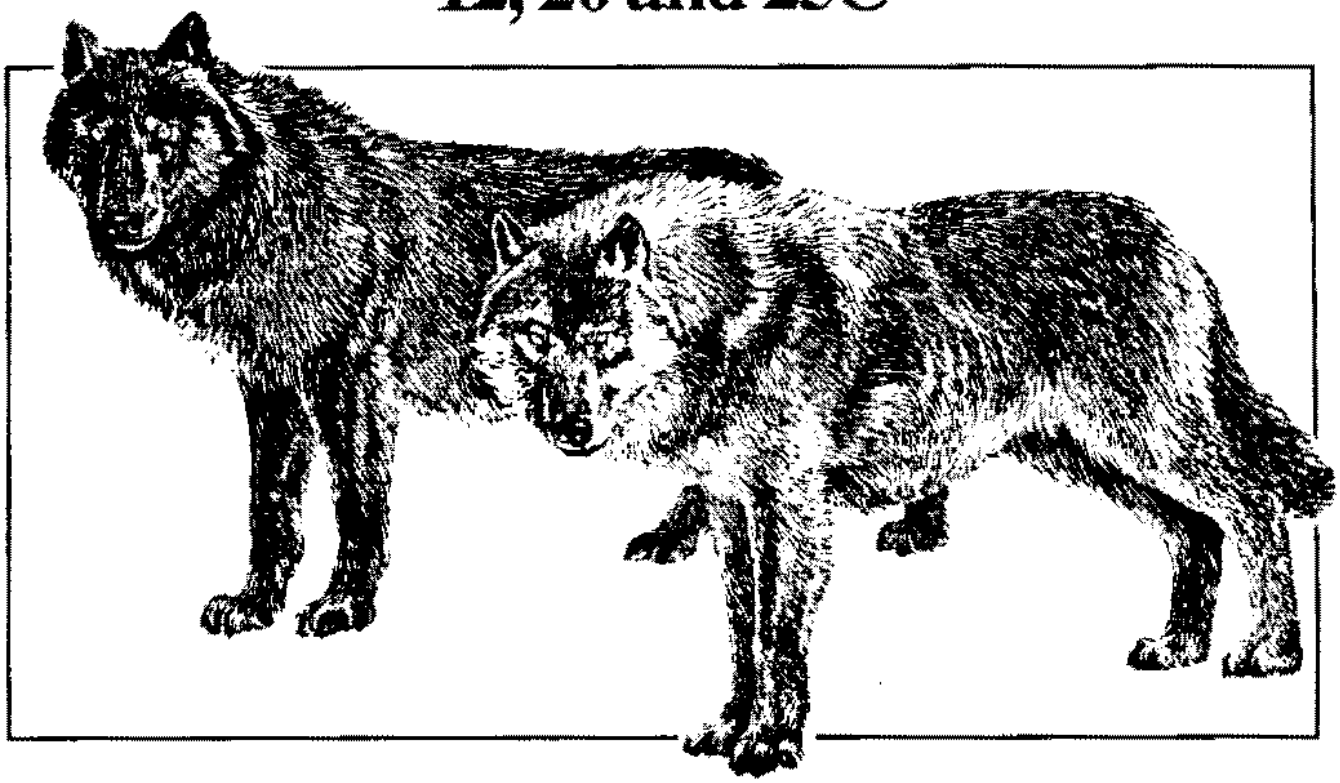
-SECOND DRAFT-

Area-Specific Wolf Management Plan

Game Management Units 12, 20 and 25C



Alaska Department of Fish and Game
March 1992

State of Alaska
Walter J. Hickel, Governor

Department of Fish and Game
Carl L. Rosier, Commissioner

Division of Wildlife Conservation
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INTRODUCTION

In October 1991, the Alaska Board of Game adopted the Strategic Wolf Management Plan for Alaska. The goals of this plan, which embody the statewide policy of the department and the board, 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 consistent with wildlife conservation principles and 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.

Because no single management program will satisfy the many different public demands for wolves or their prey, tbe strategic plan establishes different zones for different kinds of management. It outlines seven zones with different goals and describes what activities may occur within each zone. Management activities in the zones range from total protection of wolves and their prey from hunting and trapping to intensive management for high harvests of both wolves and their prey.

The strategic plan also establishes a process for continued involvement of the public in wolf management in the state. This process is designed to help the Alaska Department of Fish and Game (the department) work with the public and other agencies to provide for the conservation of Alaska's wolves and their prey populations. The strategic plan offers a framework for wolf management, but does not include details of how wolves will be managed in specific areas.

This document represents the next step in the planning process: the Area-Specific Management Plan. It proposes an outline of how wolves, prey, other predators and human use will be managed in Game Management Units 12, 20 and 25C in interior Alaska during the next 10 years, unless the Board of Game chooses to shorten the duration. Another Area-Specific Management Plan is being developed for Game Management Units 11, 13 and 14 in southcentral Alaska.

Game Management Units 11-14, 20 and 25C were selected for this first planning effort because they encompass a broad array of intensive public use areas by consumptive and nonconsumptive users alike. Most of the intensive management for wolves and their prey in Alaska has occurred in these areas in previous years. Beginning the planning effort in

these areas will help to identify the potential problems that are likely to arise in planning for the rest of the state. Area-Specific Management Plans will be developed during the next few years for other areas throughout the state.

This is the second draft of the Area-Specific Wolf Management Plan for Units 12, 20 and 25C. It is significantly different from the original. Important changes are:

1) Some Zone 7 was changed to Zone 6

   * Healy Lake and Lake George area immediately north of Alaska Highway in southeastern Unit 20D.

2) Some Zone 7 was changed to uncertain status because the area does not seem to fit the zone system.

   * Eastern corner of Unit 20B, northeastern corner of Unit 20D, and northwestern corner and eastern portion of Unit 20E. Problem: Moderate use, but intensive management may be crucial for recovery of the Fortymile caribou herd.

3) Some Zone 5 was changed to Zone 4

   * Most of Birch Creek drainage in southeast Unit 25C.

   * Upper Hess Creek drainage of eastern Unit 20F.

   * Preacher Creek and lower Beaver Creek drainages in northwestern portion of Unit 25C.

   * Northwestern corner of Unit 20C.

4) The Robertson River drainage in northwestern Unit 12 was changed from Zone 6 to Zone 7.

Most of these changes reflect more accurate application of the zones as defined in the strategic plan and public comments on the original draft. As a result of these zone changes and revised management strategies, many of the population and human use objectives were also revised.

This second draft Area-Specific Management Plan contains information on the planning area, wildlife resources, human uses and past management of those resources, major issues identified and how the public was involved in this planning process. The heart of this plan is the section on proposed management.

To draft this plan, the department needed to learn what people think are the priority uses of wildlife in the plan area (see Public Involvement section). Once the public identified what the priority uses of wildlife were, the department considered several constraints

before drafting the plan. For example, federal law restricts the types of management zones possible on some federal lands. Economic constraints place limits on how many active management programs can be undertaken. Ecological constraints determine what is biologically possible. Zones must reflect what the habitat can produce and the wildlife population levels that can be realistically achieved. For example, a zone promising long-term high levels of harvest of a particular species should not be considered for an area where habitat for that species is limited or of poor quality, and can not be easily enhanced.

The Board of Game will be considering this draft plan at their March 1992 meeting, and testimony may be given to the board during their meeting. The department has worked to make this a fair and open public planning process. We have considered all information received from the public and have sought to include minority interests as well as those of the majority.

DESCRIPTION OF PLAN AREA

The planning area consists of approximately 65,000 square miles in the eastern and central portions of interior Alaska, including the entire Tanana River drainage and a portion of the middle Yukon River drainage. It encompasses approximately 11% of Alaska. The boundaries of the planning area include the Alaska Range to the south, the Ray and White mountains to the north and the Canadian border to the east. Fairbanks is near the center of the planning area and is the major population center with about 70,000 residents. More than 25 small communities occur within the planning area. Healy, Nenana, Tanana, Central, Delta, Tok, Eagle, and Northway are the largest of these rural population centers.

Elevations range from 200 feet in the west near Tanana, to over 20,000 feet in the Alaska Range. The western portion of the planning area is characterized by the extensive flats of the lower Tanana River, while the middle and eastern portions are characterized by rolling hills sometimes called the Tanana-Yukon uplands. There is both gentle and rough mountainous terrain in the Alaska Range, Ray and White mountains. Glaciers are present in the Alaska Range.

The climate in the planning area is semi-arid, with an average annual precipitation in the Fairbanks area of 11.2 inches. Most of this falls as snow, which averages about 67 inches each winter. Snow depth is highly variable in the planning area and is occasionally a major cause of mortality among prey species. Other extremes in climate such as flooding, abnormally cold or wet spring conditions or chronically dry summers may also affect wildlife.

Major tree species in the planning area include black spruce, white spruce, paper birch, aspen, balsam poplar and tamarack. Larger shrubs include alder and a variety of willow species. The vegetation in interior Alaska is greatly influenced by the slope and aspect of the terrain. Black spruce and alder predominate in flat areas and north-facing slopes, while

white spruce, birch, aspen, poplar and willow thrive on the better drained and warmer soils found near streams and rivers and on south-facing slopes. At higher elevations, forests give way first to a zone of willow and alder, and then to alpine tundra where low forbs, sedges and grasses predominate. Tree line is about 3000 to 4000 feet in the planning area.

Naturally occurring fires are common throughout the northern half of the planning area. Periodic burning removes the dense trees and thick, insulating ground cover that eventually develops in mature forest stands, allowing the soil to warm and support an abundance of plants that are much more useful and important for wildlife than those found in mature forests. Because fires burn in different areas each year, a patchy pattern of vegetation has developed over time, providing a wide diversity of vegetation types.

Major federal conservation system land holdings within the planning area include portions of Wrangell-St. Elias National Park and Preserve (19,247 square miles), Denali National Park and Preserve (8,900 square miles), Yukon-Charley Rivers National Preserve (2,677 square miles), Steese-White Mountains National Conservation/Recreation Area (1,875 square miles) and Tetlin National Wildlife Refuge (1,094 square miles). The U.S. military is a major land holder in Game Management Units 20A, 20B, and 20D; military reservations are managed by the U.S. Bureau of Land Management. Native corporations and the State of Alaska are the other major land owners in the planning area.

WILDLIFE RESOURCES AND HUMAN USES

Wolf:

Wolves inhabit nearly all of the planning area. Most packs include 6-12 animals, but packs as large as 20-30 wolves sometimes occur. In most areas, packs remain within a home range used primarily by pack members with limited overlap in the ranges of neighboring packs. Wolves that depend on migratory caribou may, however, temporarily abandon their home range and travel long distances. The home range of most interior packs includes 200-600 square miles. Wolves are quite productive, and most packs in the interior successfully raise 4-7 pups each summer with pups making up 30-45% of populations in early winter.

Studies have shown that long range dispersals of up to 500 miles by individual wolves, especially yearlings, are a regular occurrence. Each year, one or more wolves from most resident packs disperse and travel to other regions in Alaska and Canada, sometimes joining or creating new packs. This is one reason wolves quickly recolonize vacant habitat. It also guarantees considerable genetic exchange among wolf populations in the interior.

Moose and caribou are the major prey of wolves in most parts of the planning area, although Dall sheep can be an important food in mountainous areas. Wolf packs that rely primarily on moose generally make a kill every 3-10 days, while packs relying primarily on caribou usually kill a caribou every 2-4 days. Wolf predation is one of the major factors affecting moose and caribou population levels in the planning area. Bear predation, adverse weather and human harvest also affect these prey populations.

Predation can control the rate of prey population growth, can play an important role in prey population declines, and can maintain prey populations at low densities. The effect of wolf predation on moose, caribou, and sheep populations depends largely on the densities of predators relative to prey, and the total size and reproductive success of prey populations.

Prior to statehood in 1959, wolf numbers were reduced by federal control efforts in some areas, and prey species then became abundant in these areas. After federal wolf control efforts stopped, wolves became generally abundant during the late 1960's and early 1970's, and prey populations then declined in the early 1970's. Wolf numbers were reduced in parts of Units 12, 20A, 20B, 20D and 20E for a few years during the 1970's and 1980's as part of efforts to allow low moose and caribou populations to increase. Wolf populations have since recovered in those areas. In other areas, wolf numbers have declined from historic highs in response to continued low prey densities.

