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Division of Wildlife Conservation

Federal Aid in Wildlife Restoration
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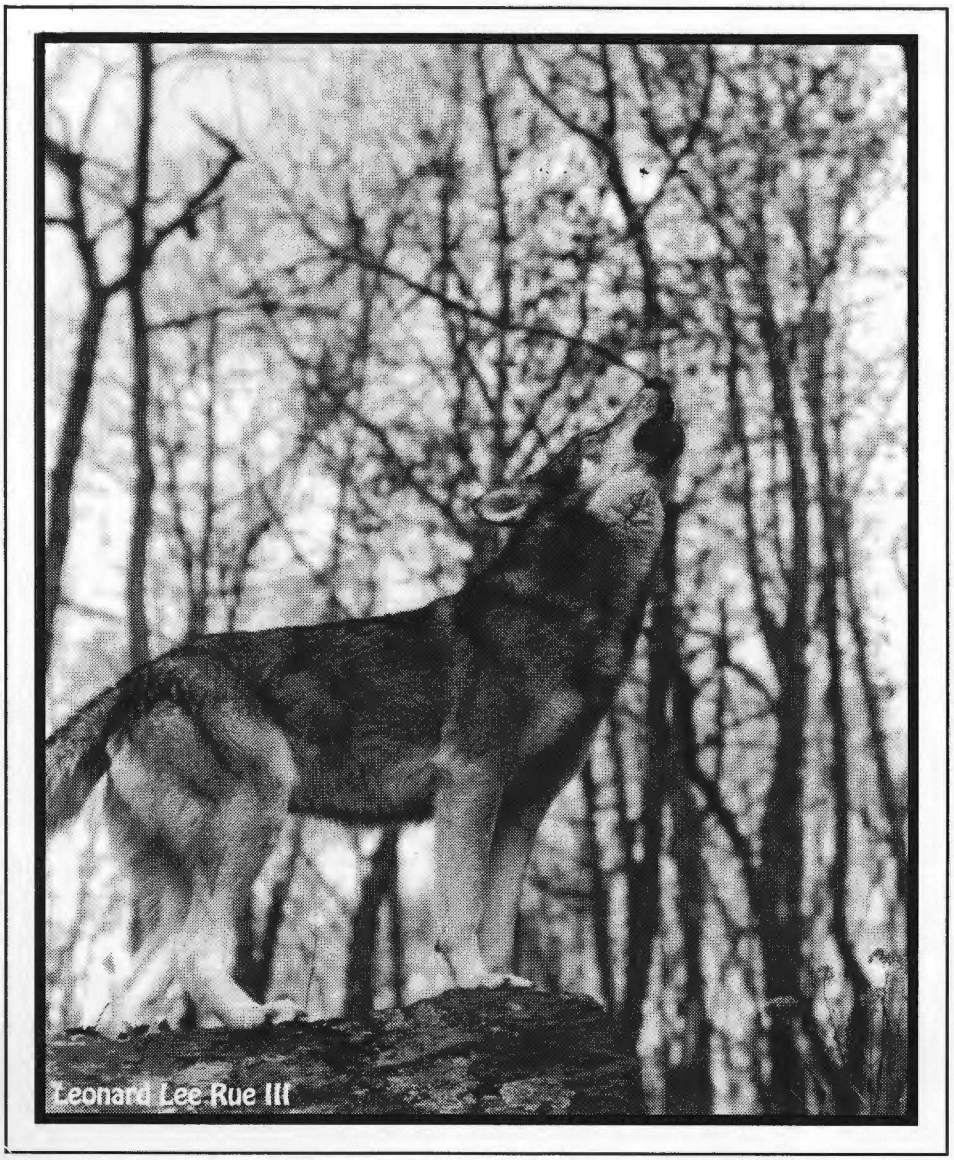
WOLF

Mary V. Hicks, Editor



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STATE OF ALASKA
Tony Knowles, Governor

DEPARTMENT OF FISH AND GAME
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DIVISION OF WILDLIFE CONSERVATION
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Project Title: Southeast Wolf Population Management

Overview: Wolves are throughout mainland Southeast Alaska and all major islands except Admiralty, Baranof, and Chichagof. Wolf distribution has remained relatively constant in recent years, but abundance varies, influenced by prey availability, disease, and harvests. Southeastern wolves tend to be darker and somewhat smaller than their northern counterparts. Sitka black-tailed deer are the mainstay of wolves' diets throughout Southeast, except for some mainland locations where moose are the prime ungulate prey. Wolf hunting and trapping effort and catch seem to increase when more wolves are present. Recent years' population estimates are higher than in the past, but this is believed more a function of increased knowledge of wolves rather than a substantive population increase.

Project Location: Subunit 1A (5,000 mi^2) - Ketchikan area including mainland areas draining into Behm and Portland Canals
Unit 2 (3,900 mi^2) - Prince of Wales and adjacent islands south of Sumner Strait and west of Kashevarof Passage and Clarence Strait

Project Objectives and Activities:

1. Regulate seasons and bag limits to maintain viewable and harvestable populations of wolves.
2. Seal harvested wolf pelts presented for sealing.
3. Contact reliable observers to gain general information about the status and trends of wolf populations, including the use of an annual trapper survey.

Work Accomplished During the Project Segment Period: We sealed 38 wolf hides from Subunit 1A and 110 from Unit 2 during the report period. Information included location and date of kill, method of take and transportation used, sex, and pelt color. We collected anecdotal information through discussions with hunters and trappers and gathered quantitative information from ongoing UAF graduate wolf research in Unit 2. We gained additional information during the annual trapper survey.

Progress Meeting Project Objectives: Five responses to our trapper survey indicated trappers currently consider wolf abundance intermediate in Subunit 1A. No responses concerning Unit 2 wolf populations were received. Harvests from Unit 2 exceeded 100 animals for the second consecutive season. Only the 1969 wolf harvest of 113 surpassed this year's take.

Over 20 wolves have been radiocollared as part of a research project in Unit 2. Relocations are obtained regularly and have shown movements up to 50 straight-line miles between relocation points. About one-half of the collared wolves were trapped or shot during the 1993-94 season. More wolves are expected to be collared and relocated during the next year.

Project Location: Subunit 1B and Unit 3 (6,000 mi^2) - Southeast Mainland from Cape Fanshaw to Lemesurier Point and adjacent islands

Project Objectives:

1. Regulate seasons and bag limits to maintain viewable and harvestable populations of wolves.
2. Seal harvested wolf pelts presented for sealing.
3. Contact reliable observers to gain general information about the status and trends of wolf populations, including the use of an annual trapper survey.

Work Accomplished During the Project Segment Period: We examined and sealed all wolves harvested during the reporting period. Hunters and trappers shared anecdotal information on number and activities of wolves. In Subunit 1B 2 male and 5 female wolves were killed. This is less than the 9 taken the previous year and less than the previous five-year average of 13. All wolves taken in Subunit 1B were taken by one trapper.

A total of 12 wolves were killed in Unit 3, 6 males and 6 females. The kill was down from the previous year's take of 48. This year only seven individuals took wolves in GMU 3. Hunters took 4 of the 12 wolves.

Progress Meeting Project Objectives: Fewer trappers were active compared to recent years. It seems the population is stable or increasing, and there is no need to implement additional restrictions at this time.

