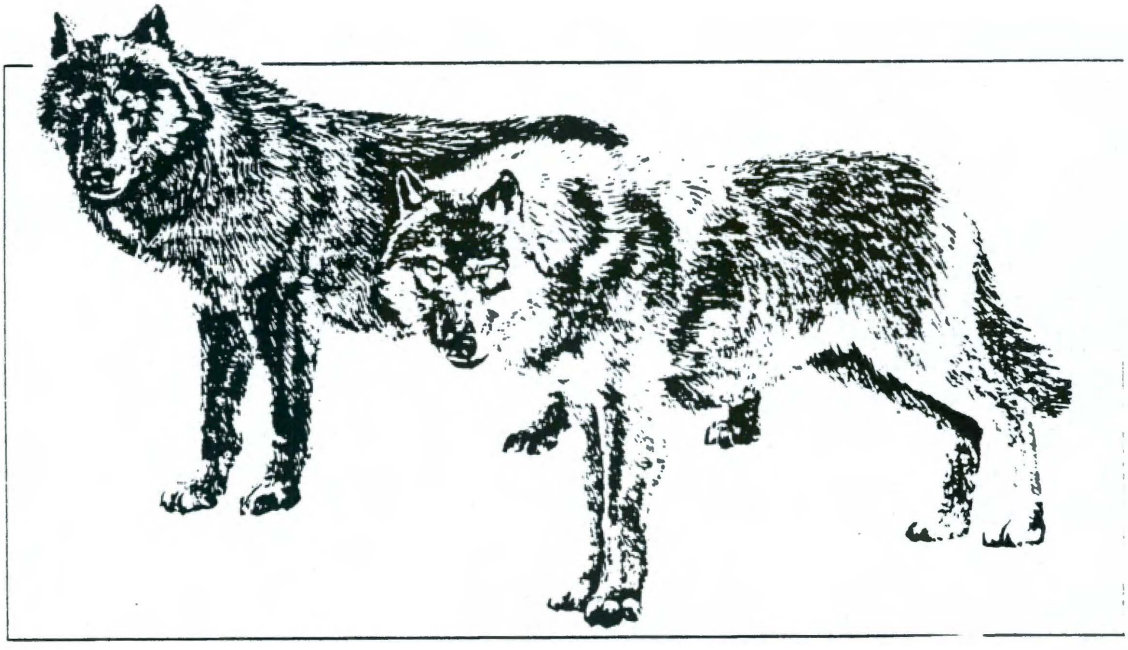
Alaska Department of Fish and Game
Division of Wildlife Conservation

Federal Aid in Wildlife Restoration
Annual Performance Report of
Survey-Inventory Activities
1 July 1991 - 30 June 1992

WOLF

Susan M. Abbott, Editor



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Project Title: Southeast Wolf Population Management

Project Location: Subunit 1A and Unit 2 (8,911 mi^2)
Subunit 1A - Ketchikan area including mainland areas draining into Behm and Portland Canals.
Unit 2 - Prince of Wales and adjacent islands south of Sumner Strait and west of Kashevarof Passage and Clarence Strait.

Project Objectives and Activities:

1. Maintain wolf populations capable of sustaining harvests at the 1984-85 levels of 15 in Subunit 1A and 43 in Unit 2.
2. Seal all wolves taken in Subunit 1A and Unit 2 that are presented for sealing.
3. Work towards better understanding the population status of wolves in Subunit 1A and Unit 2, and applying this understanding to develop better population objectives.

Work Accomplished During the Project Segment Period: Thirty-one wolves from Subunit 1A and 82 from Unit 2 were sealed between 1 July 1991 and 30 June 1992. Information obtained included location and date of kill, method of take and transportation used, and sex and pelt color. Anecdotal information was collected through discussions with hunters and trappers and from incidental observations by Department personnel.

Progress Towards Meeting Project Objectives: Wolf populations in both units appear capable of sustaining the levels of harvest stated in the objective. Considerable variation in harvest levels occur between years, mainly as a result of changes in trapping effort. The 31 wolves harvested from Subunit 1A represent the second highest recorded harvest during the past 8 seasons, and the 82 taken from Unit 2 represent the highest recorded take from that unit during the past 8 seasons. The high take from Unit 2 is attributed to the high numbers of wolves currently believed to exist on Prince of Wales Island, and to increased trapping effort by at least one very effective trapper residing on the north end of the island. Wolf research, scheduled to begin during 1992-93 will hopefully provide additional insights into wolf ecology and management on Prince of Wales Island.