An estimated 1210-1650 wolves inhabit the plan area. Wolves have occurred at moderate to high densities in most of the planning area for the past 30 years. In recent years, wolf densities in most areas have ranged from 1 wolf per 40-80 square miles. Notable increases in the wolf population have occurred in Unit 12 and 20E. Unit 20A supports a higher density than most other areas, with 1 wolf per 30-40 square miles.

Wolf populations in the interior can generally sustain harvests of 30-40% annually. Annual wolf harvests in the planning area by hunting and trapping have been low, ranging from 5-20% in most areas, with trapping accounting for most of the harvest. The low to moderate harvest rates mean that wolf populations have the ability to increase when prey availability and other conditions allow. In other words, the numbers of wolves harvested by people each year are not large enough to control wolf populations in Units 12, 20 and 25(C).

Nonconsumptive use of wolves in the plan area has been primarily concentrated in Denali National Park. Although wolf densities are higher in many areas outside the park, few other places have the combination of open terrain and road access which provide significant opportunities to view wolves. In recent years, it has become relatively common for people to see wolves while hunting in the foothills of the Alaska Range in Unit 20A, but the lack of road access prevents large numbers of people from taking advantage of the viewing opportunities. Wolves have also been seen incidentally along major roads and highways in the plan area, and cross country skiers and snowmachine users occasionally observe or follow wolf tracks in some areas. Limited "flight seeing" for wolves also occurs.

The demand for nonconsumptive use of wolves has not been measured, but appears to be increasing. Because of the secretive nature of wolves, even in areas where they are not hunted or trapped, most viewing of wolves is opportunistic. The greatest potential for increasing nonconsumptive use of wolves is for "howling" in remote areas to provide a chance to hear a wolf pack reply.

Brown Bear:

Brown (or grizzly) bears occur throughout the planning area, but they are rarely found in mountain and glacial areas above 6000 feet. Although brown bears feed primarily on vegetation, they also prey upon and scavenge moose, caribou and other large mammals. Except for a few local instances, brown bears generally do not feed on salmon in the planning area.

The effect of brown bear predation in conjunction with wolf predation on moose populations has been studied in two parts of the planning area. One study was done on the Tanana Flats in Unit 20A, an area of good moose habitat with low moose densities and poor brown bear habitat with low brown bears densities. In this study brown bear predation did not affect the recovery and growth of the low moose (or caribou) populations after wolf numbers were reduced. The second study was conducted in Units 12 and 20E, an area near Tok containing good moose habitat but low moose densities, and good bear habitat with moderate bear densities. Under these conditions, brown bear predation was more significant. Bears, along with wolf predation, kept moose populations at a low level.

Changes in brown bear populations in the planning area before 1980 are not well known. During the 1950's, federal wolf control programs included the wide use of poison baits. Some knowledgeable people believe that bear populations were substantially reduced as a result of bears consuming baits intended for wolves. Although no practical method of estimating bear numbers existed until the 1980's, it is believed that conservative seasons and bag limits for brown bear hunting and restrictions following higher than average harvests have allowed recovery of bear populations.

The total population of brown bears in the planning area is estimated to be between 1800 and 2100. The highest population densities occur in the mountain valleys and foothills of the Alaska Range (from 4.3-5.8 bears per 100 square miles). Moderate densities are present in the Tanana-Yukon uplands from the White Mountains to the Fortymile River drainage (estimated at 3.8 bears per 100 square miles). The lowest densities are present in the heavily forested and wet muskeg habitats of the Tanana and Yukon river lowlands (estimated at 1.5 bears per 100 square miles).

In most of the planning area, hunting pressure on brown bears is light and populations are probably stable. The annual harvest has averaged 69 since 1986. In some portions of Units 12, 20(A), 20(D) and 20(E) bear density has declined since 1981, as a result of high hunter

harvest. Harvest is expected to decline and density may increase due to pending changes in hunting regulations.

As with wolves, most nonconsumptive use of brown bears in the plan area has occurred in Denali National Park. Although bear densities are lower in the White Mountains than in the Alaska Range, viewing opportunities may increase as access is developed and promoted in the Steese-White Mountains National Conservation/Recreation Area.

Black Bear:

Black bears commonly occur in wooded and brushy habitat throughout the planning area, but are generally absent from mountainous and alpine habitats. Interior black bear diet consists mainly of vegetation (green plants and berries), carrion, moose or caribou calves and some fish.

Black bear predation on moose calves has been documented in this planning area, but its effect on moose populations in the planning area has not been determined. Based on studies elsewhere, black bear predation could be expected to reduce moose population growth rates if black bears were abundant in moose calving areas at calving time.

Little is known about the history of black bear populations in the plan area. Interest in hunting black bear has been increasing in areas close to Fairbanks, and harvest has also increased.

Less is known about black bears than any other big game animal in the state. Densities and productivity tend to be lower in the plan area than in areas farther south. Since large tracts of black bear habitat remain undisturbed, black bear populations are believed to be relatively healthy. Populations are believed to be stable throughout most of the planning area, especially where hunting pressure is low.

Harvest of black bears by hunters is highest in road-accessible areas near urban centers. Little or no harvest occurs in remote areas. A high level of harvest has occurred in recent years along roads within Unit 20B, and continuation of the harvest level may result in a population decline in this area. In the remainder of the planning area, including areas accessible by road, the present rate of harvest is sustainable on a long-term basis.

A great deal of the viewing of black bears in the planning area occurs at hunters' bait stations. Hunters frequently indicate that they spend many hours viewing, studying and photographing bears at their bait stations, occasionally taking family or friends along to watch the bears as well. Other viewing occurs on hillside areas along several highways during spring when bears seek new green vegetation, or in berry patches in the late summer and fall.

Moose:

Moose inhabit most of the planning area. They are absent only from mountainous areas above about 4500 feet elevation, where vegetation is scant or absent. In much of the planning area, moose are the only big game species present year round. Moose feed primarily on willow and birch twigs and leaves, but sedges and aquatic plants can be important summer food.

Moose numbers reached an all time high in the planning area during the 1960's as a result of extensive federal predator control efforts before statehood. In the late 1960's, moose densities were greater than the habitat could support. By 1971 moose numbers were declining rapidly due to record snowfall, predation, and in some areas, over-hunting. By 1975, most moose populations in the planning area had reached their lowest levels in decades. Moose presently remain at low to moderate densities throughout much of the planning area.

Over a 10-year period beginning in 1976, the department conducted several wolf population reduction programs in the planning area to help moose and/or caribou populations recover (see Past Management, Wolf Control Programs). Three were successful in meeting their objectives and provided increases in the prey populations. One program was ineffective in reaching the objectives; grizzly bear predation proved to be very significant in this area.

An estimated 35,000 moose currently inhabit the planning area, at a density of about 0.5-0.6 moose per square mile. The capability of the habitat to support moose varies widely throughout the plan area. However, the habitat can support about a moose per square mile. Because browse plants are currently receiving light to moderate use, habitat is not believed to be limiting moose numbers. Hunting throughout the plan area has been restricted to short seasons for bulls only in recent years. Hunting does not appear to have any measurable affect on population size in most areas. Predation is believed to be the primary reason moose numbers remain below the level that the habitat could support in many parts of the planning area.

Much of the planning area is easily accessible and has a long tradition of consumptive use of moose by people. Currently, about 1200 bull moose are harvested annually by about 5300 hunters, which is about 3.4% of the moose population. This is considered to be a low harvest rate.

Public demand for harvest of moose far exceeds what these populations can provide on a long-term basis. In many parts of the planning area, predators are taking a very high proportion of the moose, leaving few animals for people to harvest. Hunting regulations have become increasingly restrictive to keep use by people from adversely affecting moose populations, and unless management changes, more restrictive seasons will be needed in the future.

High nonconsumptive use of moose occurs seasonally along the park road in Denali National Park. The Chena River State Recreation Area is heavily used in summer by both tourists and local residents for moose watching. The Taylor and Steese highways could provide significant nonconsumptive use if moose were more abundant. Incidental viewing of moose occurs along the other roads and highways in the planning area, but the demand for viewing far exceeds the opportunities available. Most summer visitors expect to see moose along highways, but many are disappointed.

During the winter months, moose are more concentrated in the areas around Fairbanks and are more easily seen. Skiers, snowmachine users and motorists often view moose browsing on willows along trails and road rights-of-way. Many people also enjoy watching moose in rural subdivisions during winter. These opportunities have increased in recent years as the moose population in the lower Chena River drainage has grown.

Caribou:

The Chisana, Delta, Denali, Fortymile, Macomb, Ray Mountains, and White Mountains herds occur within the planning area. Caribou are wide-ranging, but are relatively faithful to calving grounds and wintering grounds. Their numbers normally fluctuate depending on factors including predation levels and weather.

Chisana Herd: The Chisana Herd calves and summers primarily within the Wrangell-St. Elias National Preserve in Unit 12. In winter, the herd ranges north on to state land and east into Canada's Yukon Territory. The herd was estimated in the 1960's at 3000 animals. More recently it has fluctuated between a low of about 1000 in 1980 and a peak of about 1800 in 1989. Poor calf survival has caused the population to decline to its present level of about 1400. Hunting in Alaska has been restricted to a fall season since 1974, and to only bulls since 1979. Since 1979, 30-60 bull caribou have been harvested from this herd annually (this includes up to 12 annually in the Yukon Territory). Most of the harvest in Alaska, and virtually all of the harvest in the Yukon Territory since the 1950's, has been by guided, nonresident hunters.

Nonconsumptive use of the Chisana Herd has been very limited due to remote access. However, at least one guide in the area is now offering summer pack trips for wildlife viewing.

Delta Herd: The Delta Herd ranges primarily on state land in the foothills and mountains of southern Unit 20A, but also uses some military land in the northern and eastern parts of the unit. Estimates in the 1950's placed herd size at about 5000. Since then, it has fluctuated in size from a low in 1976 of less than 2000 to a high in 1989 of 10,700. Wolf control during the late 1970's and early 1980's allowed the herd to increase at a high rate for a few years. Growth slowed during the mid-1980's. The herd declined rapidly between 1989 and 1991 due to poor survival of calves in summer and high mortality of adult females, and now numbers 5750 animals.

Unit 20A is a popular and heavily used hunting area because of its proximity to Fairbanks and the diversity of big game present. The estimated caribou harvest has ranged from 100 to 850 since the early 1980's. Harvests since 1986 have been near the maximum sustainable, and the hunting regulations have been complex in order to provide special opportunities for different types of access for hunting.

The recent decline in herd size means that fewer caribou will be available for people to harvest. The 1991-92 winter hunting seasons were closed by emergency order. Additional harvest restrictions are needed because the herd is declining, but these may not be sufficient to prevent a further decline.

As with several other herds, nonconsumptive use of the Delta Herd is limited by remote access. However, "flight seeing" from Denali Park has been increasing in recent years, and one major hunter guiding operation in the center of the herd's range has initiated summer wildlife viewing services.

Denali Herd: The Denali Herd has been one of the most studied in Alaska. It has calved in two areas: south of Denali National Park near Bull River and in the foothills of the northcentral portion of the park. Major winter ranges include the tundra flats and ridges in the vicinity of the Stampede Trail and the spruce-covered flats north and west of the Kantishna Hills.

The herd has fluctuated in size considerably from a high of about 25,000-40,000 in the 1920's to a low of about 1000 in the 1970's. The 1930's, 1940's and 1970's were periods of decline, and the 1920's, 1950's, 1960's and 1980's were periods of expansion. The population increased through the 1980's to about 3500 in 1989, but declined considerably in 1990 and 1991 due to unfavorable weather and high levels of predation. It now numbers about 2300.

The Denali Herd was lightly harvested in the early 1970's but the hunting season has been totally closed since 1976. This herd serves as a valuable comparison in studies of more heavily hunted herds, particularly the adjacent Delta Herd.

Nonconsumptive use of the Denali Herd occurs seasonally along the park road in Denali National Park. Several private lodges in Kantishna provide wildlife viewing services along the park road and in the area.