Project Location: Subunit 1C (7,600 mi^2) - Southeast mainland and the islands of Lynn Canal and Stephens Passage lying between Cape Fanshaw and the latitude of Eldred Rock, including Sullivan Island and the drainages of Berners Bay

Project Objectives and Activities:

1. Regulate seasons and bag limits to maintain viewable and harvestable populations of wolves.
2. Seal harvested wolf pelts presented for sealing.
3. Contact reliable observers to gain general information about the status and trends of wolf populations, including the use of an annual trapper survey.

Work Accomplished During the Project Segment Period: Fourteen wolves (8 male, 6 female) were harvested and sealed during the 1993-94 season. At least 2 others were trapped but not recovered because of heavy snow conditions.

We used a trapper questionnaire to gain additional information regarding target species abundance, prey abundance, trapping conditions, and trapping patterns.

Progress Meeting Project Objectives: Wolf populations in Subunit 1C seem stable at fairly high densities or slowly increasing.

Project Location: Subunit 1D (2,700 mi^2) - Southeast mainland lying north of the latitude of Eldred Rock, excluding Sullivan Island and the drainages of Berners Bay

Project Objectives and Activities:

1. Regulate seasons and bag limits to maintain viewable and harvestable populations of wolves.
2. Seal harvested wolf pelts presented for sealing.
3. Contact reliable observers to gain general information about the status and trends of wolf populations, including the use of an annual trapper survey.

Work Accomplished During the Project Segment Period: One male wolf was harvested and sealed in Subunit 1D during the 1993-94 season.

A trapper questionnaire provided additional information regarding target species abundance, prey abundance, trapping conditions, and trapping patterns.

Progress Meeting Project Objectives: Wolf populations in Subunit 1D seem stable at moderate to low numbers, although wolf predation on moose was highly visible in late winter 1992-93. Local trappers and other sportsmen have reported some increase in numbers of wolves or wolf sign in recent years, but harvests have remained low.

Project Location: GMU 5 (6,200 mi^2) - Cape Fairweather to Icy Bay, eastern gulf coast

Project Objectives and Activities:

1. Regulate seasons and bag limits to maintain viewable and harvestable populations of wolves.
2. Seal harvested wolf pelts presented for sealing.
3. Contact reliable observers to gain general information about the status and trends of wolf populations, including the use of an annual trapper survey.

Work Accomplished During the Project Segment Period: Harvest was analyzed from wolf sealing certificates. We did not hold planning meetings during the report period.

Progress Meeting Project Objectives: Seventeen wolves (10 male, 7 female) were sealed in Yakutat.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	$5.2	$1.8	$7.0
Actual	$5.2	$1.8	$7.0
Difference	0.0	0.0	0.0

Bruce Dinneford
Management Coordinator

Project Title: Southcentral Population Wolf Management

Project Location: Unit 6 (10,100 mi^2)
Prince William Sound and north Gulf Coast

Project Objectives: Maintain a population in a minimum of 5 packs that will sustain an annual harvest of at least 10 wolves.

Work Accomplished During the Project Segment Period: No wolf surveys were completed in Unit 6. Incidental observations, reports from trappers and guides, and preliminary data from a Forest Service wolf ecology study suggested a population of 40 to 60 wolves in 9 packs.

Sealing records indicated unitwide harvest of 2 wolves. Both wolves were gray males and were taken by ground shooting.

Progress Toward Meeting Project Objectives: We achieved wolf population objectives. The population could have sustained harvest in excess of the 10 animals specified in objectives.

Project Location: Units 7 and 15 (8,400 mi^2)
Kenai Peninsula

Project Objectives: Maintain the posthunting population in Unit 15A and the Kenai National Wildlife Refuge (KNWF) portion of Unit 7 at 35 wolves.

Maintain the population in the remainder of Unit 7 and Units 15B and 15C at a minimum ratio of 1 wolf to 50 moose.

Work Accomplished During the Project Segment Period: Reports from trappers and staff observations suggested the wolf density was stable or slightly increasing because of reduced harvest over the past 5 years. The current estimate is 200 wolves in Units 7 and 15.

Six wolves were taken by hunters and trappers during the 1993-94 season in Subunit 15A. Although wolves were abundant, trappers showed little interest in trapping them. This was primarily because of the presence of lice-infested wolves and the KNWF requirement to check traps every 4 days on the refuge.

Elsewhere on the Peninsula, 6 wolves were harvested in Unit 7, 9 animals were taken in Subunit 15B, and 7 wolves were killed in Subunit 15C. The 1993-94 harvest of 28 wolves was 36% below the previous 12-year average of 44.

Progress Meeting Project Objectives: To achieve population objectives, additional funding will be necessary to conduct thorough surveys followed by liberalization of U.S. Fish and Wildlife Service restrictions on trappers. The refuge requirement of checking traps every 4 days has virtually eliminated recreational trappers' opportunity to pursue wolves over most of the refuge. Low fur prices, caused by pelt damage from lice infestation, have reduced trapping and hunting efforts. Average annual harvest since the 4-day trapline check was initiated was 18 compared to 44 for the 12 years prior to the restriction.

The harvest of 28 wolves represents 14% of the early winter population estimate of 200 for Units 7 and 15. With this low rate of harvest, the wolf population is expected to increase where prey is available.

Project Location: Units 9 and 10 (43,300 mi^2)
Alaska Peninsula and Unimak Island

Project Objectives: Maintain a population that will sustain a 3-year average annual harvest of up to 50 wolves.

Work Accomplished During the Project Segment Period: Direct observation surveys were not conducted during this reporting period. An indirect survey for estimating wolf abundance was accomplished by mail-out questionnaires sent to a select group of trappers. Only 8 questionnaires were returned by active trappers, limiting our inferences about wolf abundance. One-half of the respondents indicated wolves were abundant and had increased compared to the previous year. The other one-half were split in their observations. Given the diversity of opinion and the sample size, I concluded there was not a widespread change in the status of wolves in Unit 9.

Wolf harvest is derived from wolf sealing certificates; however, the data are preliminary at the time of this report. The preliminary harvest of wolves in 1993-94 was 71 in Unit 9 and 0 in Unit 10. This harvest was more than twice the 10-year average of 32 wolves.

Progress Meeting Project Objectives: Snow conditions and lack of funding have hampered progress developing measurable objectives for wolf populations in Units 9 and 10. Research on wolves continues in other areas, but unless budgets increase, it is unlikely effort will be expanded on the Alaska Peninsula. The trapper questionnaire, incidental observations, and sealing requirements are adequate for management purposes as long as trapping effort remains light. If pelt prices and other factors lead to increased harvest, more intensive management may be required.

Project Location: Unit 11 (12,800 mi^2)
Wrangell Mountains

Project Objectives: Maintain the posthunting population at a minimum of 50 wolves.

Work Accomplished During the Project Segment Period: The fall 1993 prehunting season population estimate for Unit 11 was 90-100 wolves. This figure was higher than last year's estimated population of 60-70 wolves but below the prior 5-year average of 95 wolves in the spring after hunting and trapping season. This estimate was based on sightings from department personnel and the general public along with hunter and trapper reports. We do not conduct systematic wolf track transects in Unit 11.

