildlife habitat. For more information, call (907) 276-1917 or write to ACF, 430 W. 7th #215, Anchorage, Alaska 99501.
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Filmed in cooperation with public television station KTOO-TV of Juneau, *Wild Neighbors* explores the world of bears, eagles and whales in southeast Alaska. Learn how to view these spectacular animals with minimum impact to the environment in which they live. VHS, $22.50

Wildlife Safeguard Poster Series

Each poster was selected from entries in *Alaska’s Wildlife* annual photo contest. All editions are limited to 2500 copies. The premier poster, *Magnificent Seven* (puffins), is sold out, but the three posters shown above are available for only $12.50—while supplies last. Perfect for framing.

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18 ALASKA’S WILDLIFE • JANUARY/FEBRUARY 1992
The Arctic Coastal Plain encompasses a 25,000 square mile physiographic province in northern Alaska that is arctic in climate, coastal in location to the Chukchi and Beaufort seas, and a plain characterized by tundra vegetation, permafrost, and low topographic relief. This area, which is about the size of the state of West Virginia, extends across northern Alaska from Icy Cape on the Chukchi Sea coast east to the Canadian border.

My first view of the Arctic Coastal Plain came in early June 1975 from the window of a Wien 737 jet as it approached what was then just a gravel airstrip at Deadhorse near Prudhoe Bay. I was immediately struck by the vast number of ice-fast lake basins outlined in the snowy landscape. Later in June, as I explored nearby Storkersen Point, an impressive array of freshwater ponds and marshes became evident as the snowpack melted. I soon learned that hip boots were an absolute necessity for foot travel. About half of the Arctic Coastal Plain is surface water in the form of wet meadows, ponds, lakes, and river systems.

This diversity of wetland habitats, along with adjacent uplands, attracts millions of waterbirds to the Arctic Coastal Plain during the short arctic summer. Ducks, geese, and swans are well represented in this annual northward migration to one of the most stable collections of wetlands in North America. Each summer the U. S. Fish and Wildlife Service conducts aerial surveys of the Arctic Coastal Plain to census breeding waterfowl. In 1990, Service biologist Rod King estimated that there were over 300,000 dabbling ducks, almost 500,000 diving ducks, about 100,000 geese, and over 6,000 tundra swans on the Arctic Coastal Plain. In addition, a special group of large lakes near Teshekpuk Lake hosts large numbers of geese that have come to the Arctic Coastal Plain from other areas to complete wing-feather molt (see Alaska Fish & Game, September-October 1985). In 1990, King counted over 40,000 of these molting geese on about 200 lakes in the area. Without question, Arctic Coastal Plain wetlands are of special importance to both nesting and non-breeding waterfowl.

In their new book, The Birds of the Beaufort Sea, Stephen Johnson and Dale Herter list 32 different swans, geese, and ducks that have been observed on the Arctic Coastal Plain of Alaska. Nineteen of these species are described as nesting, while the remaining are considered summer visitors from breeding habitats farther south. Let’s take a closer look at three species that contribute to this interesting assemblage of migratory waterfowl.

The largest and most visible among the waterfowl nesting on the Arctic Coastal Plain are tundra swans (Cygnus columbianus). They are among the first birds to return to Arctic Coastal
The black brant is one of five species of geese that nest on Alaska's Arctic Coastal Plain. To help with an international banding program, the author would appreciate receiving information on black brant leg bands sighted. Please call him at (907) 786-3531.

Plain wetlands each spring. Paired birds arrive from wintering areas in late May or early June as soon as there is some open water available in larger marshes and lakes. Most of the adjacent upland habitats are still snow covered at the time swans begin to defend territories and build nests. They most frequently select larger wetlands that have emergent stands of pendant grass (Arctophila fulva) for their onshore nests. Pendant grass is a favored food for adult swans and growing cygnets, and the larger basins provide ample space for these large birds to take flight. Small groups of non-breeding swans often occupy deep, open lakes that do not have emergent plants. When these birds become flightless during wing molt, they venture to nearby upland areas to graze on terrestrial plants. As lakes begin to freeze in mid-September, adults leave the Arctic Coastal Plain with their young and follow a migration route east to the Northwest Territories, south along the Mackenzie River corridor, and across the Canadian provinces and midwestern states to wintering areas on the Atlantic Coast.

A much smaller and darker waterfowl, the black brant (Branta bernicla), is one of five species of geese that nest on the Arctic Coastal Plain of Alaska. I first saw this marine goose at Storkersen Point in early June 1975 as flocks migrated east along open leads of the Beaufort Sea. Brant nest across the Arctic Coastal Plain, usually within a few miles of the sea. They can also be found breeding on low, barrier islands along the coast. Brant prefer wetlands with small islands or peninsulas for their nest sites, which they occupy as soon as snowmelt exposes the vegetation. Their habit of nesting in colonies aids them in defense of their nests from predators. Several adults from a colony are more effective in repelling gulls, jaegers, and arctic foxes than a solitary pair of brant.