Fortymile Herd: The Fortymile Herd presently ranges between the Steese Highway and the Yukon and Tanana rivers in Unit 12, 20B, 20D, 20E and 25C. A portion of the herd winters in western Yukon Territory in the Fortymile, Sixtymile and Ladue river drainages. The herd calves and ranges primarily on state land, but also uses parts of the Yukon-Charley Rivers National Preserve during summer and fall, and the Steese-White Mountains National Conservation/Recreation Area during winter. In the 1920's the herd was probably the largest in Alaska, numbering in the hundreds of thousands and ranging as far

west as Rampart, east to near Whitehorse, Yukon Territory, and south to Fairbanks and Minto Flats. During the 1930's, the herd declined rapidly reaching a low of only 10,000 to 20,000 in the early 1940's. Federal wolf control efforts helped the herd recover to 50,000-60,000 animals between 1954 and 1963. The herd declined to about 6000 caribou between 1963 and 1975. The herd grew slowly through 1990 to about 22,700, but presently numbers no more than 21,000. Survival among newborn calves and adult females was particularly low in 1991.

The Taylor Highway and a well-developed trail system bisect the herd's range in Unit 20E. This is a popular hunting area for Alaskan residents from many communities, including Delta Junction, Anchorage, Fairbanks and southeast Alaska. Since 1991, only residents have been allowed to hunt caribou along the Taylor Highway. When the Fortymile Herd is distributed near the Taylor Highway, hunting is heavy and harvest quotas are reached quickly. In contrast, when the herd is away from the road, little harvest occurs and harvest quotas are not attained. Since 1986 reported harvests have averaged 450 animals. The Taylor Highway is also a scenic tour route in summer and the demand for wildlife viewing is high. The current low herd size restricts the opportunity for viewing of Fortymile caribou.

Macomb Herd: The Macomb Herd ranges and calves primarily in Unit 20D south of the Tanana River, but occasionally uses adjacent Unit 12 in fall and winter. Since 1975, the herd has contained 600-800 caribou. In 1990 and 1991 the herd declined due to poor calf survival and now numbers no more than 600. This herd received little harvest prior to the early 1970's, but hunters became more interested in the Macomb Herd in the late 1970's as other hunting opportunities declined. Since 1975, annual harvest has averaged about 40-50 caribou. Since 1978, hunting opportunity has been restricted by permit and the harvest has been restricted to bulls.

Limited viewing opportunity exists along open slopes south of the Alaska Highway in spring and fall. Viewing could be enhanced if the herd size increased significantly.

Ray Mountains Herd: The Ray Mountains Herd has been recognized as a distinct herd only since the late 1970's. The herd appears to range south from the West Fork of the Chandalar River through the Ray Mountains and west to the Tanana-Allakaket Trail. Reports from local residents and pilots indicate that caribou have been resident there since at least the 1940's. Calving is dispersed and occurs throughout higher elevations in the Ray Mountains. The herd winters throughout the Ray Mountains and on the eastern Kanuti Flats and adjacent hills. The Ray Mountains contain a large amount of alpine summer range and some of the most robust lichen ranges in Alaska, so the herd could undoubtedly become much larger.

Occasional aerial surveys have been flown, but no caribou from the herd have been radio-collared. Because the area is remote and lightly hunted, population data are not routinely collected. The herd has probably been stable at about 600-800 since 1984. Predation by wolves and bears in early summer is the most likely factor limiting population growth.

Since 1980, the annual reported harvests have totaled 5-14 animals. The fall harvests occur primarily in the vicinity of Caribou Mountain near the Dalton Highway. The late winter harvests occur near Tanana, primarily by residents of Tanana and the nearby Tozitna River homesites.

White Mountains Herd: The White Mountains Herd occupies parts of Units 20B, 20F and 25C in an area bounded by the Steese and Elliott highways and the Yukon Flats. The herd calves and summers primarily in the Steese-White Mountains National Conservation/Recreation Area between the Steese and Elliott highways and Beaver Creek. It winters primarily on state land west of Beaver Creek. Prior to 1967, part of this area was used by the Fortymile Herd. Caribou in this area were first recognized as a separate herd in the late 1970's. The White Mountains Herd grew slowly during the 1980's, 800-1000 caribou by 1989. The herd has not experienced the severe annual calf losses that other interior Alaskan herds have since 1989.

This is a newly-recognized herd, and there is little documented historical use of the White Mountains for caribou hunting. The herd is mostly inaccessible during summer and fall. The annual harvest ranges from 6 to 20 bulls. A new winter hunt designed to increase hunting opportunities within the Steese-White Mountains National Conservation/Recreation Area began in 1991. As the Bureau of Land Management develops and promotes access to the area, opportunities for viewing caribou in summer and winter may increase. Viewing could be enhanced by larger herd size.

Dall Sheep:

Dall sheep are found in two different habitat types in the planning area. In the southern portion of the planning area along the north slopes of the Alaska Range and the Wrangell Mountains, high quality Dall sheep habitats occur in a continuous band across the alpine areas. In the northern portions of the planning area in the Tanana-Yukon uplands between the Tanana and Yukon rivers, sheep habitat is high quality but discontinuous, occurring as patches of alpine areas separated by spruce lowlands.

Predation on sheep comes from several sources. Wolves can sometimes have a significant effect on Dall sheep populations, even though sheep are not preferred prey for wolves. This can occur when preferred prey, such as caribou or moose, are scarce. Other factors, such as unfavorable weather, may make sheep temporarily more vulnerable to wolf predation.

Other predators include coyotes, which have become more abundant in the planning area in the last decade and appear to be preying on sheep more than before, and golden eagles, which apparently take more sheep than was previously believed. In the northern part of the planning unit, sheep populations are more vulnerable to predation of all types, because their populations are smaller, and their habitats contain less escape terrain.

Because Dall sheep habitat consists of stable plant communities, sheep numbers tend to be stable over the long term. Changes in environmental conditions such as weather or predation can produce short-term fluctuations, but these are usually not far from the long-term numbers.

The mountains in the southern part of the planning unit have historically supported high densities of sheep. Historical data suggest the Alaska Range supports 7000 sheep, and the Wrangell mountains can sustain about 12,000 sheep over the long term. However, recent data suggest that sheep numbers in this area may be below the long-term, stable levels. The causes are unknown, but adverse weather and high levels of predation are likely responsible.

The northern part of the planning unit supports low densities of sheep. Historical data suggest this area will sustain about 700 sheep over the long term.

High harvests of mature rams occur in the mountains of the southern part of the planning unit. Recent harvests in the Wrangell Mountains have averaged about 280 rams per year. Recent harvests in the Alaska Range have totaled an average of 200 rams per year. Harvest in the Tanana Yukon uplands average about 10 rams per year. Harvests are expected to remain stable even if sheep numbers decrease, because harvests have been small relative to sheep populations.

Most nonconsumptive use of sheep occurs within Denali National Park. Mining roads in the Healy area east of Denali also provide access for sheep viewing, and sheep are occasionally seen from the Alaska and Glenn Highways in Unit 12 and the Richardson Highway in Unit 20D. Expanded use of the Steese-White Mountains National Conservation/Recreation Area may result in additional sheep viewing in the plan area.

PAST MANAGEMENT

This section describes how wildlife has been managed in the planning area in recent years. For most species, information on management objectives, harvest goals and whether or not the objectives are being met is given. More detail is available for some species and areas than others because of differences in how much scientific information is available. In some cases there are specific data, while in others little is known about the species or area.

This information describes what management of these species has been until now. The final Area-Specific Management Plan, when adopted, may require some changes in how wildlife is managed in the future.

Wolf:

During the past two decades, wolf management in most of the planning area has not been intensive. Harvest levels in most units have remained well below the annual sustainable yield. Short-term intensive programs were conducted in four portions of the planning area during the 1970's and 1980's and are discussed below.

Management Activities: Wolves have been monitored throughout the planning area by conducting periodic aerial surveys to estimate abundance, interviewing trappers to determine population trends, and observing wolf packs during other wildlife surveys. Harvested wolves are sealed by department staff or sealing officers. Information on location, date and method of take, pack size, and other information is recorded. Sealing records for wolves have been kept since 1971. Earlier records consist of bounty records and aerial permits.

Control Programs: Wolf control programs were conducted in portions of the planning area in the late 1970's and early 1980's to permit moose or caribou populations to recover to former levels of abundance.

In Unit 20A, the moose population had fallen from a high of around 20,000 to an estimated 2800 moose by 1976. Caribou numbers had also dropped to about 1500 to 2000. Wolf control was initiated in late winter of 1976, and by fall 1978 the wolf population had been reduced by two-thirds. In response, the moose population has grown to the present level of 10,500. The Delta caribou herd also grew rapidly, reaching a peak of about 10,700 in 1989. Since then, the caribou population has declined to about 5700, probably due to other factors such as adverse weather conditions. Wolf numbers recovered within 4 years after the control program ended in 1982 in most of the unit.

In central Unit 20B, there were about 2220 moose and 114 wolves prior to 1980. During the winter of 1982-83 about half of the wolf population was removed. This set the stage for moose population growth, and moose numbers have steadily increased since 1982 to the present level of 3000 to 3500. By 1985, the wolf population had recovered to near pre-control levels.

In western Unit 20B moose densities were very low in most of the area, and wolves numbered about 80, prior to 1984. Between 1984 and 1986 wolf numbers were reduced by about half. Following the wolf control effort the annual growth rate of moose increased significantly. In the Minto Flats portion of Unit 20B, the area in which control efforts had been concentrated, moose numbers increased from about 600 to 700 to about 1500-1700 by 1989. By 1989 wolf numbers had recovered to near pre-control levels.

In Unit 20D wolf control was conducted between 1980 and 1984 to decrease predation on moose and caribou. A total of 61 wolves was removed. This program resulted in moderate increases of moose populations, but was somewhat less effective than control programs in other parts of the plan area.

In Units 12 and 20E during the early 1980's, moose and caribou populations were low to moderate in relation to wolves, with 16-39 moose for each wolf. In parts of Units 20E and 12, wolf numbers were reduced by about half during the winter of 1981-82, and again by about half during the winter of 1982-83. This program was ineffective in reaching objectives. Grizzly bear predation proved to be very significant in this area. By 1986 wolf numbers had returned to near pre-control levels.

Brown Bear:

In portions of Units 12, 20E and northern 20D, recent management objectives have called for temporary reductions in brown bear abundance until the moose population growth rate increases. In Unit 20A, research has been under way since 1981 to determine the harvest level that can be sustained by the brown bear population. Management objectives have called for maintaining the current high harvest rate in Unit 20A until 1992, then monitoring population recovery. In Units 20B, 20C, 25C, and southern 20D, management objectives are to maintain stable bear populations at current levels. Hunting is prohibited in the Denali National Park portion of Unit 20C. The management objective in this area is to minimize human-brown bear conflicts.

Black Bear:

Current management objectives for black bear populations in the planning area have been primarily oriented towards maintaining stable populations capable of sustaining harvest by hunters.

Moose:

In Unit 12, current management objectives have called for increasing the moose population to 5000 to 7000 with a minimum bull:cow ratio of 40 bulls:100 cows by the year 2000. Harvest goals have called for an annual harvest of bulls up to 3% of the population, with a hunter success rate of 35%. The population is currently estimated at 3000 to 3500 and is stable or slightly declining. About 3% of the population is being harvested, and the bull:cow ratio is about 50 bulls:100 cows. Based on current population trends, the herd size objective will not be met by the year 2000.

In Unit 20A the current management objectives have called for a population of at least 10,000 moose and a minimum bull:cow ratio of 30 bulls:100 cows. Past harvest goals have called for an annual harvest of up to 300 bulls until these management objectives are reached. These objectives are currently being met.

In Unit 20B, current management objectives have called for a population of 10,000 moose, with 4000 of these in the portion west of Fairbanks and 6000 in the portion east of Fairbanks, and a minimum bull:cow ratio of 30 bulls:100 cows. Harvest goals have called for an annual harvest of at least 300 bulls. The population is now estimated at 9000 moose and increasing slowly. Although the population size is below the management objective, the other objectives are being met.

In Units 20C, 20F and 25C moose densities are low, and little else is known about the populations. Population size objectives have not been established. The department intends to obtain better information on moose distribution and abundance in these units. Current harvests are limited to bulls only, and management objectives have called for maintaining a bull:cow ratio of at least 30 bulls:100 cows. Because access is more difficult in these units, harvests tend to be self-limiting, and the bull:cow ratio objective is being met. In addition, the department is encouraging habitat enhancement through proper management of wildland fires in these remote areas.

In Unit 20D management objectives have called for increasing the moose population to 7000, including 1500 in the southeast, 2500 in the southwest, and 3000 in the north, and maintaining a bull:cow ratio of at least 30 bulls:100 cows. Harvest goals have called for at least a 20% hunter success rate, as long as moose numbers are stable or increasing.