Preliminary harvest data show 17 wolves taken by 8 trappers during the 1993-94 season. This harvest was well below the previous year's take of 33 wolves. We estimated this year's harvest rate at about 18% of the extrapolated fall 1993 population of approximately 95 wolves. The 1992-93 harvest rate was estimated to be higher (26%). Females accounted for 35% (n=6) of this year's take and males 65% (n=11). One wolf was taken by a local resident during the fall, while all the remaining harvest was taken by locals living in the Park resident zone. Ninety-four percent (n=16) of the wolves were trapped, and 6% (n=1) shot. Snow machines were the most popular method of transportation, accounting for 70% of the reported take, followed by dog teams (18%) and aircraft (12%).

Progress Meeting the Projected Objectives: Wolf population estimates in Unit 11 increased slightly in 1993-94, following a slight decline during the previous 2 years. Wolves were considered abundant, but further increases in the wolf population may be restricted by habitat suitability. Because much of Unit 11 is mountainous or glaciered, wolves are limited to the more gentle slopes and river valleys. In addition, ungulate numbers are lower in Unit 11 than in the adjacent Unit 13. Wolves disperse into suitable habitat in Unit 13 where ungulate numbers are higher and may limit overall wolf numbers.

The wolf harvest was the lowest reported since 1986, reflecting a slightly lower population and reduced trapping effort. Snow conditions were not favorable for ground trapping over parts of the unit. This year's reported harvest rate of 17% was below the level that human harvesting was expected to reduce the population. Additionally many packs receive little or no hunting or trapping pressure. Most trappers and hunters concentrate their activities in proximity to access points, especially those areas along the Nabesna and McCarthy Roads, the only roads that lead into this unit. Because hunting and trapping pressure is low and not expected to increase, we expect Unit 11's wolf population to remain at current levels or decline somewhat because of the low prey base available to wolves in this unit.

Project Location: Unit 13 (25,000 mi^2)
Nelchina Basin

Project Objectives: To maintain the posthunting population at a minimum of 150-200 wolves.

Work Accomplished During the Project Segment Period: We conducted wolf survey flights in Unit 13 during October and November 1993, and March 1994. The area covered during these flights included large portions of Subunits 13A, 13B, and 13C, but only small segments of 13D and 13E. The minimum fall population estimate for the area surveyed was 340 wolves. Portions of Subunit 13B had the highest observed wolf numbers in the unit, with a density estimate of 20.5 wolves/1000 km^2.

We used reports from hunters and trappers, along with incidental sightings by department personnel, in conjunction with track survey data to estimate wolf densities for all of Unit 13. A fall 1993 Unit 13 population estimate was between 380-420 wolves in 49 packs. Observed pack size was as high as 23 wolves. This yielded a unitwide density estimate of 8.9 to 9.8 wolves/1000km^2. The preliminary spring 1994 population estimate was between 180-220 wolves.

Preliminary harvest figures showed 179 wolves (84 males, 86 females, and 9 sex undetermined) reported taken to date by 55 hunters and trappers during the 1993-94 season. This was the highest harvest ever reported in Unit 13; it was 23% higher than the previous record take of 145 wolves in 1990. Seventy-four (42%) wolves were ground shot, 63 (35%) were snared. and 41 (23%) were trapped. Snowmachines were the most popular method of transportation (54%) and aircraft were the choice of 36% of those who went afield. Forty-nine wolves were snared and 15 animals were shot by trappers and/or trappers using aircraft The average take per trapper was 3.2 wolves. Unit residents took 95 (53%) wolves and nonlocal Alaskans 84 (47%) wolves. Subunit 13E and 13B had the highest harvests. The preliminary overall wolf harvest rate in Unit 13 was approximately 45% of the estimated fall population.

Progress Meeting the Project Objectives: The spring 1994 population estimate of 200 wolves in Unit 13 met the population objective. Wolf numbers increased in Unit 13 between 1988 and 1990. Wolves in Unit 13 were not limited by prey availability because moose and caribou numbers were high. Although the Nelchina caribou herd was estimated at 40,000 animals, a large portion of the herd migrated into Unit 12 and Canada during the winter. As a result, caribou were often unavailable to wolves in portions of Unit 13, and moose became the important prey species from early October until late April. Wolves readily preyed on caribou when they were available in Unit 13 during winter months. In years when a portion of the herd remained in Unit 13, predation rates on caribou were quite high.

The 1993-94 wolf harvest was the highest ever reported in Unit 13. The most notable change in the harvest pattern was the number of wolves taken by snares. Prior to this year, snares accounted for 2-6 animals annually and the highest number of wolves snared in a season was 11. The number taken by ground shooting also increased. The number of wolves shot using aircraft was unexpectedly low with only 13 animals taken under the same day airborne, 300-foot regulation. Trappers used aircraft to set snares in more remote portions of the unit whereas wolves were previously taken in these areas with land-and-shoot methods.

Project Location: Unit 14 (6,600 mi^2)
Upper Cook Inlet

Project Objectives:

Units 14A and 14B: Maintain a posthunting population at 35 wolves.

Unit 14C: Maintain a posthunting population of 20 wolves.

Work Accomplished During the Project Segment Period: During the 1993-94 season, 7 wolves were sealed from Unit 14. Six were taken in Subunit 14B and 1 was taken in Subunit 14A. One of the wolves killed in Subunit 14B was taken illegally by a person who pursued it with a snowmachine and shot it underneath the track. A questionnaire was mailed to all trappers who sealed fur taken in Unit 14. Few trappers made sets specifically for wolves. When present, wolf tracks were noted on furbearer track transects.

A wolf snow-tracking survey was conducted on 5 March 1994 in the Knik River, Lake George, Hatcher Pass, Peters/Purches Creeks, Little Willow Creek and the Kashwitna River. We found 2 wolves, and tracks of 2 more in the Knik River, and tracks of 8-9 wolves in the Kashwitna River.

During July 1994, at least 3 adults and 4 pups were seen near Pinnacle Mountain. Observations from staff and the public indicated additional wolf packs in the following drainages: Talkeetna River near Sheep River, Iron Creek, Peters Creek/Eagle River, Ship Creek, and Twenty-mile River/Portage Creek.

Local pilots frequently observed wolves in the Knik River area. Only 1 wolf, a pup, was reported taken from this pack. The adults survived the trapping season and produced pups during spring 1994. They apparently used a new den site. During June 1994, 4 adults (2 probably yearlings) and 4 pups, were observed near the den.

Progress Meeting Project Objectives: Systematic wolf surveys were not flown in Unit 14. Through incidental observations and discussions with trappers and hunters, we estimated the wolf population in Unit 14 at 45-65 wolves, including 20-25 in Subunit 14C. To adequately track and manage wolf numbers, the department should continue to refine a systematic method to estimate wolf numbers and apply this method every 5 years.

Project Location: Unit 16 (12,300 mi^2)
West side of Cook Inlet

Project Objectives: Maintain a population that will sustain an annual harvest of 25 wolves.
Work Accomplished During the Project Segment Period: During the 1993-94 trapping season, 12 wolves (1 from Subunit 16A, 11 from Subunit 16B) were reported taken from Unit 16.

Results from a questionnaire mailed to all trappers who sealed fur taken in Unit 16 indicated few trappers made sets specifically for wolves. Several long-time trappers and pilots indicated the number of wolves seemed to be increasing.