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

Project Objectives: Maintain wolf populations capable of sustaining harvest at the 1984-85 level of 10 (Subunit 1B) and 9 (Unit 3). Develop population objectives.

Work Accomplished During the Project Segment Period: We examined and sealed all wolves harvested. We collected anecdotal information from hunters and trappers about number and activities of wolves observed. In Subunit 1B, 3 male and 6 female wolves were killed; less than the 19 taken in the previous year but equal to the previous 5-year average of nine.

A total of 48 wolves were taken in Unit 3: 25 males, and 23 females. The harvest was up from the previous year's take of 21. Trappers reported that wolf sign was more plentiful than in previous years. Both deer and bear hunters took wolves.

Progress Towards Meeting Project Objectives: Harvest exceeded the management objectives. The population appears stable or increasing, and no need to implement additional restrictions exists at this time.

Project Location: Subunit 1C (7,562 mi^2)
The southeast Alaska mainland, and the islands of Lynn Canal and Stephens Passage between Cape Fanshaw and the latitude of Eldred Rock, including Sullivan Island and the drainages of Berners Bay.

Project Objectives and Activities: Subunit 1C wolf population objectives are to: a) maintain wolf populations capable of sustaining harvest at the 1984-85 level of 10, and b) work on developing population objectives. Subunit 1C wolf management activities were to: a) work on developing population objectives and b) seal all wolves that are harvested and brought in for sealing.

Work Accomplished During the Project Segment Period: Two wolves were harvested and sealed during the 1991-92 season. A trapper questionnaire was used to gain additional information regarding target species abundance, prey abundance, trapping conditions, and trapping patterns.

Progress Towards Meeting Project Objectives: We consider wolf populations in Subunit 1C stable. The management goal to sustain a harvestable surplus of 10 wolves is probably being met.

Project Location: Subunit 1D (2,670 mi^2)
Southeast Alaska mainland north of Eldred Rock, excluding Sullivan Island and drainages of Berners Bay

Project Objectives and Activities: Subunit 1D wolf population objectives are to: a) maintain wolf populations capable of sustaining harvest at the 1984-85 level of 4, and b) work on developing population objectives. Subunit 1D wolf management activities were

to: a) work on developing population objectives, and b) seal all wolves harvested in the area and brought in for sealing.

Work Accomplished During the Project Segment Period: No wolves were harvested and sealed in Subunit 1D during the 1991-92 season. We used a trapper questionnaire to gain additional information regarding target species abundance, prey abundance, trapping conditions, and trapping patterns.

Progress Towards Meeting Project Objectives: We consider wolf populations in Subunit 1D stable. The management goal of sustaining a harvestable surplus of four wolves is probably being met. Local trappers and sportspersons have reported increased numbers of wolves or wolf sign in recent years, although harvests remained stable.

Project Location: Unit 5 (6,235 mi^2)
Cape Fairweather to Icy Bay, eastern Gulf of Alaska coast

Project Objectives and Activities: Unit 5 wolf population objectives are to: a) maintain wolf populations capable of sustaining harvest at the 1984-85 level of 14, and b) work on developing population objectives. Unit 5 wolf management activities are to: a) work on developing population objectives, and b) seal all wolves harvested in the area and brought in for sealing.

Work Accomplished During the Project Segment Period: We analyzed harvest from wolf sealing certificates. We collected anecdotal information about abundance opportunistically from hunters, Department staff and Fish & Wildlife Protection officers. No planning meetings were held during the report period.

Although we hoped to fly track surveys during winter, we conducted none. The National Park Service submitted proposals to the Federal Subsistence Board to significantly restrict wolf hunting seasons and bag limits in Subunits 5A and 5B. After testimony from Division of Wildlife Conservation staff, the proposal was withdrawn.

Progress Towards Meeting Project Objectives: Wolves were sealed in Yakutat. Yakutat residents as well as nonlocal outdoors people contributed anecdotal information about wolf sightings. We sealed 4 male wolves and 1 female wolf from Subunit 5A. One female wolf was harvested and sealed from Subunit 5B. One wolf was snared and the remainder shot. Three nonresidents, 2 local residents, and 1 nonlocal resident took one wolf each. The harvest spanned from March to December. We submitted comments to the Division of Habitat and the U.S. Forest Service about wolf habitat concerns. Roading and logging continues in Subunit 5A, which effects wolf and other species.