The female incubates her clutch of four to eight eggs for 24-26 days. When the young are only one to three days old, the adults often lead their broods to coastal wetlands and estuaries, where the whole family spends about five weeks feeding on nutrient rich salt grasses and sedges. In late August, when the young can fly, brant leave the wetlands of the Arctic Coastal Plain for large ocean bays and estuaries along the Pacific states and Mexico, where they winter. An international banding program involving the Soviet Union, Alaska, Canada, Japan, and Mexico is expected to yield new information about the relationship of brant from different nesting, molting, staging and wintering areas. If you see a brant with a plastic leg band, please notify me of the color and the three character code. In return, I'll tell you about the bird's breeding and migratory history.

The Arctic Coastal Plain also plays a key role in the life cycle of a third interesting species of waterfowl. The northern pintail (Anas acuta) is a rather nomadic duck that nests from the prairie regions of central North America, west to California and north to the Beaufort Sea coasts of Alaska and Canada. A small segment of the population crosses the Bering Sea to nest and molt in eastern Siberia. The North American pintail population has declined precipitously in the last decade; they are at their lowest level since waterfowl surveys were begun in 1955. Interestingly, counts in Alaska have remained relatively stable, and our wetland habitats now support 45-60 percent of the North American population of this prized duck. Although the Arctic Coastal Plain is not an especially important nesting area for pintails, the rich aquatic invertebrate foods and stable water levels of lakes and ponds attract large numbers of non-breeding birds. This is particularly pronounced in years when drought in more southern prairie areas prevents them from nesting. For example, in 1990 the U.S. Fish and Wildlife Service determined that there were almost 300,000 pintails on the Arctic Coastal Plain, which represents about 40 percent of all ducks counted that year. One might argue that Alaska's Arctic Coastal Plain supports a "reservoir" of pintails that supplies southern prairies with breeding populations when conditions there are favorable.

The migratory behavior of these and the other waterfowl (see eider article) that depend on wetlands of Alaska's Arctic Coastal Plain makes cooperative research and management paramount in protecting this valuable international resource.

Dirk V. Derksen is a wildlife biologist with the U.S. Fish and Wildlife Service where he supervises migratory bird research at the Alaska Fish and Wildlife Research Center in Anchorage.
Steller’s and spectacled eiders are small marine ducks that breed and winter at northern latitudes remote from most human populations. Their world breeding ranges are composed of three geographically isolated areas: the Yukon Delta, the Arctic Coastal Plain of Alaska, and eastern Siberia. Both species have recently experienced significant declines on the Yukon Delta, a comparatively pristine waterfowl breeding area in western Alaska. Steller’s eiders have not been found nesting on the Yukon Delta since 1975 and may be locally extirpated; and, based on U.S. Fish and Wildlife Service (USFWS) surveys, spectacled eiders declined over 90 percent on the delta when compared with previous estimates of population size. Although reasons for the declines on the Yukon Delta remain unclear, possible factors include changes in patterns of movement, overharvest, predation, habitat change, and weather.

In response to these declines, the USFWS is currently conducting status reviews to see if Steller’s and spectacled eiders should be added to the growing List of Endangered Species. Evidence clearly supports listing for the spectacled eider, because the Yukon Delta represents the center of its world breeding range. But for the Steller’s eider, the Yukon Delta was a peripheral breeding area at the southernmost extreme of the species’ breeding range, the center of which is eastern Siberia. Assuming that the Yukon Delta subpopulation was small compared to the Siberian subpopulation, why be overly concerned about the loss of a few Yukon Delta birds or, for that matter, with the comparatively small Alaskan Coastal Plain subpopulation? Such logic ignores an important consideration: not only is preserving the overall size of species’ population important, but equally important is preserving the flow of individuals between its subpopulations and the potentially unique genetic adaptations displayed by birds from different breeding areas. The greater the genetic diversity, the better the chances that species will withstand environmental change.

Although geographically isolated, the Yukon Delta, the Arctic Coastal Plain of Alaska, and eastern Siberia are to some extent interconnected through the movement of individual eiders. The majority of the world population of the Steller’s eider, for example, coexists in lagoons along the Alaska Peninsula during winter and early spring, facilitating the mixing of individuals from the different subpopulations during pair formation. Aerial surveys conducted by the USFWS along the Alaska Peninsula suggest a world population decline of over 50 percent for Steller’s eiders, substantiating reports from the Soviet Union that the species has declined and is now rare on the Siberian breeding grounds. This decline may have contributed to the lack of recent nesting records for Steller’s eiders on the Yukon Delta. As numbers of eiders breeding in Siberia declined during this century and a surplus of individuals was no longer produced, immigration to the Yukon Delta may have ended. If Steller’s eiders breeding on the Arctic Coastal Plain of Alaska are so sustained by immigration, then the continued existence of the Coastal Plain subpopulation, and possible recolonization of the Yukon Delta, will depend on maintaining a stable Siberian subpopulation.