Progress Meeting Project Objectives: The population objectives for this unit were met. Systematic surveys were not conducted during this reporting period. Public and staff observations indicated at least 2 packs were inhabiting 16A, and a third was suspected. At least 5 packs were inhabiting 16B, and a sixth was probable. Though increasing, wolf harvests were probably well below the sustainable level, and ample opportunity existed to harvest wolves To adequately track wolf numbers, the department should continue to refine the probability-network sampling method to estimate wolf numbers and apply this method every 5 years.

Project Location: Unit 17 (18,800 mi^2)
Northern Bristol Bay

Project Objectives: Maintain a population that will sustain an annual harvest of 25 wolves.

Work Accomplished During the Project Segment Period: Preliminary data indicated a reported harvest of 52 wolves, including 26 males (62%), 16 females (38%), and 10 of undetermined sex during the 1993-94 season. This level of harvest was above the 5-year average of 24. Wolves were not killed in Subunit 17A; however, 48 (92%) were taken in Subunit 17B, and 4 (8%) in Subunit 17C. Local residents reported killing 44 wolves (85%), nonlocal residents harvested 5 wolves, and nonresident hunters harvested 3.

Most trappers used snowmachines for access (n=30; 58%). Hunters using aircraft killed 20 wolves (39%). All wolves harvested during this reporting period were shot. Fifteen wolves were killed in January (29%), 12 in December and March (23% each), 8 in February (15%), 3 in September (6%), and 2 in April (4%).

Progress Meeting Objectives: We do not have objective data on the population density of wolves in the Unit. Local trappers noted wolf populations seemed to be increasing unitwide during this reporting period, which was reflected by an increased harvest. I also saw more wolves during moose and caribou surveys than in previous years. Perhaps Unit 17B and 17C wolf populations responded favorably to increasing caribou and moose populations and the prohibition on same-day-airborne trapping.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	6.8	10.0	16.8
Actual	6.8	8.0	14.8
Difference	0.0	2.0	2.0

Submitted by:

Karl Schneider
Management Coordinator

Project Title: Region III Wolf Population and Habitat Management

Project Location: Units 12, 19, 20, 21, 24, 25, 26B and 26C

Units 12 and 20E

Project Objectives and Activities:

Unit 12:

1. Provide for an optimum harvest of wolves.
   a. Monitor harvest through sealing records and trapper questionnaires.
   b. Conduct fixed-wing aerial surveys during the winter in selected areas.
   c. Radiocollar and monitor selected packs.
2. Provide maximum opportunity to participate in hunting and trapping wolves.
3. Monitor wolf numbers, population characteristics, and harvests.
4. Temporarily reduce wolves in the northwestern portion of Unit 12 by 70-80% by the year 1995.
5. Maintain sustained yield objectives after population objectives are achieved.
6. Increase human-use opportunities of wolves and moose by significantly increasing moose numbers and by maintaining a healthy, productive wolf population.

Subunit 20E:

1. Monitor wolf numbers, population characteristics, and harvests.
   a. Monitor harvest through sealing records and trapper questionnaires.
   b. Conduct fixed-wing aerial surveys during the winter in selected areas.
   c. Radiocollar and monitor selected packs.
2. Temporarily reduce wolf numbers to less than 100 by 1993 and thereby increase the growth rates of both caribou and moose populations by lowering wolf:ungulate ratios.

Work Accomplished During the Project Segment Period:

Unit 12:

During FY94, 25 hunters and trappers harvested 76 wolves (41 males, 28 females, 7 unknown sex) in Unit 12, exceeding the 5- year average harvest of 38 wolves. During FY94, wolves held high value on the fur market throughout most of the trapping season, and in response trappers selected for wolves. Snaring, ground shooting, and trapping accounted for 41%, 26%, and 22% of the harvest, respectively. The harvest removed about 38% of the fall 1993 population estimate of 180-216 wolves. This rate exceeds sustainable (25%) harvest.

The Unit 12 wolf population estimate derived from 10 hours of track survey, trapper reports, radiotelemetry data, and incidental sightings of wolves or tracks by department personnel. A spring 1994 population estimate of 123-162 wolves (includes a 10% addition for lone wolves) in 28 established packs in Unit 12 reflected a decline in wolf population by 17-25% since spring 1992. The fall 1993 estimate was derived by adding the known overwinter harvest and wolves that died of natural causes to the spring estimate. Based on this estimate, the Unit 12 fall wolf population declined by 6-14% since 1992.

Three wolves in 3 packs carried radiocollars during FY94. These collared wolves were monitored periodically during winter 1993-94 to help with the population estimate.

Subunit 20E:

During FY94, 22 hunters and trappers harvested 63 wolves (31 males and 24 females, and 8 unknown sex). This is the second consecutive year of high harvest. Wolves have held a high value on the fur market the past two years and in response, area trappers have put more effort into wolf trapping. Snaring, trapping, and ground shooting accounted for 63%, 22%, and 13% of the harvested wolves, respectively. The harvest of 63 wolves represented 30-34% of the fall population estimate of 186-210 wolves. This harvest rate exceeds sustainable (< 25%) and has caused the population to decline.

The FY94 Subunit 20E spring wolf estimate of 111-128 derived from over 30 flight hours of survey time, trapper reports, radiotelemetry data, and incidental sightings by department personnel. In portions of the subunit, surveys were not conducted and counts made in prior years were used in the estimate. We derived the fall estimate by adding the known overwinter harvest and the number of wolves that died from natural or unknown causes to the spring estimate. The wolf population has declined by 4-10% since fall 1992.

During FY94, we monitored 12 radiocollared wolves associated with 11 packs. We also collected data on pack and territory size, movement patterns in relation to caribou wintering and calving areas, and population demographics.

Progress Meeting Project Objectives:

Unit 12:

Management objectives 1 through 3 were met during FY94. In June 1993, the Alaska Board of Game rejected a wolf reduction program in northwestern Unit 12. With that decision, management objectives 4 through 6 are no longer achievable. During the planning process conducted during FY92 and FY93, maintaining natural ecosystems in much of Unit 12 and providing consumptive use by local residents were identified as management priorities. To meet these objectives, we recommend changing the Unit 12 wolf project objectives to the following:

1. To provide opportunity to participate in hunting, trapping and viewing wolves.
   a. Monitor harvest through sealing records and trapper questionnaires.
   b. Temporarily close the wolf trapping season if the population declines below 100 wolves.
2. Monitor wolf numbers and population characteristics.
   a. Conduct fixed-wing aerial surveys during the winter in selected areas.
   b. In cooperation with U.S. Fish and Wildlife, radiocollar and monitor selected packs.

Subunit 20E:

Objective 1 was met during FY94. To meet objective 2, the Draft Area Specific Wolf Management Plan needs to be adopted. During June 1993, the Alaska Board of Game rejected this plan. Because of that decision, the project objectives need to be changed to become achievable. However, wolf objectives in Subunit 20E also need to complement the objectives developed to cause significant growth of the Fortymile Caribou Herd. Currently, wolves are a primary limiting factor on herd growth. We recommend the following changes in objective 2:

2. Provide for the maximum harvest of wolves in western Subunit 20E.
   a. Through seasons and bag limits, allow for increased harvest within and in the vicinity of the Fortymile Caribou Herd.
   b. Monitor harvest and temporarily close the season if the population in western Subunit 20E declines below 75 wolves.