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

Submitted by:

W. Bruce Dinneford
Management Coordinator

PROJECT TITLE: Southcentral Population Wolf Management

Project Location: Unit 6 (10,100 mi^2)
Prince William Sound and north Gulf of Alaska 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: We did not complete any wolf surveys in Unit 6. Incidental observations and reports from trappers and guides suggested a minimum population of 77 wolves in 10 packs.

Sealing records indicated unitwide harvest of 6 wolves. All were grey, 2 were male, 4 were female, 3 were taken by ground shooting and 3 were caught by snaring.

Progress Toward Meeting Project Objectives: Wolf population objectives were achieved. The population probably 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 portion of Unit 7 at 25 to 35 wolves.

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

Work Accomplished During the Project Segment Period: An interagency survey conducted by the U.S. Fish and Wildlife Service and the department resulted in an estimated minimum number of 45 wolves in Subunit 15A (39 associated with collared wolves in six packs plus 15% added on for missed loners) . Wolf surveys were not conducted in the remainder of Unit 15 or in Unit 7. Reports from trappers and staff observations suggest these areas are stable or slightly increasing because of reduced harvest over the past four years. The current estimate is 200 wolves for Units 7 and 15.

Two wolves were shot by hunters but none were taken by trappers during the 1991/92 season in Subunit 15A. Since the management objective was not expected to be reached during the scheduled season the department and U.S. Fish and Wildlife Service agreed to extend the time check period for trappers using snares to take wolves from four to seven days rather than extend the season. However, only those trappers that attended a trapper education course taught by department staff were allowed to take advantage of the

relaxed regulation, beginning 1 February 1992. The time check period for using traps remained unchanged at four days. Although wolves were abundant, trappers showed little interest in attempting to trap primarily because of poor weather, presence of lice infested wolves, and difficulties related to checking traps every four days or snares every seven days in the Refuge. No additional harvest resulted from the reduced regulations on the Refuge. Wolf harvest in the remainder of Unit 15 was: Subunit 15B - 0, and Subunit 15C - 5. Unit 7 had a reported harvest of 2. The total harvest for Units 7 and 15 was 9. The 1991/92 harvest was 73% below the average annual harvest of 39 during the previous 10 years.

Progress Towards Meeting Project Objectives: A minimum population estimate was only determined for Subunit 15A because of budget limitations. The result from the Subunit 15A census indicated the management objective was exceeded at the end of the 1991 season. The reduced restrictions on the Refuge also failed to provide adequate harvest to achieve the population objective. This was the third year additional opportunities were allowed but no wolves were harvested.

To achieve population objectives, additional funding will be necessary to conduct thorough surveys after liberalized U.S. Fish and Wildlife Service restrictions on trappers. The current refuge requirement of checking traps every four days and snares every seven, if you have completed the education course, has virtually eliminated recreational trappers' opportunity to pursue wolves over most of the refuge. Low fur prices because of pelts damaged by lice infestation and the complete closure for trapping lynx have also reduced trapping and hunting effort. Average annual harvest since the four-day trapline check began was 16 compared to 48 for the 10 years before the restriction.

The harvest of 9 wolves represents 4.5% of the early winter population estimate of 200 for Units 7 and 15, and the second lowest reported harvest since 1974-75 when wolves were taken under a permit system for hunting only. The lowest harvest was reported in 1990\91 with a total of 8. With this low harvest rate, we expect the wolf population 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: We did not conduct direct observation surveys during this report period. We conducted an indirect survey to estimate wolf abundance by questionnaires mailed to a select group of trappers. Twenty seven of 60 (45%) questionnaires were returned. Trappers' responses indicated localized increases and generalized stability in wolf numbers over last year. Responses also

indicated that good snow conditions throughout the season improved access and increased effort. Decreasing prices for other fur species has also increased effort toward wolves.

We derived the wolf harvest from wolf sealing certificates. Preliminary data were available from sealing certificates. The preliminary harvest of wolves was 86 in Unit 9 and 3 in Unit 10. The harvest in Unit 9 is 2.6 times the 10 year average of 32 wolves. We attributed this drastic increase in harvest to several factors including: 1) it was the last year for same day airborne hunting to be open on a unit basis until the Strategic Wolf Management Plan process has been completed; 2) good snow and weather conditions greatly improved access for snowmachines and ski equipped aircraft; and 3) localized increases in wolf populations and relatively high prices increased trapper interest in wolves.