In Unit 20E current management objectives have called for increasing the moose population to 8000 to 10,000 with a minimum bull:cow ratio of 40 bulls:100 cows by the year 2000. Harvest goals have called for increasing hunter participation from 300 to 800 hunters by the year 2000, with a hunter success rate of 35%. The current population is estimated at 4000 to 4500 moose and increasing slowly. At the present growth rate, the management objectives and the harvest goals will not be met by the year 2000.

Caribou:

Chisana Herd: Current management objectives have called for maintaining a population of 2000 to 2500 caribou.

Delta Herd: Current management objectives have called for a population of between 8000 and 10,000 caribou to provide the maximum sustainable opportunity to hunt caribou, maintaining a bull:cow ratio of at least 30 bulls:100 cows, and a hunter success rate of at least 30%. Because hunting pressure has been high, the proportion of mature bulls declined in the late 1980's. To insure that an adequate number of bulls are maintained in the population, management objectives have called for a mature bull:cow ratio of at least 6 mature bulls:100 cows. The population objective is not currently being met, but the bull:cow ratio objective is close to being met.

Denali Herd: Current management objectives call for maintaining a naturally regulated caribou herd. Since 1976 the Denali Herd has been managed for nonconsumptive use and study. The population has fluctuated at low levels for many years. Hunting seasons have been closed throughout Unit 20C since 1976.

Fortymile Herd: The Alaska Department of Fish and Game and the Yukon Department of Renewable Resources completed work on a draft management plan for the Fortymile Herd in 1990. The primary management goal for this herd is to reestablish the herd in its former range in Alaska and the Yukon Territory. This herd formerly numbered in the hundreds of thousands, and provided tremendous hunting and viewing opportunities along the Steese and Taylor highways. To meet this goal, a population objective of 60,000 caribou by the year 2000 was set and harvest guidelines were established. In 1991, the U.S. federal government opened a separate federal hunting season, even though the harvest quota had been reached. It is unclear whether the federal government will abide by the management plan.

Macomb Herd: Current management objectives have called for increasing the population to 1500 and 2000 caribou.

Ray Mountains Herd: The current objective is to determine the herd size in 1992.

White Mountains Herd: Current management objectives are related to increasing the accuracy of population estimates, and to assessing the potential impacts of increased recreational use and mineral development in the area on the herd. The department intends to establish population size and harvest objectives in 1992.

Dall Sheep:

In the northern Wrangell Mountains and the Alaska Range west of the Little Delta River, sheep have been managed to provide maximum opportunity to harvest mature rams since statehood (1959). East of the Little Delta River, two special management areas (the Delta Controlled Use Area and the Tok Management Area) restrict hunting by permit to provide aesthetically pleasing, high quality hunting opportunities and production of trophy sheep.

Sheep in the Tanana-Yukon uplands are managed to provide high quality hunting experiences for the small number of hunters who participate. In the eastern part hunting is limited by permit to achieve this goal, and in the western part (the White Mountains) poor access naturally limits the number of hunters using the area. Increased recreational emphasis in the western portion, plus the potential for mineral development, has brought the advisability of continuing to manage for high quality experience to question. If current management direction is continued, consideration probably should be given to limiting participation by permit as a way to sustain quality hunting experiences.

Present bag limits restrict the harvest of sheep to mature, full-curl rams. Harvest of ewe sheep has not been allowed in the planning area any time in recent history. It is believed that if sheep populations are below long-term, stable numbers now, the harvest of rams will eventually decrease until the populations recover.

PUBLIC INVOLVEMENT

The Strategic Wolf Management Plan outlines a process for developing Area-Specific Management Plans for wolves and other wildlife in Alaska. Before this Area-specific management plan was drafted, the department hosted workshops in Fairbanks, Delta Junction and Tok in January to gather public input on what should be included in the plan. More than 70 people attended the workshops.

Department staff also met with a number of interested organizations, including the Alaska Outdoor Council, Alaska Trappers Association, Fairbanks Advisory Committee, Nenana-Minto Advisory Committee, Northern Alaska Environmental Center, Tanana Chiefs Conference, Tanana Valley Sportsmen's Association and Upper Tanana-Fortymile Advisory Committee. Other organizations were contacted by mail and/or telephone, including the Alaska Wildlife Alliance, Arctic Audubon Society, Circle-Central Advisory Committee, Middle Nenana Advisory Committee, Minchumina Advisory Committee, and Tanana-Rampart-Manley Advisory Committee. Information packets were mailed to interested people and were also available for public distribution at the Fairbanks office.

By January 31, comments and suggested zone maps had been received from more than 150 individuals or groups. The department wrote the first draft of this plan based on these comments and information from staff biologists. All public comments were considered, and the ideas were synthesized into a plan. A second round of public workshops was held in Fairbanks, Delta Junction and Tok in February and March to give people a chance to review the draft plan. More than 70 people attended these workshops. Department staff again met with many interested organizations and individuals to discuss the draft plan. By March 16, comments on the first draft had been received from more than 45 individuals or groups. All public comments received are on file and may be seen at the Fairbanks office.

The first draft of this plan was modified in response to public comments to arrive at this second draft, which is being presented to the Board of Game for consideration at its March 1992 meeting.

When writing the first and second drafts, the department considered <u>all</u> interests, and all comments and suggestions received from the public. The values of people in small communities and rural areas were considered carefully along with those of people in the large urban areas, so that those in the minority would not be overlooked. Similarly, the interests of people with very different values were carefully considered in an attempt to

provide for the full range of values. It must be recognized that no plan can please every individual. Our goal is to produce a plan which will provide for the values of all, somewhere in Alaska.

MAJOR ISSUES IDENTIFIED AND ADDRESSED

A number of issues and problems have been identified in the planning process. This section discusses these concerns and describes how they are being addressed. Some major issues and problems were identified before the first draft was written, while other issues were brought out in the public review of the first draft of this plan.

Terminology

Some problems resulted from vague terminology or the definition of the zones in the Strategic Wolf Management Plan. Terms such as "minimum," "moderate," "high use" or "intensive management" mean different things to different people. To clarify these terms, the department drafted definitions of some of the terms used, but not defined in the Strategic Wolf Management Plan (see Appendix I). While not everyone may agree with the proposed definitions, they are presented here so that plan reviewers will know how the department has interpreted these terms.

Zone Limitations

Another problem is that the system of seven zones outlined in the Strategic Wolf Management Plan does not provide appropriate management zones for all situations in Alaska. In the Strategic Wolf Management Plan, "use" and "management level" are linked together in Zones 3-7. This creates a problem when an area that is used intensively does not need to be managed intensively, or vice versa. In this draft Area-Specific Management Plan, many areas are proposed for Zone 6 because human use has been, and is expected to remain, at a high level. Many people assume that Zone 6 mandates moderate to high levels of management, and are either pleased or displeased at the prospect. In this draft plan, the zones are often more closely related to use than to proposed management intensity. Modifying the Strategic Wolf Management Plan to separate human use from management intensity in the zone definitions should be considered.

In this plan we have indicated areas that do not easily fit into existing zone definitions. These include the Yanert River drainage in Unit 20A (use level moderate, but management intensity may be high to provide for Delta caribou herd recovery), the Fortymile caribou herd calving area in Units 20B, D and E (use level moderate but management intensity may be high to provide for Fortymile caribou herd recovery), and the Steese Highway corridor in central Unit 25C (use level high but in a small enough area that management would not be different from surrounding area of moderate use, moderate

management). A list of suggested modifications to the Strategic Wolf Management Plan has been drafted by the department for consideration by the Board of Game at it's March meeting.

Zone 6 vs. Zone 7

Another difficulty arose when trying to differentiate between Zones 6 and 7 in the draft plan. According to the Strategic Wolf Management Plan, wolf population control through regulation or reduction is allowed in both zones, but in Zone 6 "Wolf population reductions are not anticipated, but may be allowed," while in Zone 7 "Wolf population reduction may be necessary." The only distinction appears to be whether or not it is likely that "wolf population reduction" will be necessary.

In the draft plan, areas were identified as Zone 7 only if the department believes it is likely that a significant reduction of wolves may be necessary in that area to meet population and human use objectives during the life of this plan. However, reductions may not occur throughout all Zone 7 areas, and are not expected to last throughout the plan period. The specific terms and conditions applying to any reduction programs will be determined in the implementation planning process.

Areas were identified as Zone 6 if there is high use and some degree of wolf population regulation may occur, but reduction is not anticipated. As with population reduction, regulation is not expected to occur on all Zone 6 lands (see Map 2), nor over the entire life of the plan. Details of any wolf population regulation will also be specified in the implementation planning process.

Some people felt that if the management was not aimed at producing a "high use" area for all wildlife species (such as part of the Unit 20E Zone 7), another zone designation (possibly a Zone 6) was more appropriate.

Differences Between Zone 7 in Unit 20A and Units 20B, D, and E

Some people thought that management intents for the Unit 20A and 20E Zone 7 areas were significantly different, and therefore they should be zoned differently. Others thought that Zone 7 was an appropriate designation for both. The first draft plan proposed that most of Unit 20A be managed intensively to provide for long-term, high population levels of moose, caribou, sheep, bears and wolves. The first draft also proposed that parts of Units 20B, D, and E be designated Zone 7. Much of Unit 20E is proposed for Zone 7 primarily to allow wolf population reduction, if it becomes necessary for recovery of the Fortymile caribou herd.

In the second draft we have significantly reduced the size of the eastern Zone 7 area and limited it to central Unit 20E. Management of this smaller area may be intensive to provide high use along the Taylor Highway and associated trail system.

The remainder of the area formerly in Zone 7 in Units 20B, D, and E is more appropriately classified Zone 5 over the long term. However, because it may be necessary to reduce wolf numbers to benefit the Fortymile caribou herd, at this time we have not determined whether this should be classified as Zone 5 or Zone 7.

Buffers

During the input and review process, people viewed buffers as either necessary to protect National Park resources or as undesirable extensions of park boundaries where consumptive uses have already been precluded. Some people mentioned that a protected area would provide a constant source of wolves to repopulate a nearby wolf regulation or reduction area, and could compromise the effectiveness of the management program.

Some people noted a significant difference between Denali National Park and Yukon-Charley Rivers National Preserve. Among those who favored buffers, many felt that buffers were necessary near Denali, due to the popularity of the park and the high nonconsumptive use levels there. Yukon-Charley Rivers Preserve was perceived by some people as being more remote than Denali, so that the need for a buffer was not as important. Others thought that a buffer is needed for Yukon-Charley Rivers, also.

This revised draft includes an area of Zone 4 near the east side of Denali National Park. North of Denali National Park and Preserve the plan proposes a substantial area of Zone 4. Although proposed as a Zone 4 because it is an area of moderate use for which minimum management is needed, this area also serves to provide a gradual transition between the protected area within the original park and more heavily used lands along the Tanana River. The department will work with the National Park Service and others in the implementation planning process to identify ways to further minimize the effects of any management programs on lands outside of Denali National Park on wolves within the park.

Yukon-Charley Rivers National Preserve is surrounded by an area for which long-term use and management is at the Zone 5 level. However, in the short term, it may be necessary to conduct wolf population reductions in part of this area to benefit caribou. Special considerations will be taken to prevent any adverse effects on preserve wildlife of management activities occurring outside the preserve. See Proposed Management, Unit 20D and 20E section, for further details.

Balance

Some people felt a balance between nonconsumptive and consumptive uses should be included in every area-specific management plan. Department staff believed the board's intent in approving the Strategic Wolf Management Plan was that the entire state should reflect balance when all of the area-specific management plans are completed, but that some area-specific management plans will likely be weighted toward one use or the other. Due to the heavily populated area near Fairbanks and the high interest in providing for consumptive use, this plan is weighted toward consumptive use, but nonconsumptive values were considered when the plan was drafted and revised.

Protection for Wolves on State Land

Some people felt wolves should be offered more protection on state-owned lands. Since wolves are already largely protected on federal lands, they believe that nothing will be gained for protection of wolves if this plan protects wolves only on federal land. Many federal lands are, in effect, zoned by federal law which precludes intensive wolf management. As a result, intensive management is most likely to occur on state lands. However, in the revised draft, some additional state land has been proposed for Zone 4, which precludes wolf population regulation or reduction during the life of the plan.