Project Location: Units 19, 21A, and 21E

Project Objectives and Activities:

1. Determine distribution, abundance, and population trends of wolves in selected areas.
   a. Radiocollar and monitor selected packs.
2. Maintain a harvestable population of wolves capable of continuing to sustain an annual harvest of at least 100 wolves.
   a. Seal hides taken by hunters and trappers; interview hunters and trappers to assess relative abundance of wolves.
3. Manage to reduce wolf numbers in areas where wolf predation is thought to be significantly affecting ungulate populations through calf or adult mortality.
4. Refine annual wolf population estimates in the area based on incidental sightings, hunter interviews, and sealing documents.
5. Delineate wolf survey area boundaries in each of the 6 Subunits and attempt to survey these respective areas beginning in March 1991.
   a. Conduct fixed-wing aerial surveys during the winter in selected areas.

Work Accomplished During the Project Segment Period: Through preliminary analyses of sealing documents, incidental discussions with area trappers and hunters, incidental field operations, and trapper questionnaires, we estimated the size of the wolf population from 770 to 1000 wolves in 72-90 packs. This is a slight increase from the previous years' population estimate.

During the 1992-93 season, final analyses of sealing documents indicated hunters and trappers took 48 wolves from Unit 19 and 21A and 21E. This harvest represents approximately 4-5% of the population. Harvest by subunit was 19A, 15; 19B, 7; 19C, 10; and 19D, 3. Reported harvests in 21A and 21E were 8 and 5 wolves, respectively.

The previous year, 16 wolves were sealed in these same subunits. Thus, the harvest tripled even though fewer trappers were in the field. This, along with the trapper questionnaires, indicates an increasing wolf population. Certainly a higher harvest could be sustained. Previously, when land-and-shoot methods were allowed, harvests were commonly between 100 and 150 per year.

Progress Meeting Project Objectives: We estimated wolf distribution and abundance. Pelts were sealed and analyses of harvest data will be finalized once sealing documents are computerized. Statistically sound estimates of wolf densities were not achieved over large expanses because of lack of personnel.

Project Location: Subunits 20A, 20B, 20C, 20F, and 25C

Project Objectives and Activities:

1. Estimate wolf population size from aerial surveys for wolves in all subunits by 1993.
   a. Analyze data from aerial surveys of wolves, wolf harvest, and observations by public, pilots, and staff.
2. Model the potential range of impacts wolf predation has on ungulates in each subunit by 1993.
   a. Estimate wolf and ungulate populations for each subunit.
   b. Estimate wolf predation rates on ungulates based on survey data and review of the literature.
3. Determine wolf population objectives that will reasonably meet public needs for consumptive and nonconsumptive uses of wolves and their prey in all subunits of the study area by 1993.
4. Implement policies and programs for wolf management as directed by the Board of Game.

Work Accomplished During the Project Segment Period: We conducted aerial surveys for wolves in Subunit 20A throughout winter 1993-94 in conjunction with the wolf predation control program. In early fall 1993, we estimated 250-275 wolves in 30-34 packs were present in Subunit 20A. Poor tracking conditions in March and April prevented us from completing additional surveys. Based on extrapolation, our fall 1993 estimates also included 150-225 wolves in 20-30

packs in Subunit 20B, 200-320 wolves in 25-40 packs in Subunit 20C, and 75-125 wolves in 10-20 packs in each of Subunits 20F and 25C. We will estimate the posthunt wolf population for Subunit 20A during summer 1994.

According to a preliminary count of sealing certificates from this reporting period (1993-94), the number of wolves harvested by trappers or hunters was highest in Subunit 20B (99) and Subunit 20A (64, 1 of which was found dead and was probably killed by other wolves). In Subunit 20A, an additional 98 wolves were harvested by the department during the predation control project, bringing the subunit total harvest to 161 wolves. Harvests remained moderate-to-low in Subunits 20C (31), 20F (10), and 25C (15).

Approximately 30 trappers attended a Wolf Trapping School cosponsored by the department and the Alaska Trappers Association in October 1993.

To determine the effect wolf population sizes have on prey populations, we initiated a research project in 1992 to develop and test a predator-prey computer model. We used this model to examine the potential effects of various management scenarios for wolves and their prey in Subunit 20A. These scenarios were discussed with the public and the Board of Game during the planning process for Area Specific and Implementation Plans.

During a special June 1993 Board of Game meeting, the Board adopted a wolf predation control program for Subunit 20A to provide relief to the declining Delta caribou herd and to test the feasibility of a ground-based control program. The regulations governing this program specify at least 35 wolves will remain in the control area and at least 100 wolves will remain in all of Subunit 20A to maintain a viable population. Wolf population objectives were not established for the other 4 subunits.

The wolf predation control program for Subunit 20A was implemented as directed by the Board, consistent with the Board's "Wolf Conservation and Management Policy for Alaska." This project is budgeted from the Fish and Game Fund and will be reported separately.

Progress Meeting Project Objectives: We did not meet our objective to estimate wolf population size from aerial surveys in all subunits by 1993. Although we conducted surveys in Subunits 20A and 20B in recent years, we did not conduct aerial surveys in Subunits 20C, 20F, or 25C. National Biological Survey biologists surveyed wolves in Denali National Park and Preserve in southern Subunit 20C. It will be necessary for us to continue to monitor the wolf population in Subunit 20A to evaluate the effectiveness of the control program. However, I recommend we broaden our survey efforts in 1994-95 to include other subunits.

Modeling the potential range of the effects of wolf predation on ungulates has now been identified as a separate research project with a final report due in September 1995. I recommend deleting this objective. We plan to use the model to assess and explain different options as we discuss management objectives for wolves and their prey.

To more clearly understand the effects of the wolf control program, I also recommend we pursue a calf mortality study of moose and/or caribou in Subunit 20A.

We attempted to determine what wolf population objectives would reasonably meet public needs for consumptive and nonconsumptive uses of wolves and their prey in this study area through the wolf management planning process. We will continue to solicit public input but our objectives must be consistent with new guidelines established in the Board of Game's "Wolf Conservation and Management Policy for Alaska," the Wolf Predation Control Implementation Plan for Subunit 20A, and the Alaska State Legislature's Intensive Management of Big Game Act (effective 7/11/94).

I recommend the following management objectives for the next reporting period:

1. Estimate wolf population size and distribution from aerial survey and harvest in Subunits 20A, 20B, and 25C by 1996.
2. Solicit public input regarding prey population and harvest objectives prior to the spring 1995 Board meeting. Determine what wolf population levels can be supported with these objectives.
3. Initiate a calf mortality study of moose and/or caribou in Subunit 20A by 1996.

Project Location: Subunit 20D

Project Objectives and Activities:

1. Determine distribution, abundance, predation rates, and population trends in selected areas.
    a. Seal hides taken by hunters and trappers; interview hunters and trappers to assess relative abundance of wolves.
    b. Conduct fixed-wing aerial surveys during the winter in selected areas.
    c. Radiocollar and monitor selected packs.