Progress Towards Meeting Project Objective: Lack of reliable snow conditions and funding have hampered progress towards developing measurable objectives for wolf populations in Units 9 and 10. Research on wolves continues in other areas, however, and unless budgets increase, effort probably will not be expanded on the Alaska Peninsula. Currently the trapper questionnaire, opportunistic 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 75 wolves.

Work Accomplished During the Project Segment Period: The spring 1992 post-hunting season population estimate for Unit 11 was 85-95 wolves. We based this estimate on sightings by both Department personnel and the general public along with hunter and trapper reports. This figure is similar to last year's estimated population of 90-95 wolves but slightly below the previous 5-year average of 105 wolves in the spring after hunting and trapping season.

Preliminary harvest data shows 11 trappers took 30 wolves during the 1991-92 season. This harvest is lower than the previous year's take of 37 wolves. We estimate this year's harvest rate at between 20 and 25% of the extrapolated fall 1991 population of 135 wolves. We estimated a similar 1990-91 harvest rate. Females accounted for 33% ($\underline{n}$ = 10) of this year's take and males 63% ($\underline{n}$ = 19). Males accounted for 55% of the take over the last 5-year period (1985-90). All the reported 1991-92 harvest was taken by locals living in the Park resident zone. Seventy-seven percent ($\underline{n}$ = 23) of the wolves were trapped, 23% ($\underline{n}$ = 7) shot, while none were snared. Snow machines were the most popular method of transportation, accounting for 70% of the reported take.

Progress Towards Meeting the Projected Objectives: Wolf population estimates in Unit 11 fluctuated little over the past 5 years. Wolves are considered abundant but further increases in the wolf population may be restricted by a number of factors. Suitable wolf habitat is normally below 4,000 feet elevation. Because much of Unit 11 is mountainous or glaciated, wolves are limited to the more gentle slopes and river valleys. Ungulate numbers are also lower in Unit 11 than in the adjacent Unit 13. Dispersal of wolves into suitable habitat in Unit 13 where ungulate numbers are higher occurs and may limit overall wolf numbers.

Historically, human take of wolves has limited the wolf population in Unit 11. Because the lower prey base influences wolf reproduction, the effect of human harvesting of wolves has a greater impact. As low as a 20-25% harvest of fall wolf numbers can stabilize wolf population growth in areas supporting low density ungulate populations. When harvest rates are below 20%, the wolf population expands. Also, many packs receive little or no hunting or trapping pressure. Most trappers and hunters tend to concentrate their activities close to access points especially those areas along the Nabesna and McCarthy roads, the only 2 roads that lead into this unit. Because hunting and trapping pressure is low and not expected to increase, we expect the wolf population in Unit 11 to remain at the current level.

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

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

Work Accomplished During the Project Segment Period: We completed wolf track surveys on the Upper Susitna River trend count area in Subunit 13E during spring 1992. We located 17-22 animals in the study area. The resulting density estimate was between 3.5 and 4.6 wolves:1000 km^2. Extrapolation of the Upper Susitna population estimate to the remainder of Unit 13 would result in a unitwide estimate of 150-200 wolves for spring 1992. This is probably an underestimate, as Subunit 13E was more intensely harvested than the rest of the unit.

Wolf track survey flights were conducted in three study areas in Unit 13 during winter 1991-92 as part of a research project designed to estimate wolf densities. The study areas surveyed included the eastern Talkeetna Mountains in Subunit 13A, Fog Lakes and Susitna River in Subunit 13E, and the Chistochina River in Subunit 13C. The wolf density estimates for the study area in Subunit 13A was 1.9 wolves:1000 km^2; in Subunit 13E 4.1 wolves:1000 km^2; and 4.8 in Subunit 13C.

Nine radio collars were placed on wolves in Subunit 13B. These wolves were radio-collared as part of a research project testing wolf transects as a method of obtaining wolf

population estimates. Because favorable snow conditions were never attained, we could not complete a track survey in the area where the radio collars were located.

We used reports from hunters and trappers along with incidental sightings by ADF&G personnel in conjunction with track survey data to estimate wolf densities in the remainder of Unit 13. A final spring 1992 Unit 13 population estimate was between 167 and 225 wolves in 36 packs. This would result in a unitwide density estimate of 3.9 to 5.3 wolves:1000 km^2.