Planning Process Rate of Speed

Many people expressed the concern that the planning process is going too fast. The short time between adoption of the Strategic Plan and this board meeting has limited the opportunity for public review of the plans. To address this problem, the department is asking the Board of Game to approve a "Board-Approved" draft plan instead of a final plan at this meeting, so that public involvement in the planning process can continue. If the Board of Game agrees, the department will work with the public to develop implementation plans based on the Board draft, and the Board of Game will consider the "Board-Approved" draft and implementation plans for final adoption at their meeting in October or November 1992.

Public Involvement in Setting Wildlife Management Objectives

Concerns focused on whether the public was adequately involved in setting wildlife population objectives. Key questions of concern included:

* Does the public want an increase or a decrease in wildlife populations?

* What rate of population change is necessary or acceptable?

* At what cost? (financial costs, trade-off of natural areas versus managed areas, distasteful management tools, such as wolf population regulation/reduction)

Public review of the "Board-Approved" draft plans will allow the public to effectively participate in setting objectives for these plan areas.

Zone Honesty

Some people said that if wolf population regulation or reduction is not likely to happen, then zone designations should be lowered in the plan, with the idea that the Board of Game can consider and revise the plan if more intensive management becomes necessary. Other people felt that Zones 5, 6 and 7 should predominate, in order to preserve management options such as wolf population regulation and reduction. Some of the area proposed as Zone 5 in the first draft of this plan is proposed for Zone 4 in the second draft, because wolf control is not planned due to higher priorities elsewhere in the planning area.

Intensive Management

Some people thought that an area should be designated as a Zone 7 only if the intent is to manage all aspects of the area very intensively, such as habitat, predators, prey and human use, including enforcement of regulations. They said that what is referred to as "intensive management" in the draft plan is actually moderate management, and that no place in the state has been intensively managed in the past 10-15 years. Other people thought that the Alaska Wolf Management Planning Team only considered the last 10-15 years, and that it would compromise the whole planning process to change what is meant by intensive management without consulting the team.

The first draft of this plan indicated that intensive management will not take place in some Zone 7 areas, and this has been revised to more clearly state what will be done. Habitat enhancement is considered a part of Zone 7 management. Habitat manipulation will be accomplished primarily by working with the land management agencies and private land owners to allow wildland fires to burn in Zone 7 areas, and to encourage the use of prescribed fires in certain areas. Mechanical manipulation of habitat will most likely be limited to areas of specific small concern because of the higher costs involved.

The Size of Zone 7 Areas

Some people thought that the areas proposed as Zone 7 in the draft plan were much larger than necessary to provide for the management objectives listed. Others felt the Zone 7 areas were too small to provide for human use. Canadian and Alaskan biologists think that 5800 square miles is the minimum size needed to successfully carry out a wolf reduction program because of the effects of immigration of neighboring wolf packs.

Intensive Wildlife Management to Benefit Hunters

Some people believe that long-term, intensive management of wolves and other wildlife to provide for high levels of consumptive use of prey species is not an acceptable management goal anywhere in Alaska. Others believe that wildlife management should not allow fluctuations of predator and prey populations because this compromises hunters' opportunities. The Alaska Wolf Management Planning Team discussed intensive management of wildlife and wolf population regulation and reduction at length, and arrived at a consensus on several points. However, consensus was not reached on the subject of long-term, intensive management of wolves and other wildlife to provide for high levels of consumptive use of prey species. Some people believe that since consensus was not reached the planning team recommended against it. Others strongly believe the team and the board clearly endorsed management of ecosystems to provide greater benefits to people.

We have interpreted the board's intent in adopting the Strategic Wolf Management Plan to provide the option of managing predators and prey in limited areas to provide for increased harvests by people. Such management may involve regulating wolf numbers at a level below what the prey can support to provide additional harvest for people. It is not our intention to regulate wolf numbers at very low levels to provide maximum human use of the prey resource.

Regulation vs. Reduction

Early in the planning process, the department assumed that wolf population regulation might be more acceptable to the public than wolf population reduction. The strategic plan states that wolf population reduction is not intended to be a routine practice.

During the review process, some people said that they think population reduction is far less offensive than population regulation. Reduction can involve short duration manipulation of a wolf population, with subsequent recovery of the wolf population to former levels of abundance. They view this as highly preferable to situations where wolf numbers are kept low for extended periods of time.

The department will continue to work with the public through the Implementation Planning process to identify the most appropriate and acceptable management tools.

Enforcement

Several people indicated concern that enforcement of hunting and trapping regulations is presently inadequate, and that wolf regulation or reduction programs involving public participation could result in a situation where harvests are excessive. Department staff will closely monitor each regulation and reduction program to prevent this from taking place.

Staff will also work closely with enforcement officers in the Division of Fish and Wildlife Protection (Department of Public Safety) to ensure that these programs receive adequate enforcement.

Human Harvest

Some people believe that heavy hunting pressure, primarily from nonlocal and/or nonresident hunters, is a major problem. They believe that harvests by people are solely to blame for low or declining populations of wildlife. Studies have shown that harvests by people are a very small part of all the causes of mortality in wildlife populations in the plan area. Low or declining wildlife populations are generally influenced much more by other factors such as predation, weather conditions, food supply and habitat condition. Nevertheless, in areas where wolf population reductions are considered in this plan, harvests of prey species by people have already been substantially reduced and my be curtailed further until prey numbers increase.

Wildlife Data

Some people indicated a concern that research studies conducted by the department have demonstrated that past wolf regulation or reduction programs have not been worthwhile. Others stated that data collected by department biologists were inaccurate and led to wrong conclusions. Peer review is valuable for improving the quality of research, and department biologists studying wolves and predator/prey interactions will continue to work closely with other biologists from federal and Canadian wildlife agencies. In addition, research results undergo extensive review by nationally and internationally recognized experts when submitted for publication in international, professional ecology and wildlife management journals.

PROPOSED MANAGEMENT

The map on page 47 illustrates the proposed distribution of zones in the plan area. The priority uses of wildlife, wildlife management objectives, proposed zone boundaries and strategies needed to achieve the management objectives are described below for each game management unit.

Tables 1-9 list the current and proposed population and harvest objectives for major game species in the plan area. Although nonconsumptive uses were identified as important in many areas, they have not been measured, so objectives are not listed in the tables. Nonconsumptive uses were considered when designing the boundaries and management strategies.

In some cases federal law dictates the zones for certain areas. For example, the original Denali National Park can only be designated as a Zone 1, because federal law prohibits all hunting and trapping. Management in the extension to Denali National Park and Preserve, Yukon-Charley Rivers National Preserve and the Wrangell-St. Elias National Park and Preserve can be no more restrictive than Zone 3, because federal law guarantees subsistence hunting and trapping in these areas.

Unit 12

Maintaining relatively natural ecosystems was identified as a priority in much of Unit 12. Consumptive use of wildlife by people is also important to local residents and other Alaskans. This plan will provide low to moderate population and harvest objectives for most of Unit 12 (Table 1).

Most of Unit 12 lands (about 65%) are included in either the Wrangell-St. Elias National Park and Preserve or the Tetlin National Wildlife Refuge. An additional 12% of the unit is included in the Tetlin Indian Reservation. Therefore, management options and actions are prescribed by either federal law or reservation policy.

Unit 12 is proposed to be managed as Zone 3 in the designated park, Zone 4 in the preserve, Zone 5 in the refuge and the reservation and Zone 6 on state and private lands in the Tok and Little Tok river drainages. The north facing slopes of the Alaska Range west of the Tok-Cutoff Road and northwestern Unit 12 would be Zone 7 (see map). Wolf control (population regulation and reduction) is not anticipated on the Zone 5 or Zone 6 areas, but could occur in the Zone 5 area at the request of the land owner (U.S. Fish and Wildlife Service, Tetlin Indian Corporation).

At public meetings during this wolf planning process, tbe U.S. Fish and Wildlife Service outlined stipulations that would have to be met prior to implementing any control programs on refuge lands. First, subsistence demands for moose and caribou would have to exceed availability. Second, an Environmental Impact Statement would have to be funded and written by the Fish and Wildlife Service. In addition, the public would not be allowed to participate in any control program on refuge lands. The department could assist with the implementation of control programs on refuge lands.

The annual wolf harvest rate has averaged 18% during the past 5 years. It is unlikely that wolf hunting or trapping pressure will increase substantially under the proposed zoning. Accordingly, wolf populations throughout most of Unit 12 will not be regulated by harvest but primarily by prey availability. Significant changes in resident moose and caribou populations or opportunities for consumptive use of those populations by people are not expected except in the northwestern portions of the unit.

The northwestern portion of Unit 12 and the Robertson River drainage in Unit 20D would be managed intensively to increase moose populations to benefit subsistence use by local residents. This may require short-term reduction of wolf numbers in this area.

Unit 20A

High levels of consumptive use of the Delta caribou herd, moose and other wildlife were identified as priorities in Unit 20A due to the variety of wildlife species present, the proximity to Fairbanks and the history of use. Viewing of wolves and other wildlife has become more popular there in recent years, mainly by hunters.

Under this plan, Unit 20A will be managed for high population levels of prey species and moderate population levels of predator species (Table 2). This goal will provide for high levels of harvest as well as continued viewing opportunities. Wolf and prey populations, and their habitat, will be intensively manipulated to provide for increased use of the prey populations by people. The cost of intensive management would be 3-5 times greater than present expenditures if the proposed zoning is implemented.

The severe decline in the Delta caribou herd since 1989 resulted from adverse weather, but wolf predation has been increasing. Caribou harvest by people has been significantly reduced and will be further reduced. Harvests will continue to be limited to bull caribou until the herd recovers. However, it is unclear whether the herd can recover without reducing predation.

There are presently 180-250 wolves in Unit 20A, and the wolf population has been increasing slowly in recent years. Several studies in Alaska and elsewhere in North America have shown that if an important prey species declines significantly, wolves may shift to available alternate prey. Presently, moose are abundant within the range of the Delta caribou herd. If wolves shift their diet from caribou to moose, wolf numbers could remain high despite a decline in caribou numbers. In that case, continuing high levels of wolf predation on caribou may push the number of caribou even lower.

Under this plan, the eastern Tanana Flats and the portion of this unit east of the Little Delta River will be Zone 6, an area east of the Nenana River adjacent to Denali Park will be zone 4 and the remainder will be Zone 7 (see map). Wolf population reductions may be required in portions of Unit 20A to assist recovery of the Delta caribou herd if productivity and survival rates do not increase significantly during 1992. To increase the allowable harvest of moose by hunters, wolf numbers in Unit 20A would be regulated below their current levels under the proposed plan. Specific population management objectives and activities will be addressed in the implementation planning process. This plan will also deal with concerns in the area along the western portion of 20A where Zone 7 lands are located near the Zone 1 portion of Unit 20C in Denali National Park.

Under this plan moose numbers in Unit 20A will increase slightly. Naturally occurring fires and prescribed fire will be used to enhance browse productivity and quality to sustain a larger moose population. The current harvest levels for moose will be maintained until the population reaches approximately 12,000 moose. After the moose population objective of 12,000 moose is reached, the moose population will be regulated by allowing increased harvests of both bull and cow moose.

A reduction in wolf numbers to stimulate caribou population growth will likely benefit sheep. The response of sheep populations to reduced wolf numbers may be less than that of caribou or moose, because predation by coyotes may be a significant mortality factor on sheep in the central Alaska Range.

Grizzly bear numbers in Unit 20A currently are lower than normal because a continuing study on the effects of harvests on grizzly populations has mandated high harvest rates since 1982. The reduction in caribou hunting opportunity is expected to reduce the number of grizzly bears harvested because many bears are taken incidentally by caribou hunters. Over the life of this plan, bear numbers should increase slowly.

Unit 20B

High levels of consumptive use of moose and enhanced wildlife viewing opportunities were identified as priorities in the central and western portions of Unit 20B. As a result, game populations in these areas will be managed for high human use under a Zone 6 designation (Table 3).

In the eastern portion of the unit, a moderate level of consumptive use was identified as appropriate. Accordingly, the area will be managed under a Zone 5 designation. However, the headwaters of the Salcha River may initially be more intensively managed to benefit the Fortymile carihou herd (see map). Limited wolf reduction may occur in this part of Unit 20B (see Units 20D and 20E). Remote access in this area will continue to result in moderate harvests of wolves and moose.