Work Accomplished During the Project Segment Period: Preliminary harvest data indicate 44 wolves were taken by hunters and trappers during 1993-94. Thirty-six wolves were taken from southern Subunit 20D, and 8 were taken from northern Subunit 20D.

We tracked radiocollared wolves from 6 packs in northern Subunit 20D and 1 pack from southern Subunit 20D to estimate relative abundance and territory size of wolves. We are still interviewing trappers. Estimates of fall 1993 and spring 1994 wolf minimum population size will be completed after additional trappers have been interviewed.

Progress Meeting Project Objectives: Harvested wolves were sealed to monitor harvest. Wolves were radiotracked primarily in northern Subunit 20D, and trappers were interviewed to estimate number of packs and population size.

Project Location: Subunits 21B, 21C and 21D and Unit 24

Project Objectives and Activities:

Subunits 21B, 21C, and 21D:

1. Reduce wolf density to achieve a moose:wolf ratio of 50:1 until the moose population objectives are attained in Subunit 21B.
   a. Encourage trapper participation by education and liberal regulations.
2. Maintain a stable fall wolf density of approximately 1 wolf/50 mi^2 with the intent to sustain an 11-32% annual harvest rate from the wolf population in Subunits 21B, 21C, and 21D after the moose population objectives have been attained.
   a. Conduct fixed-wing aerial surveys during winter in selected areas to determine population size.
   b. Radiocollar and monitor selected packs and interview hunters and trappers to assess relative abundance of wolves.
   c. Seal hides taken by hunters and trappers to determine annual harvest rates.

Unit 24:

1. Reduce wolf density to 1 wolf/1000 mi^2 to achieve a moose:wolf ratio of 50:1 in the central part of the unit; i.e., Hughes to Bettles.
   a. Encourage trapper participation by education and liberal regulations.
2. Maintain a stable fall wolf density of approximately 1 wolf/50 mi^2 with the intent to sustain an annual harvest of 30 wolves in the southern part of Unit 24, south of Hughes (6,150 mi^2).
   a. Conduct fixed-wing aerial surveys during winter in selected areas to determine population size.
   b. Radiocollar and monitor selected packs and interview hunters and trappers to assess relative abundance of wolves.
   c. Seal hides taken by hunters and trappers to determine annual harvest rates.

Work Accomplished During the Project Segment Period:

Subunits 21B, 21C, and 21D:

We contacted trappers and provided educational materials to increase trapper efficiency.

Within Subunits 21B and 21C, wolf populations were estimated based on sealing documents, wolf trapper surveys, estimates of density, and previous years radiocollared pack home ranges.

In Subunit 21D the entire area was surveyed with USFWS. Using a probability estimator method, we tabulated a population estimate and variance. The Sample Unit Probability Estimator (SUPE)

uses the probability of sighting fresh wolf tracks for population estimates in sample units (4 mi. x 4 mi.) after a snowstorm. Any tracks found within the sample unit are followed until wolves are sighted. The SUPE resulted in a spring population estimate of 256.0 wolves (+ 14.2% at 80% C. I.) and density estimates of 8.16 wolves/1000 km^2 (SE=0.91).

The Subunit estimated fall wolf populations are listed.

Subunit 21B - 80-90 wolves in 9-11 packs
Subunit 21C - 40-50 wolves in 6-10 packs
Subunit 21D - 275-365 wolves in 34-37 packs

Fifteen wolves were radiocollared from 10 packs, and locations were plotted.

Hunters and trappers harvested 52 wolves during the 1993-94 season. Sealing compliance in some of the rural villages seems to be increasing.

Unit 24:

We contacted trappers and provided educational materials to increase trapper efficiency.

No surveys were conducted.

No new wolves were radiocollared in the Unit. Using trapper interviews and previous surveys, we estimated the fall wolf population at 405-540 wolves in 58-66 packs in Unit 24.

Hunters and trappers harvested 71 wolves during the 1993-94 season. Sealing compliance in some of the rural villages appears to be increasing.

Progress Meeting Project Objectives: The wolf radiotelemetry projects were in cooperation with the USFWS and have provided better population estimations and distribution data. The SUPE population estimation method is a very good technique to increase our knowledge about wolf numbers. It should be added as an activity to Game Management Units 21B, 21C and 24 to help determine population estimates with statistical parameters.

Most objectives have been met with regard to sustaining harvest levels. In the middle Game Management Unit 24 area, wolf numbers are still above optimum levels which discourages moose population growth.

Project Location: Subunits 25A, 25B, 25D, 26B, and 26C

Project Objectives and Activities:

1. Conduct a wolf census in Subunits 25A, 25D East, and 25B West by 1995.
2. Evaluate the effects of wolf predation on moose in Subunit 25D using computer modeling.

Work Accomplished During the Project Segment Period:

Sealing forms on file in early June 1993 indicated hunters and trappers harvested 18 wolves in Subunit 25A, 11 in Subunit 25B, 19 in Subunit 25D, 29 in Subunit 26B, and 11 in Subunit 26C. These harvests are the same or lower than those of previous years except in Subunit 25D where the number reported taken increased from 10 to 19.

No surveys were conducted during this period, but the status of wolves was discussed informally with numerous local and nonlocal residents. Observations by the public generally indicate wolf numbers have increased in recent years.

Progress Meeting Project Objectives: No additional surveys have been conducted since March 1992 when wolf numbers were estimated in Subunit 25D. Because other activities have been higher priority, we have made minimal progress toward project objectives.

Some progress was made toward Objective 2. The level of compliance with pelt sealing requirements is fairly high in Unit 25, and contacts with the public and sealing agents suggest wolves are routinely sealed in this area. In Subunits 26B and 26C wolf pelts harvested by local residents are often processed locally. Although some pelts are not sealed, the total number taken by local residents is not large. Wolves taken by nonlocal residents adjacent to the Dalton Highway in Subunit 26B are regularly sealed.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	82.0	21.0	103.0
Actual	73.7	16.6	90.3
Difference	8.3	4.4	12.7

Explanation: Wolf surveys planned for Subunit 20B could not be conducted due to poor snow and weather conditions.

Submitted by:

Kenton P. Taylor
Management Coordinator

Project Title: Western and Arctic Alaska Wolf Survey and Inventory

Project Location: Unit 18 (42,000 mi^2)

Project Objectives and Activities:

1. Establish and maintain viable wolf populations in Unit 18.
   a. Monitor harvests through the sealing program, contacts with the public, and the annual trapper questionnaire.
   b. Explain and promote compliance with the sealing requirement among local hunters and trappers.
   c. Monitor the size and population status of wolves and wolf packs in Unit 18.
2. Minimize adverse interactions between wolves and the public.
3. Develop updated population management objectives in consultation with other agencies and the public.

Work Accomplished During the Project Segment Period: Sealing certificate data indicate 4 wolves were harvested in Unit 18 during the 1993-94 season. In addition, sightings of wolves and prey believed to be killed by wolves were reported by local trappers, hunters, pilots, and by department and U.S. Fish and Wildlife Service (FWS) staff engaged in other activities.

We mailed a trapper questionnaire March 1994 to evaluate wolf abundance. Trappers and hunters have reported no change in wolf abundance since last year. However, public reports of wolf sightings have decreased. Coyotes moving into the southwest portion of Unit 18 have been seen for 3 years between the Kwethluk and the Kisaralik rivers, and possibly 1 coyote was seen east of the Andreafsky area. Some of these coyotes may have been mistaken for wolves.