The Endangered Species Act authorizes the USFWS to list either entire species or individual subpopulations of a species as threatened or endangered. The long-term viability of Steller’s and spectacled eiders would be best insured by the latter approach. Working cooperatively with the Soviets to protect Siberian Steller’s eiders should be a high priority. But if cooperation does not prove effective over the long-term, or if the Siberian subpopulation continues to decline, the continued existence of this highly distinctive species (the Steller’s eider is the sole member of the genus Polysticta) may require that North American subpopulations be listed and managed separately.

Kenneth Kertell is a wildlife biologist with LGL Alaska Research Associates in Anchorage. He recently authored an article entitled “Disappearance of the Steller’s Eider from the Yukon-Kuskokwim Delta, Alaska” in the Journal ARCTIC.
Marine Mammals of Kasegaluk Lagoon

Spotted Seals: World Travelers

Spotted seals, and more seals! That is what there are in Kasegaluk Lagoon along the northwestern Chukchi Sea coast of Alaska. This sparsely populated and little-traveled area of Alaska has some of the largest spotted seal haulouts in the world. Over 2,000 spotted seal haulout to rest on sandbars and spots near passes at the northern and eastern end of the lagoon.

Kasegaluk Lagoon! Another visited Kivalina and then swam back to Cape Lisburne, a distance of over 350 miles, in just two weeks. The other two have moved between northern Kasegaluk Lagoon and Point Hope. These long trips to sea are undoubtedly associated with feeding. The seals sometimes make over 250 dives in a day, with an average length of 4-8 minutes.

Based on information from these four satellite tags, the first ever attached to spotted seals, we now know that Kasegaluk spotted seals spend most of their time at sea and may travel long distances from their regular haulouts. The 2,000 seals that biologists count in Kasegaluk haulouts during aerial surveys must represent only a small fraction of the total seals using the area. We hope that satellite tagging studies planned for 1992 will teach us even more about the diving characteristics and habitat use of spotted seals in northern Alaska.

Kathy Frost is a wildlife biologist with the Division of Wildlife Conservation, ADF&G, Fairbanks.

Beluga Update

That whale is white, 14 feet long, and concentrates in shallow coastal waters during summer. Most Alaskans immediately know the answer is the beluga whale, but they may be familiar only with the Cook Inlet population of this small odontocete (toothed) cetacean. In fact, most belugas in Alaska belong to the Bering Sea population. Belugas in this population winter in the Bering Sea and travel to different concentration areas in northern Alaska, Canada, and Siberia to spend their summers.

There are four major concentration areas for belugas in northern Alaska: Bristol Bay, Norton Sound, Kotzebue Sound, and Kasegaluk Lagoon. Kathy Frost and Lloyd Lowry of the Alaska Department of Fish and Game (ADF&G) have been studying one of these beluga concentration areas, Kasegaluk Lagoon, since about 1980. Most recently, they flew aerial surveys during July 1990 and 1991 to determine how many belugas are to be found in Kasegaluk Lagoon. They found that belugas tend to concentrate in the shallow, muddy waters near the passes and may mill around in the same area for hours or sometimes for days.

The reasons why belugas concentrate near Kasegaluk Lagoon are not known for sure, but probably include molting, feeding, and calving. Recent studies by Canadian researchers have shown that belugas shed their skin, or molt, each summer. The warm, freshwater inflow to the Kasegaluk Lagoon enhances the natural occurrence of ingredients for molting: extensive gravel beds and clean water. Molting is the major reason that belugas congregate near the passes.

In the spring of 1991, ADF&G scientists attached radio tags to belugas in the Kasegaluk Lagoon to track their movements. The tags were able to provide information on the number of belugas present in the lagoon at any given time. Using this information, ADF&G has been able to estimate the number of belugas present in the Kasegaluk Lagoon during the summer months.

The village of Point Lay, with about 130 people, is the only village located along Kasegaluk Lagoon. Belugas are one of the most important subsistence resources for the residents of Point Lay. In some years, beluga meat and blubber are used for making and oil and soap. Because belugas are such an important resource, and because they are shared by people in other parts of Alaska as well as Canada and Siberia, a group called the Alaska and Inuvialuit Beluga Whale Committee (AIBWC) was formed in 1988. Members of this group include biologists from Alaska and western Canada and representatives of local, state, and federal governments who are interested in the conservation and management of belugas. One of the most important goals of the AIBWC is to create a management plan for belugas that will identify conservation issues and provide harvest guidelines in order to ensure that belugas remain healthy and abundant for our children and grandchildren to enjoy and use.

The management plan is a cooperative effort between biologists and hunters. A draft is being circulated in the villages for adoption in 1992. Alaskans recognize it is important to work together to keep belugas along our coastline healthy and abundant.

by Kathy Frost

Left to right: Warren Neakok, Dorcas Neakok, Samantha Carroll, Quin Carroll, Randy Davis & Geoff Carroll tag a spotted seal.

Note: Kasegaluk Lagoon is located on Alaska's northwestern coast, between Cape Lisburne and Wainwright.