In western Unit 20B, wolf numbers will be regulated at or slightly below the current population level. Recent harvests of wolves have been insufficient to regulate wolf numbers. Attempts to increase efficiency of hunters and trappers will be made, but management of wolf numbers may require limited land-and-shoot taking of wolves. Wolf population reduction involving aerial shooting of wolves is not anticipated under this proposal in most of Unit 20B. These management decisions will be made during the implementation planning process.

Presently, 8500-9500 moose inhabit Unit 20B. Moose harvests will be restricted to bulls only until the population objective of approximately 10,000 moose is reached. Habitat enhancement to benefit moose populations will be accomplished through management of

naturally occurring fires, prescribed burning, small scale mechanical manipulation, and logging practices.

Once moose population objectives are reached, moose harvests are expected to increase by approximately 50%, and the harvest of moose under permit will be necessary to meet population and human use objectives. Opportunities for viewing moose along the Chena Hot Springs Road and other highways should also increase. Wolf and moose harvests in the extreme eastern portion of Unit 20B will remain at low to moderate levels under the proposed plan because of remote access.

Moose harvest in the Minto Flats Management Area has been maintained at a low level under a permit system since 1979 to provide a subsistence preference for rural residents during a period when moose numbers were low. Following wolf control programs conducted between 1984 and 1986, moose numbers substantially increased to approximately 1,600 moose on the Minto Flats by 1989. Harvests in the Minto Flats Management Area during the 5-year period of 1986-90 averaged only 16 bulls annually. Under this plan the harvestable annual surplus of moose will be 75-100 bull moose annually, which could allow a general hunting season to be reestablished by the Board of Game. Additional harvest may be allowed for antlerless moose under permit.

Caribou harvests in Unit 20B have been low in recent years, but are expected to increase under the proposed plan due to anticipated increases in the Fortymile caribou herd. Opportunities to view caribou along the Chena Hot Springs Road and Steese Highway may also increase.

Unit 20C

The primary use of wildlife identified in Denali National Park and Preserve was nonconsumptive use, viewing and scientific study (Table 4). Consumptive use of moose, bears and wolves in the northern part of the unit, in areas near the Parks Highway and the Stampede Trail, is also important to local residents and hunters from Fairbanks (Table 5).

Federal law and policy mandates that the original Denali Park be designated Zone 1, and the new portion of Denali Park Zone 3 (see map). Denali National Preserve and the state lands to the north have been proposed as a Zone 4. This designation will allow predator and prey populations to fluctuate largely independent of human influence. The northeastern portion of Unit 20C is proposed as a Zone 5.

Under this plan, Unit 20C would be managed to provide a naturally regulated caribou population, primarily for viewing, study and other nonconsumptive uses, and low to moderate harvests of moose and wolves. If the Denali caribou herd reaches a population level of greater than 4000 caribou during the life of this plan, a hunting season to harvest up to 2% of the herd annually may be considered for that portion of Unit 20C outside of Denali Park. However, because wolf and bear numbers are presently high within the range

of the Denali herd, it is unlikely that the herd will grow to that level during the life of this plan.

Under this plan the moose population is expected to remain at current low density levels in much of Unit 20C. Moose harvests are expected to fluctuate near the current harvest level. Wolf harvests in Unit 20C will have little or no affect on the wolf population.

Units 20D and 20E

Management for moderate consumptive and nonconsumptive use (viewing, photographing, etc.) of naturally regulated wildlife populations was identified as the highest priority for lands within the Yukon-Charley Rivers National Preserve. The preserve and some adjacent state land is proposed as Zone 4 to continue minimal management of predators and prey in this area.

Management for high consumptive use of the Fortymile caribou herd, moose and other wildlife as well as high nonconsumptive use along the Alaska and Taylor highways during the summer was identified as the highest priority for much of the remaining land in these units. These units have a long history of consumptive use by people. The big game wildlife resources are relatively accessible from roads and rivers, and are not far from the major population centers in the planning area. Viewing of caribou and other wildlife along the Alaska and Taylor highways is also seasonally important. This plan proposes to manage predators and prey in portions of the units for high population levels to allow high levels of harvest and viewing (Tables 6 and 7).

Under this plan, Unit 20D south of the Tanana River except the Robertson River drainage, the northwestern portion of Unit 20D including Shaw Creek Flats and the lower Goodpaster River will be managed as a Zone 6. The Robertson River drainage would be in Zone 7. Recently, Dall sheep and caribou populations have declined and moose calf survival has decreased in these areas. Human use of moose and caribou has been severely restricted and may be further reduced in the short term. Efforts will be made to reverse the declining trend of the Macomb caribou herd and to increase moose populations throughout the area. In order to achieve these goals, regulation of wolf numbers will be necessary in portions of the Zone 6 area. Conventional hunting and trapping will be used and limited land-and-shoot taking may be allowed. The necessity for a reduction program in the Zone 6 area is not anticipated but may be required if the Macomb caribou herd continues to decline under less intensive management. Wolf reduction may occur in the Robertson River drainage.

A priority population objective under this plan is to increase the Fortymile caribou herd to 60,000 caribou by the year 2000. This objective is shared with Canada, and considers historical herd levels, the amount of suitable habitat and the amount of human demand. Ongoing research is attempting to determine the importance of wolf predation on limiting the growth of the Fortymile caribou herd. This research may determine if wolf control on

the calving and post-calving ranges will be necessary to reach the desired population level within 8 to 10 years.

The Fortymile caribou herd spends the summer months in the northeastern portion of Unit 20D, the headwaters of the Salcha River in Unit 20B and the northwest portion of Unit 20E. Areas in eastern Unit 20E and the adjacent Yukon Territory are important fall-early winter range. If research confirms that wolf control (regulation or reduction) is necessary to reach the desired caribou population objective, this plan proposes to intensively manage wolf packs outside of Yukon-Charley Rivers National Preserve in this area for the first 5 years of the plan. Measures to protect the wolf population in the preserve from the effects of any control program will be described in the implementation plan for lands adjacent to the preserve. If wolf numbers have to be reduced in the western portion of the Fortymile caribou range, reduced wolf numbers will only be maintained for 3-5 years. Then wolf numbers will be allowed to return to natural levels.

The potential need for wolf population reduction in these portions of the herd's range creates a zone designation dilemma (see Map 1). Over the long term, these areas are expected to provide moderate use under moderate management. This argues for Zone 5 classification. However, the department is concerned that some people may believe Zone 5 is inappropriate given the potential for wolf population reduction in the next few years. This issue will be thoroughly discussed with the board before a final decision is made.

The Taylor Highway and its associated trail system provides access for thousands of consumptive and nonconsumptive users annually. Under this plan, wolf numbers will be managed in central Unit 20E as a Zone 7 to stimulate moose and caribou population growth. Habitat is available to support increased numbers of moose and caribou in this area. Habitat productivity and diversity is expected to remain high because of changes caused by two large fires within the past 25 years and because current fire management zoning encourages limited fire suppression.

In the central portion of Unit 20E, wolf numbers may also be reduced under this plan for 3-5 years and then allowed to increase to moderate levels. However, the population may be regulated at a level below that which could be sustained naturally. Specific management actions will be addressed in the implementation plan.

Until the caribou population goal is reached, the harvest will be limited primarily to bulls, and the total will not be allowed to exceed 1-3% of the pre-hunting season population. Once the caribou population goal is met, hunters will be allowed to harvest from 5-10% of the pre-season caribou population; that harvest will include cows. A portion of the harvest will be in Canada. Specific population and harvest objectives and activities will be addressed in the implementation plan.

If wolf population reduction is conducted in eastern Unit 20D and western and central Unit 20E, the moose population is expected to grow rapidly from 4000 to 10,000 animals. Until

moose population objectives are met, harvest will be restricted through short seasons and a one bull bag limit. The harvest of moose will be allowed to increase by the end of the planning period, and cow moose hunts may become necessary to stabilize the population in central 20E.

Sheep populations in the central portion of Unit 20E are small due to limited habitat and predation. Presently, sheep harvest is very low and is managed primarily for aesthetic hunting conditions. If conducted, wolf population reduction is expected to cause an increase in the sheep population, which may increase harvest.

The grizzly bear population in this area has remained stable or declined slightly over the past 10 years. This plan calls for continued management of the grizzly bear population to enhance moose and caribou calf survival. The liberal season and bag limit for grizzly bears will continue in Unit 20E during the life of this plan, and the annual harvest will probably remain similar to harvests in recent years unless access into the area improves. Proposals to liberalize season and bag limits in northern Subunit 20D will be considered at the March 1992 Board of Game meeting. It is important to continue managing predation by grizzly bears along with wolves. Reducing predation of only wolves may result in compensatory predation by bears. This would diminish the effects of the control program. However, no management programs which could threaten the viability of any wildlife population will be allowed.

The black bear population may slowly increase under this plan as caribou and moose numbers increase. Black bears are an important predator on moose calves. The survival rates of bear cubs and yearlings in areas with high moose densities are higher than in areas with similar habitats but lower moose densities. The harvest of black bears by humans may increase.

Unit 20F

Consumptive use of moose, mainly by local residents, was identified as a priority use of wildlife in this area.

Under the proposed plan most of Unit 20F would be designated as a Zone 5 (see map). Although residents of Unit 20F have expressed a desire for increased numbers of moose, moose populations are not expected to increase under this plan (Table 8). A portion of Unit 20F in the upper Hess Creek drainage would be designated a Zone 4.

Harvest of wolves will be limited to conventional trapping and hunting unless moose populations significantly decline, or additional actions to reduce wolf numbers are requested by the land manager and deemed appropriate by the Board of Game. Under the

proposed plan, wolves, moose and caribou are expected to fluctuate independent of human influence. The proposed management plan would have little effect on bear populations in Unit 20F.

Unit 25C

High levels of both consumptive use and viewing along the Steese Highway corridor were identified as priorities in Unit 25C. In the remainder of the unit, moderate to low use is expected. The number of caribou in the White Mountains have increased in recent years and may continue to increase independent of human influence (Table 9). Moose, wolf, sheep and bear populations are expected to fluctuate independent of human influence under the proposed plan.

The proposed plan calls for a Zone 4 in the Yukon-Charley Rivers National Preserve, in the Birch Creek drainage, and along the northern boundary of Unit 25C. The White Mountains in southern 25C would be managed under a Zone 5 designation. A Zone 6 designation along the Steese Highway reflects the high level of human use in that area. Manipulation of predators within the small area of the Steese Highway corridor would not significantly benefit prey populations. Therefore, wolf reduction or regulation is not anticipated within any portion of Unit 25C.

Moose harvests along the Steese Highway are expected to increase in coming years as hunting pressure increases. Caribou harvest along the Steese Highway will increase as the Fortymile caribou herd increases. Opportunities to view these species may also increase slightly.

IMPLEMENTATION PLANS

If an Area-Specific Management Plan adopted by the Board of Game requires the reduction or regulation of a wolf population, an Implementation Plan must be developed before wolf control can be conducted. This Implementation Plan must include specific details of predator and prey populations in the affected area and proposed management actions. The Strategic Wolf Management Plan establishes the procedure for developing implementation plans, including public review and adoption by the board under AS 44.62.

This draft Area-Specific Management Plan will require some degree of wolf population regulation and reduction to meet stated objectives in portions of Unit 20 (see Map 2). If adopted as proposed, the department will work with the public to develop one or more Implementation Plans. These plans will specify methods and means to be used to achieve management objectives. Land-and-shoot taking of wolves will only be recommended in limited portions of the planning area (see Map 3).

APPENDIX I

Draft Definitions of Terms Used In the Planning Process

The Strategic Wolf Management Plan uses several terms, primarily relating to human use and management, that are not clearly defined. In developing Area-specific management plans it has been necessary to develop standardized definitions of these terms so that all parties have a common understanding of their meaning. Following is a list of some of the terms used in the strategic plan along with definitions of how we have used the terms in this draft. Because the planning process is still evolving, these definitions may be modified based on public and staff input regarding the draft plan and these definitions.

Please feel free to offer your comments and suggestions on the terms given below:

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

> Genetic diversity refers to the genetic differences of individuals within and between populations. It results from the exchange of genes among populations. Genetic diversity of wolf populations can be protected by preventing the isolation of populations and maintaining potential sources of immigrants.

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

> The duration of short-term effects is 1 to 5 years, thus the duration of long-term effects is greater than 5 years.

... to provide for the **broadest possible range of human uses and values** of wolves and their prey.