We sent all villages public notices informing hunters and trappers that wolves should be sealed after they are harvested.

Progress Meeting Project Objectives: Observations reported by the staff and the public indicate several wolf packs occupied the entire length of the Yukon River, portions of the Kilbuck Mountains, and the Kuskokwim River near the Unit 19A boundary. The overall Unit 18 population is estimated to range from 75 to 100 wolves in 6-8 packs. Several wolf kills of caribou were documented during the reporting period. Resident wolf packs have been observed near Nyac on the upper Tuluksak River drainage, the upper Kwethluk and Kisaralik drainage, the Goodnews and Arolik drainage, the Paimiut Hills, Russian Mountains, Twelve-mile Slough and the Portage Hills area, and the Andreafsky Mountain area. In addition, scattered sightings have been reported elsewhere in the Unit.

Sealing certificate data indicate 4 wolves were harvested during the reporting period. Two wolves were taken during January 1994, and 2 were taken March 1994 between Kotlik and the Andreafsky River. All 4 wolves were ground shot; snowmachines were used as transportation.

No sex information was reported when sealed. Due to low fur prices and high local demand for wolf pelts for parka ruffs, some local trappers may have not sealed their harvest. Wolf harvest is normally very low in Unit 18. Most of the wolves found in Unit 18 are migrants from nearby Units 17, 19, 21, and 22.

Increased numbers of ungulates in the Kuskowkim and Yukon drainages should increase numbers of wolves in the near future. Recent migrations of several thousand Western Arctic herd caribou into the lower Yukon and Andreafsky River area, the increase and expansion of the Kilbuck caribou herd, and the increase of moose numbers along the lower Yukon River will potentially attract wolves from nearby Units into Unit 18, or allow increased year-round occupancy by more wolves within the Unit.

Project Location: Unit 22 (25,230 mi^2)
Seward Peninsula and that portion of the Nulato Hills draining west into Norton Sound.

Project Objectives and Activities:

1. Establish and maintain viable wolf populations in Unit 22.
   a. Assess harvest, interview hunter/trappers, and seal all pelts brought in for sealing.
   b. Establish and maintain license vendors and sealers in all Unit 22 villages.
   c. Improve compliance with current sealing requirements through public communication and education.
2. Cooperate with reindeer herders to develop methods which will reduce adverse interactions between wolves and reindeer.
3. Develop updated wolf management objectives upon completion of the statewide wolf management plan.

Work Accomplished During the Project Segment Period: Data from furbearer sealing records indicate 14 hunters and trappers harvested 34 wolves (27 males, 5 females, and 2 of unknown sex) in Unit 22 during the reporting period. All the hunters/trappers were residents of Unit 22. A breakdown of this harvest by subunit includes 23 in Subunit 22A, and 11 in 22B. Data pertaining to type of take includes ground shooting - 32, and trapping - 2. Snowmachines continued to be the major transportation used by resident wolf hunters.

Unit 22 schools continue to use the educational program developed several years ago, focusing on the importance of wildlife management concepts and regulations. Staff made several trips to assist license vendors in the villages, explaining the need for regulations and harvest reporting.

Staff continued to devote a considerable amount of time answering and making phone calls, writing articles, mailing out regulatory materials, and supporting local license vendors.

Numerous meetings and impromptu discussions throughout the year with reindeer herders and National Park Service staff disclosed possible ways of reducing wolf/reindeer interactions.

Progress Meeting Project Objectives: The magnitude of the unreported wolf harvest each year in Unit 22 is substantial. Efforts to inform the public of the importance of wildlife conservation and the need for regulations are starting to show results in some communities because the number of individuals purchasing licenses has increased. Additional contact with local village residents is needed for complete compliance with current regulations.

We are making limited progress reducing confrontations between wolves and reindeer. Discussions with local reindeer herders have led to some herders attempting to reduce wolf/reindeer interactions by spending more time with the reindeer, particularly at fawning time, and keeping reindeer in areas with lower wolf densities.

Development of an area-specific wolf management plan has not occurred, although we communicated our intent this year with local residents and representatives of several governmental agencies.

Project Location: Unit 23 (43,000 mi^2)
Kotzebue Sound and the Western Brooks Range

Project Objectives and Activities:

1. Maintain existing populations of wolves in Unit 23.
   a. Maintain the furbearer sealing program to monitor harvest.
   b. Conduct a wolf census in the Noatak River drainage by 1996.
2. Minimize adverse interactions between wolves and the public.

Work Accomplished During Segment Period: We supported license vendors and furbearer sealers in Unit 23. Sealing certificates indicated hunters and trappers in Unit 23 harvested 46 wolves (27 males, 17 females, and 2 of unknown sex). At least 20 additional wolves were taken but not reported through the sealing program. Of those sealed, 44 wolves were ground shot and 2 were trapped. Twenty-one hunters harvested 42 wolves using snowmachines. Other hunters used aircraft (1), dog team (1), and a 4-wheeler for transportation. Use of aircraft is frequently underreported. When aircraft is used to access a camp where a snowmachine is located, often only the snowmachine transportation is reported. Fifty-seven percent of the harvest was in the Kobuk River drainage, 35% in the Noatak River drainage, and 6% in the Selawik and Buckland River drainages.

The final report for the cooperative wolf research study was completed in the form of a Phd. dissertation. This report is comprehensive, including data previously reported in project progress reports and publications.

Progress Meeting Project Objectives: Healthy populations of wolves and liberal hunting and trapping regulations exist in Unit 23. Unit 23 wolf population densities seemed relatively high and increasing, especially in the Noatak River drainage. Wolf predation will continue to affect the magnitude of the decline in moose and sheep numbers, as well as the rate of return of these ungulate populations to their former levels of abundance.

Harvest reporting rates by local residents remained low. Many local residents view hunting and trapping regulations and sealing requirements as excessively complicated. We will submit regulatory proposals to simplify these regulations.

Project Location: Unit 26A (53,000 mi^2)
Western North Slope

Project Objectives and Activities:

1. Maintain viable wolf populations in Unit 26A.
   a. Monitor the population density of wolves in the most heavily hunted area in Unit 26A once every 3 years.
   b Monitor harvest through the statewide sealing program and by interviewing knowledgeable people in the villages. In addition, develop a better monitoring system.
   c. Interview hunters, guides, and pilots to collect harvest and population status information.
2. Determine the impact of wolves on Unit 26A moose populations.
   a. Monitor the wolf population by conducting surveys in the primary moose habitat area once every 3 years.
   b. Record wolf observations and moose carcasses during moose counts and compare to observations of past counts.
3. Develop a management plan in cooperation with the public and other agencies.

Work Accomplished During the Segment Period: During the reporting period, 40 wolves were sealed. Twenty-seven (68%) were males, 10 (25%) were females, and 3 (8%) were unknown. Twenty-nine (73%) animals were ground shot, 10 (25%) were trapped, and the status of 1 (3%) was unknown. Hunters harvested 31 (79%) animals using snowmachines for transportation, 4 (10%) animals were taken using aircraft, 4 (10%) were taken using boats, and 1 (3%) was unknown. The chronology of the harvest was September - 5, November - 1, December - 4, January - 2, February - 1, March - 14, April - 11, and 2 unknown.