Preliminary harvest figures show 116 wolves (52 males, 61 females and 3 sex unknown) were reported taken to date by 55 hunters and trappers during the 1991-92 season. This harvest was lower than the 145 wolves taken during the 1990-91 season but well above the 5-year (85-90) average of 76 wolves. The 1991-92 wolf harvest declined because the wolf population was lower in some subunits following the high harvest in 1990-91. We issued 173 permits and 73 wolves (63%) were reported taken by same-day-airborne permit holders, while 43 wolves (37%) were taken by other methods and means. Subunits 13E, 13B, and 13A had the highest harvests. Subunit 13E was closed by emergency order on March 19, 1992 after the desired subunit harvest was reached. The remainder of Unit 13 stayed open to wolf hunting until the scheduled season closing date on 30 April. The preliminary overall wolf harvest rate in Unit 13 was approximately 33% of the estimated fall population.

Progress Towards Meeting the Projected Objectives: The spring 1992 population estimate midpoint of 195 wolves in Unit 13 was within the minimum population objective of 150-200 wolves for this unit. Between 1979 and 1989 spring population estimates fluctuated between 100 and 175 wolves depending upon harvest. Wolf population growth was controlled primarily by human harvest. Wolf numbers increased in Unit 13 between 1988 and 1990 because of harvest restrictions implemented by the Board of Game. We attribute the past year's decline (20%) from the 1991 estimate of 242 wolves to human harvests in 1991-92.

We did not consider wolves in Unit 13 limited by prey availability as moose and caribou numbers were high. Although the Nelchina caribou herd was estimated at 40,000 animals, its winter migration into Unit 12 and Canada between 1989 and 1991 resulted in few caribou being present and available to Unit 13 wolves from early October until late April. During the winter of 1991-92 an estimated 27,000 Nelchina caribou were available to Unit 13 wolves and wolf predation on caribou increased.

Managing wolves by establishing a subunit harvest quota started during the 1990-91 season in Unit 13. The 1991-92 wolf harvest quota was again established to restrict the take at 30 to 35% of the fall population estimate. This quota was then divided on a subunit basis to prevent overharvesting in areas accessible by snowmachine, dog sled and highway vehicle, as well as in more remote portions of the unit with few trees where wolves could be more vulnerable to land-and-shoot taking. We intended to disperse

hunting into more remote portions of the unit that are important ungulate habitats where wolves were lightly harvested. Separate harvest quotas were established for both the same-day-airborne hunting and ground trapping. Wolf harvest management by quota appears to be a feasible strategy for Unit 13 and should be continued. Preliminary harvest figures showed the initial quota was attained only in Subunit 13E.

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

Project Objectives:

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

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

Work Accomplished During the Project Segment Period: During the 1991/92 trapping season, 3 wolves were sealed from Unit 14. All were taken in Subunit 14A; 2 were male and 1 was female. We mailed a questionnaire to all trappers who sealed fur taken in Unit 14. Thirty-five trappers responded to the trapper questionnaire; 23 trapped during 1991/92. Only 3 respondents made sets specifically for wolves.

A young female wolf, radio-collared on the Kenai National Wildlife Refuge in February 1991, was observed with a gray male in the Knik River drainage in September. Because of the potential for the spread of lice from Kenai wolves, both wolves were captured, treated with ivermectin, and radio-collared. During subsequent tracking flights these wolves were never seen with other wolves, and they were always < 16 km from the capture location in the Knik River. During May a den site was confirmed, and during June at least 4 pups were seen.

Progress Towards Meeting Project Objectives: No post-harvest wolf surveys were flown in Unit 14, but we estimate the wolf population in Unit 14 at 50-60 wolves, including 20-25 in Subunit 14C. Periodic systematic surveys would allow accurate wolf population estimates, and evaluation of our project and population objectives. Lacking the resources for systematic surveys, ADF&G could plan for a 1- or 2-day snow-tracking survey to be conducted in April when (and if) snow conditions are ideal. A 1-day survey of Unit 14 would require 3-4 biologists and 24-32 hours of aircraft time (approximately $3100-4200; but significantly less if Fish and Wildlife Protection aircraft are used). These surveys, conducted every 3-4 years, would yield a minimum number and distribution of wolves, that would be adequate for current management.

New 5-year population and human use objectives were drafted for Unit 14. The new population objective is to maintain a minimum unitwide population of 55 wolves with about 35 in Subunits 14A and 14B (combined) and 20 in Subunit 14C. Human use

objectives are to allow, in Subunits 14A and 14B, low levels of human harvest by hunting and trapping as long as it does not conflict with the population objective. In Subunit 14C, the human use objective is to provide for nonconsumptive uses such as viewing, photography, listening and knowledge that wolves are present in the area.