> Human utilization includes consumptive and nonconsumptive uses and both of these endeavors are managed on a sustained yield basis. Common nonconsumptive uses include, but are not limited to, viewing, photographing, listening, and studying animals in natural settings. Consumptive uses usually involve predator and prey harvesting that may vary in intensity from low to maximum sustained yields.

Prey Populations

> Prey species include: moose, caribou, Dall sheep, mountain goat, Sitka black-tailed deer, and musk-ox. For management purposes, populations of musk ox and caribou are identified as discrete herds; populations of Dall sheep and mountain goats are

identified based on major mountain ranges; populations of deer are generally identified by islands and moose populations are identified on the basis of geographic area, usually game management units (GMUs) or major drainages.

Predator Populations

Predator species include: wolves, brown bears, and black bears. For management purposes populations of wolves and bears are generally identified on the basis of GMUs or major drainages.

...to provide areas where wolves and prey are not **significantly influenced** by people.

Significant influence means that there are long-term measurable changes in population size, composition, density and/or distribution.

...to provide opportunities to harvest a **small portion** of the wolf and prey populations to meet **special needs.**

Small portion, [sic], very low, and low harvest rates are used synonymously to describe limited harvests of wolves and prey that have no measurable effects on population size, structure, and/or distribution. At low harvest rates, populations of wolves and prey can be expected to fluctuate much as they would without human harvest. Special needs refer to the opportunity for subsistence harvest that is guaranteed by law.

...to provide for **moderate harvests** of wolves and prey by people.

Moderate harvest rates describe levels of use of wolves or prey that may have measurable effects on population size, structure, and/or distribution. Under moderate harvest rates, populations of wolves and prey may fluctuate near the pre-determined levels, differing from those that might occur naturally, because of human harvests and natural environmental factors.

...to provide for **high harvests** of wolves and prey by people.

High harvests of wolves and prey are near maximum sustainable levels and will have measurable effects on population size, structure, and/or distribution. Populations of wolves and prey can be expected to fluctuate near pre-determined objective levels as a direct result of harvest management.

Minimum, moderate, and intensive management of predator and prey populations

Wildlife management is the art and science of manipulating habitat, wildlife, and/or people to achieve specific human use goals, both consumptive and nonconsumptive and to ensure the welfare of animal populations. Wildlife management can vary in intensity depending upon the management techniques that are employed.

Minimum management involves limited manipulation of habitat, predators, prey, and human uses. Under this management regime, predator and prey populations can be expected to fluctuate much as they would without human harvest and habitats will be unaffected by management. Examples of management activities which might be conducted include periodic surveys or censuses, general hunting seasons, and opportunistic law enforcement.

Moderate management involves intermediate manipulation of habitat, predators, prey, and human uses. In some cases predator populations may be reduced or regulated and the size or composition of prey populations may be affected. Moderate management may include limited habitat improvement. Populations may produce higher sustained yields than would result from minimal management. Examples of management activities which might be conducted include permit hunts, either sex hunts, controlled use areas, specimen collections, routine surveys and censuses, and routine law enforcement.

Intensive management involves substantial manipulation of habitat, predators and prey, and human uses to achieve identified objectives. Predator populations will likely be regulated and may be reduced to achieve prey population management objectives. Intensive management may include a broad spectrum of habitat improvements including mechanical manipulation of vegetation and the use of fire. Populations of wolves and prey are an expected result of management prescriptions and result in maximum sustained yields. Other examples of management activities may include intensive surveys and censuses, permit hunts, either sex harvests, special seasons, specimen collections, and intensive law enforcement.

...to provide areas where wolves and prey are managed for **high human use**.

This implies significant exploitation (near maximum sustained yields) of predator and prey populations by humans for consumptive, nonconsumptive, or both types of uses.

ADF&G will provide for consumptive use of healthy wolf populations on a **sustained yield** basis.

> Sustained yield, used in the context of consumptive uses, means the numbers or biomass that can be taken from a population year after year while assuring persistence of the population. Sustained yield, used in the context of nonconsumptive uses, implies maintaining opportunities to view, photograph, hear, enjoy, and learn about wildlife in a natural setting that are available year after year while assuring persistence of the resource.

Professional wildlife biologists...will be asked to review the area-specific management plans and comment on whether the affected wolf population will remain **viable over time.**

> Viable over time means that self-perpetuating populations of wolves will continue to exist in the plan area.

Predator Pit

> Predator pit describes the situation where predation is able to keep a prey population at a level well below that which the habitat could support. Evidence to date indicates this situation can occur where moose are the primary prey species; wolves, or wolves in conjunction with one or two bear species, are the primary predator; and both predators and prey are lightly harvested.

Table 1. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 12

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	200-250	150-250[1]	35 (16-73)	15-75	2-5 years	
Moose	2500-3500	2500-4000	86 (73-105)	70-110	3-5 years	
Caribou	1400-1500[2]	1000-2000	41 (30-49)	30-50	Presently met	
Sheep	10,000-12,000	10,000-14,000	278 (250-300)	250-325	Presently met	
Grizzly Bear	250-350	200-350	17 (12-22)	10-25	Presently met	Proposed liberalized bag limits may or may not reduce population
Black Bear	700-1000	700-1000	25 (16-37)	15-40	Presently met	

1 This objective reflects potential short-term reduction in northwest Unit 12.

2 The winter population of caribou in Unit 12 can include all or part of the Nelchina and Mentasta herds; an additional 15,000-50,000 caribou.

Table 2. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 20A

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	180-250	125-175	38 (31-56)	45-70[1]	2-4 years	
Moose	10,000-12,000	11,000-13,000	362 (301-420)	500-1000	2-4 years	
Caribou	5750	8000-10,000	655[2] (552-841)	500-1000	4-7 years	
Sheep	2000-4000	4000-6000	143 (122-163)	150-200	5-10 years	
Grizzly Bear	100-175	100-175	15 (5-21)	5-15	Presently met	
Black Bear	500-700	500-700	34 (25-40)	50-75	Presently met	Harvest increase expected resulting from recent regulation changes.

[1] Annual harvest designed to stabilize wolf numbers at 125-175 wolves; wolves would initially be reduced from current level of 180-250 to a population of 125-175 wolves.

[2] Harvest in 1992 will be limited to no more than 100 bull caribou.

Table 3. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 20B

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	150-250	150-250	21 (6-35)	50-80[1]	2-5 years	
Moose	8500-9500	9000-11,000	386 (315-437)	500-700	3-5 years	
Caribou	See 20E, 25C	Seasonal Migrants Only	See 20E, 25C	See 20E, 25C	See 20E, 25C	Caribou in Subunit 20B are part of the Fortymile or White Mtns herds
Sheep	0-50	0-50	0	0	N/A	Sheep occur as extension of 20E or 25C populations
Grizzly Bear	90-150	90-150	6 (3-9)	5-10	Presently met	
Black Bear	750-1250	750-1250	120 (95-152)	100-150	Presently met	

[1] Increased wolf harvests anticipated, especially in western 20B. Projected harvests will stabilize wolf numbers in western 20B. In central and eastern 20B wolf harvests are not expected to regulate wolf numbers.

Table 4. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 20C - DENALI NATIONAL PARK (excluding Denali National Preserve)

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	125-175	Populations will fluctuate independent of human influence.	0	0	Presently met	This area includes only Denali National Park. Denali National Preserve is included with remainder of 20C.
Moose	2000	" "	0	0	" "	
Caribou	2900	" "	0	0	" "	
Sheep	1500-2500	" "	0	0	" "	" "
Grizzly Bear	150-250	" "	0	0	" "	" "
Black Bear	250-350	" "	0	0	" "	" "

Table 5. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 20C, EXCEPT DENALI NATIONAL PARK (includes Denali National Preserve)

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	50-125	50-125	17 (3-45)	0-15	Presently met	Wolf, moose, and caribou populations will fluctuate mostly independent of human influence.
Moose	1500-2500	500-3000	100 (70-116)	25-150	Presently met	
Caribou	2900	See Table 4	0	50-100 when population is over 4000	Unknown	The Denali caribou herd ranges both in and out of Denali Park
Sheep	0	0	0	0	N/A	
Grizzly Bear	60-110	60-110	4 (4-6)	0-10	Presently met	
Black Bear	700-1100	700-1100	17 (7-25)	5-50	Presently met	

Table 6. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 20D

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	100-150	50-125[1]	17 (6-29)	5-30	3-5 years	Wolf population reduced and then released in northeastern 20D; regulated in remainder 20D.
Moose	2500-5000	4000-6000	125 (118-130)	120-300	5-10 years	Moose harvest may not increase because much of population increase will be in inaccessible northeastern 20D.
Macomb Caribou	600	600-800	39 (10-57)	0-50	Presently met	Population presently declining; hunting will be closed for 1992-93 season.
Fortymile Caribou						Seasonal migrant in this area - see Unit 20E for details
Sheep	1000-1500	1000-2000	35	27-45	Presently met	
Grizzly Bear	140-200	100-200	5 (2-9)	10-15	5-10 years	Proposed liberalized bag limits in northeastern 20D may or may not reduce population.
Black Bear	400-600	400-600	15 (15-18)	15-30	Presently met	

[1] This objective considers initial wolf reduction in northeastern 20D and then expected growth of wolf population for remainder of the plan.

Table 7. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 20E

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	230-260	90-300[1]	22 (9-44)	5-50[1]	3-5 years	Population will be released in the western portion of planning area.
Moose	4000-4500	8000-10,000	48 (37-57)	280-400	5-7 years	
Caribou	20,000-22,000	55,000-60,000	466 (249-795)	3000-6000	8-10 years	Portion of the harvest will occur in Canada.
Sheep	300-400	600-800	6 (1-10)	10+	8+ years	
Grizzly Bear	350-450	350-450	17 (13-24)	10-25	Presently met	
Black Bear	1000-1500	1000-1500	14 (5-24)	30+	Unknown	Harvest increase expected with increased hunting pressure.

[1] This estimate reflects both the initial reduction and the expected population growth by the end of the plans life.

Table 8. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

UNIT 20F

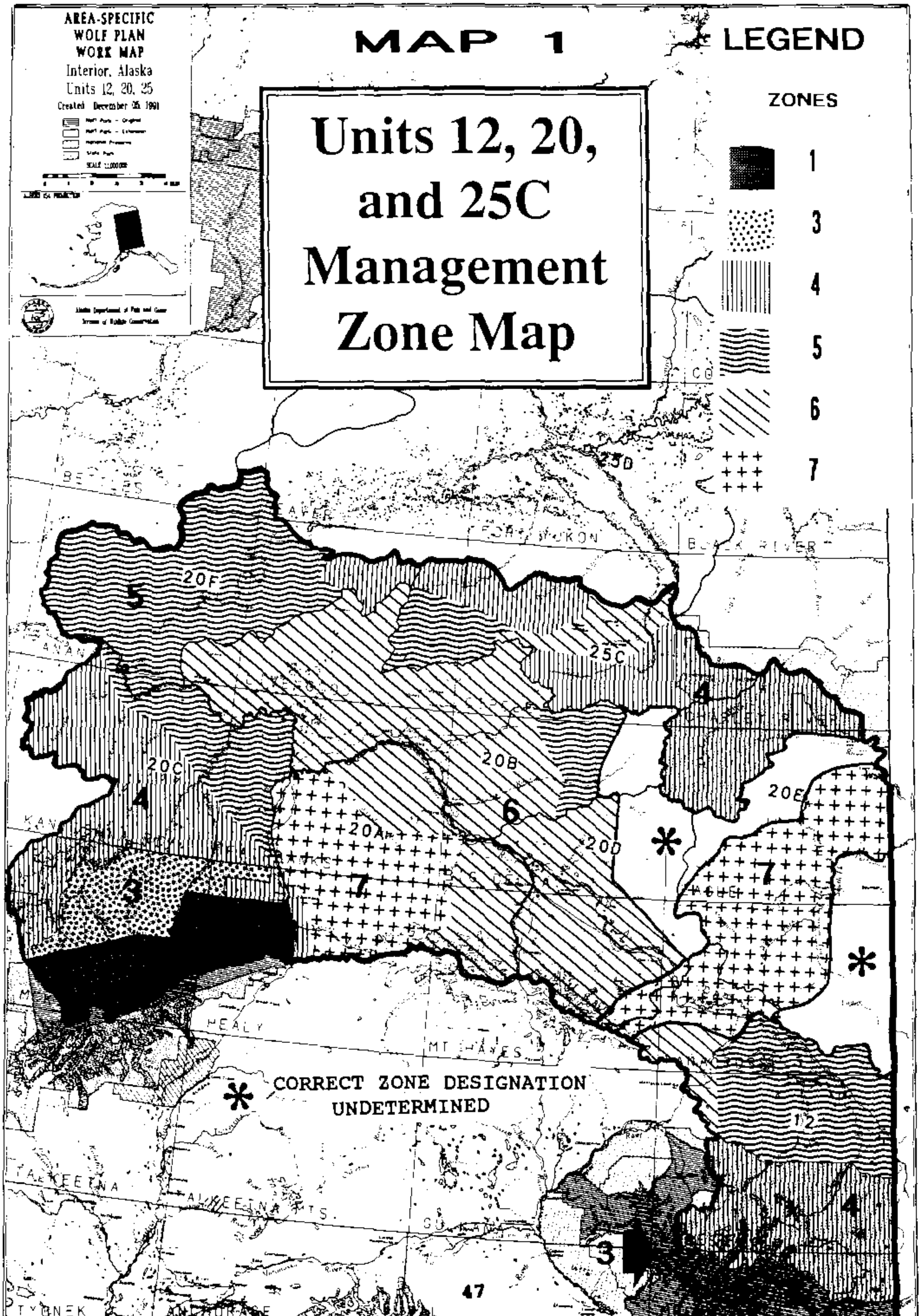
SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	75-125	75-125	7 (2-14)	0-20	Presently met	Wolf, moose, and caribou populations will fluctuate mostly independent of human influence.
Moose	1000-2000	1000-2000	30 (20-40)	20-40	Presently met	
Caribou	500-1000	500-1000	3 (0-10)	0-25	Presently met	" "
Sheep	0	0	0	0	N/A	
Grizzly Bear	60-110	60-110	2 (1-4)	0-10	Presently met	
Black Bear	400-700	400-700	14 (5-32)	10-50	Presently met	Harvest increase expected with increased use of Dalton Highway corridor.