A Sample Unit Probability Estimator (SUPE) sample design was used to census wolves in a 10,343 km^2 area bordered by the Colville, Killik, and Itkillik Rivers and Gunsight Mountain on 8 and 9 April 1994. Thirty-three wolves were seen in 8 packs, resulting in an estimate of 43 wolves, with a confidence range of 43-45 at the 90% level. We calculated a density estimate at 4.1 wolves per 1000 km^2. This compares to a density estimate of 4.2 wolves/1000 km^2 generated by using a transect-intercept probability sampling design in 1992. We believe some wolves normally residing within the study area followed caribou that moved outside the area shortly before the 1994 survey, and the actual density of wolves in the area has probably increased during the last 2 years.

On 10 April, we surveyed an area to the north of the Colville River. Although wolves had been seen in the area previously, we did not see any wolves in the area during the survey. As observed in the area to the south, the wolves seemed to have followed migratory caribou that moved out of the area.

Progress Meeting Project Objectives: Traditional track surveys conducted during 1986 and 1987 in approximately the same area sampled in 1992 and 1994 resulted in density estimates of 2.6 wolves/1000 km^2 and 2.7 - 3.2 wolves/1000 km^2 (Trent 1987). These surveys indicate the density of wolves has increased in that portion of the Unit south of Umiat, which is among the most heavily hunted areas in Unit 26A. Results of these surveys and the following additional considerations indicate harvest levels are probably within sustained yield limits:

1) same-day airborne hunting for wolves has not been permitted (although same-day wolf hunting is now allowed if the hunter is 300 feet from the airplane) and extensive areas of Unit 26A receive little impact from hunters;
2) hunters, guides, and pilots who spend time in the area indicate wolf densities are increasing in Subunit 26A; and
3) the number of wolves observed by staff during moose surveys has steadily increased during the last 14 years.

The number of moose counted during surveys along the Colville, Anaktuvuk, and Chandler Rivers has declined during the last 2 years, and this may be partly due to wolf predation. We will continue to conduct wolf and moose surveys to monitor the effect of hunters on wolves and the combined effects of hunters and wolves on moose.

The wolf harvest during 1993-94 was the highest on record since 1990-91. This higher harvest probably reflects a larger wolf population. Because interest in wolf hunting is increasing in many villages, wolf populations may decline in localized areas. The department sealing program is not effective at measuring harvests in most villages. We are working with the North Slope Borough to develop a more effective harvest monitoring program, involving local monitors from each village.

Segment Period Project Costs:

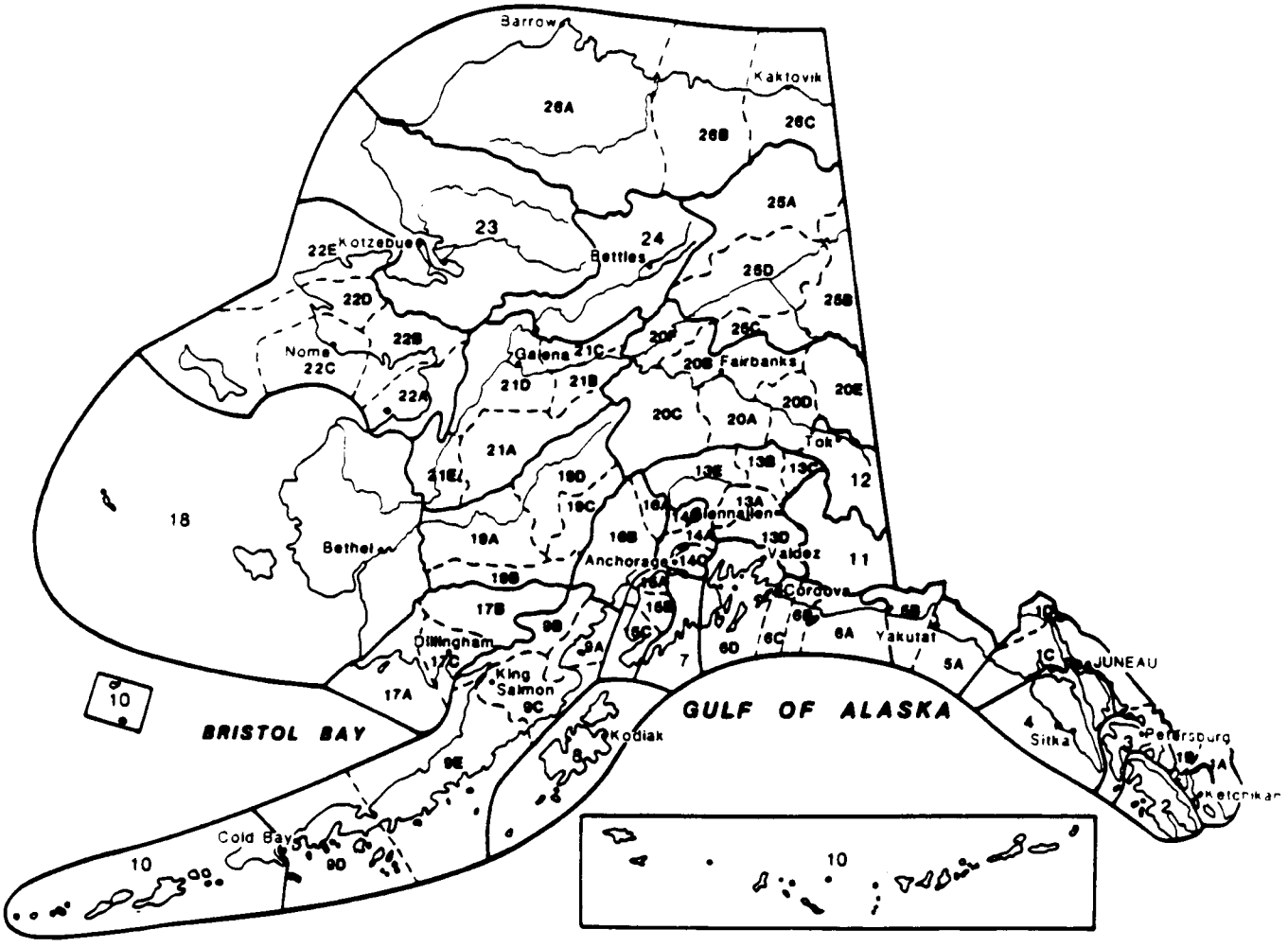
	Personnel	Operating	Total
Planned	28.0	11.9	39.9
Actual	28.0	4.7	32.7
Difference	0	7.2	7.2

Explanation: Because wolf surveys were conducted at the same time as moose surveys in Unit 26A, aircraft charter costs were less. In addition, the costs associated with the wolf sealing program were incorporated with the furbearer sealing program.

Submitted by:

Steve Machida
Survey-inventory Coordinator

Alaska's Game Management Units



The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manfacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program distributes funds to states using a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum of 5% of revenues collected each year. The Alaska Department of Fish and Game uses its funds to help restore, conserve, and manage wild birds and mammals. These funds are also used to educate hunters to develop skills and attitudes for responsible hunting. Federal Aid funds paid for 75% of this study.