Table 9. Current and projected population and harvest estimates for big game species. These figures represent the best estimates available and are presented for planning purposes. Actual population sizes and harvest levels will be dependent upon management actions and regulations specified in the implementation plans.

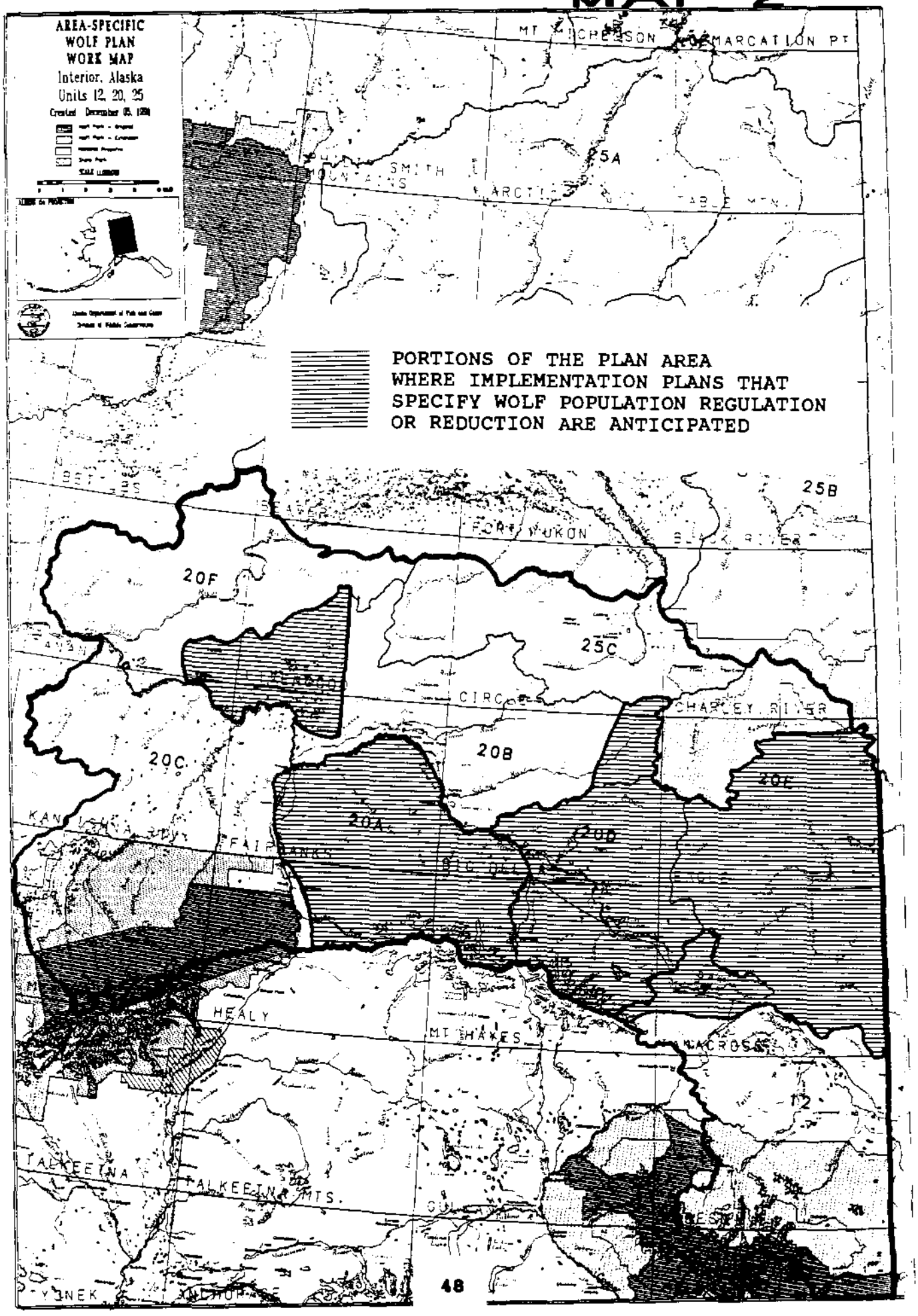
UNIT 25C

SPECIES	CURRENT POPULATION ESTIMATES	POPULATION OBJECTIVES UNDER PROPOSED PLAN	AVERAGE (RANGE) HARVEST 1986-1990	ANNUAL HARVEST OBJECTIVES WHEN POPULATION OBJECTIVES ARE MET	TIME REQUIRED TO MEET POPULATION AND HARVEST OBJECTIVES UNDER PROPOSED PLAN	COMMENTS
Wolf	75-125	75-125	6 (1-11)	0-25	Presently met	Wolf, moose, caribou populations will fluctuate independent of human harvest.
Moose	500-1500	500-1500	34 (26-44)	25-75	Presently met	" "
Caribou	750-1000	1000-2000	19 (4-30)	25-50	Presently met	
Sheep	300-400	300-400	3 (1-5)	0-10	Presently met	
Grizzly Bear	60-110	60-110	3 (2-4)	0-10	Presently met	
Black Bear	350-550	350-550	*	25-50	Unknown	

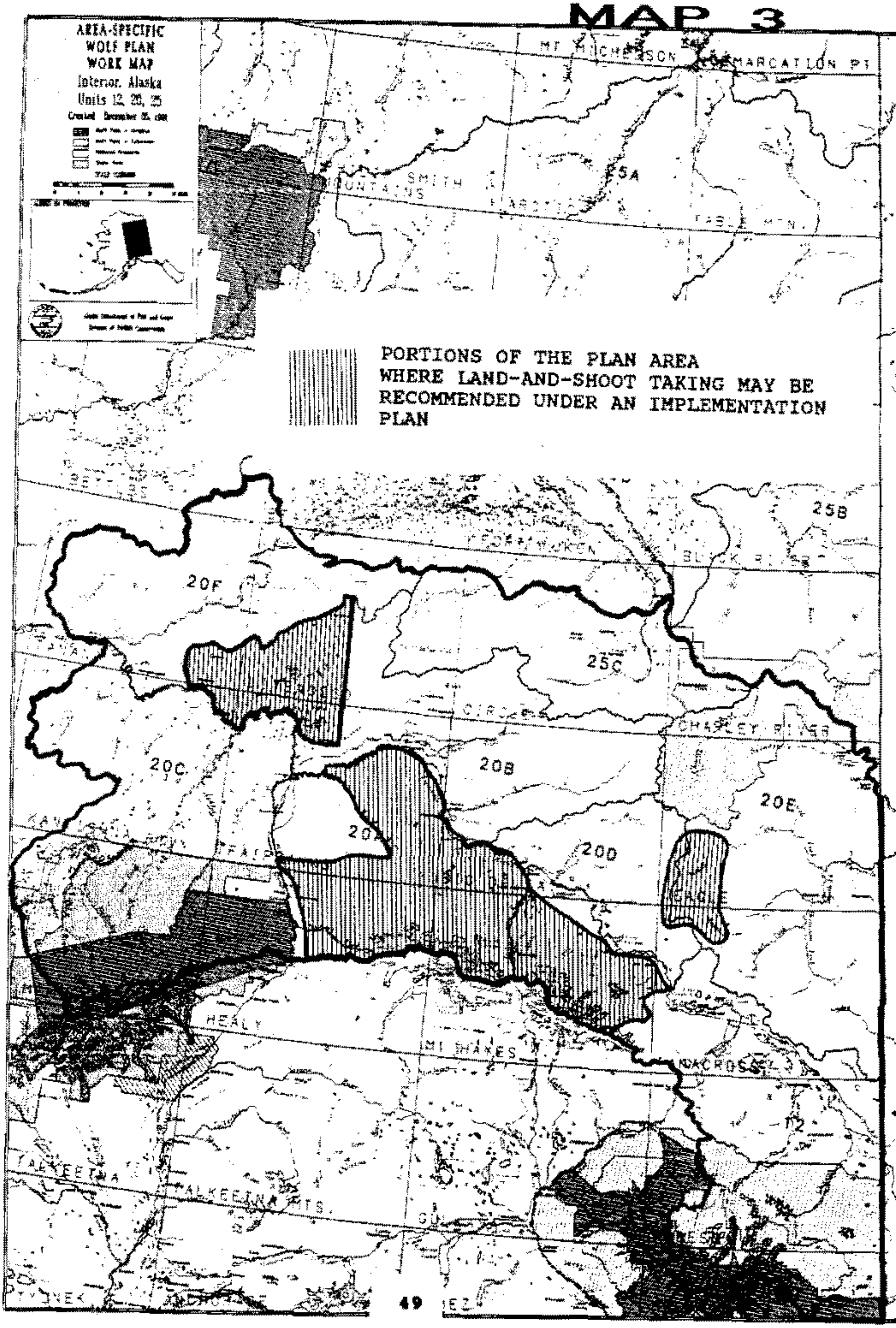
* No sealing requirement for 25C


AREA-SPECIFIC
WOLF PLAN
WORK MAP
Interior, Alaska
Units 12, 20, 25
MAP 1
Units 12, 20, and 25C Management Zone Map
LEGEND
ZONES
1
3
4
5
6
7
20F
25C
25D
20C
20B
20A
20D
20E
12
FORT YUKON
HEALY
CORRECT ZONE DESIGNATION UNDETERMINED
TALKEETNA
TYONEK
ANCHORAGE

MAP 2


AREA-SPECIFIC
WOLF PLAN
WORK MAP
Interior, Alaska
Units 12, 20, 25
Created December 15, 1988
PORTIONS OF THE PLAN AREA
WHERE IMPLEMENTATION PLANS THAT
SPECIFY WOLF POPULATION REGULATION
OR REDUCTION ARE ANTICIPATED
MT. MICHELSON
MARCATION PT.
5A
FORT YUKON
25B
25C
20F
20C
20B
20E
20A
20D
CIRCLE
CHARLEY RIVER
FAIRBANKS
HEALY
MT. HAYES
MACROSS
12
TALKEETNA
TALKEETNA MTS.
ANCHOR

MAP 3


AREA-SPECIFIC
WOLF PLAN
WORK MAP
Interior, Alaska
Units 12, 20, 25
PORTIONS OF THE PLAN AREA WHERE LAND-AND-SHOOT TAKING MAY BE RECOMMENDED UNDER AN IMPLEMENTATION PLAN
25A
25B
25C
20F
20C
20B
20E
20D
CIRCLE
HEALY
TALKEETNA