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 up to 25 wolves.

Work Accomplished During the Project Segment Period: Three trappers reported taking 3 wolves, 2 males and 1 female. All were taken in Subunit 16B. One was snared and 2 were trapped. Two successful trappers used snowmachines for access and 1 used an aircraft.

We lacked incidental observations by biologists because we conducted no other surveys in the units during this report period.

Progress Towards Meeting Project Objectives: The Unit 16 wolf population is probably near a historical low and is far below the population objective. The reported harvest is very low and should not prevent population growth.

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

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

Work Accomplished During the Project Segment Period: Preliminary data indicate a reported harvest of 31 wolves, including 18 males (55%), 7 females (23%), and 6 of unknown sex. This harvest level is comparable to the 5 year average of 34.6. No wolves were killed in Subunit 17A;, 28 (90%) were killed in Subunit 17B; and 3 (10%) in Subunit 17C. Local residents reported killing 27 wolves (87%) and nonlocal residents killed 4 (13%).

Most trappers (77%) used aircraft for access. Eighteen wolves were shot under same-day-airborne provisions. Ground shooting was the most common (71%) method of take. Eleven wolves were killed in January (35%), 9 were killed in February (29%), 8 were killed in March (26%) and 2 were killed in December (6%).

Progress Towards Meeting Objectives: No objective data were available about wolf population density in Unit 17. Local trappers noted that wolf populations appeared low unitwide during this report period. Snow and weather conditions were good for aerial hunting during late winter and spring 1992. We saw no wolves during moose and caribou surveys. These observations suggest that the Unit 17 wolf population remains low in spite of increasing caribou and moose populations in many areas.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	6.6	9.0	15.6
Actual	6.6	9.3	15.9
Difference	0.0	-0.3	-0.3

Explanation: Expenses were greater than planned because of the capture and tracking of 2 wolves along the Knik River.

Submitted by:

Ken Pitcher and John Trent
Management Coordinators

Project Title: Region III Wolf Population and Habitat Management

Project Location: Unit 12 and Subunit 20E

Project Objectives and Activities:

Unit 12:

1. Provide for an optimal harvest of wolves.
2. Provide maximum opportunity to participate in hunting and trapping wolves.
3. Monitor wolf numbers, population characteristics, and harvests.
4. Temporarily reduce wolf numbers to less than 100 by 1993.
5. Maintain sustained yield objectives for wolves 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.

Unit 20E:

1. Monitor wolf numbers, population characteristics, and harvests.
   a. Monitor wolf harvest through sealing records and trapper questionnaires.
   b. Conduct fixed-wing aerial surveys of wolves during winter in selected areas.
   c. Radio-collar and monitor selected wolf 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: Eighteen hunters and trappers harvested 30 wolves (17 males, 12 females, 1 unknown sex) during the 1991-92 season. Most of the harvest was by trapping (11) and snaring (9). Land-and-shoot hunting only accounted for 3 wolves this season, a substantial decline from 1990-91 (18 wolves). The harvest removed 13-15% of the fall population estimate of 198-239 wolves. This level will not regulate the Unit 12 wolf population.

We derived the Unit 12 wolf population estimate from 10 hours of wolf-track survey during November 1991, trapper reports, radio-telemetry data, and incidental sightings of wolves or tracks by ADF&G personnel while conducting moose and lynx surveys. We estimated a spring 1992 population of 164-208 wolves (includes a 10% addition for lone wolves) in 29 packs. This estimate compares with the 1991 estimate of 165 wolves.

We derived the fall 1991 estimate of 198-239 wolves by adding the known overwinter harvest and wolves that died of natural causes to the spring estimate. The fall 1991 wolf population in Unit 12 was probably slightly lower than in 1990.

Four wolves in two packs carried radiocollars during FY92. We monitored these radio-collared wolves periodically during winter 1991-92 to help define pack distribution and contribute to the population estimate.

Subunit 20E: Ten hunters and trappers harvested 18 wolves (12 males and 6 females) during FY92. Most wolves were taken by snares (8) and traps (6). Land-and-shoot hunting accounted for three wolves. The harvest of 18 wolves represented 9-10% of the fall population estimate of 175-206 wolves.

We derived the FY92 Subunit 20E spring wolf estimate of 136-147 from over 100 flight hours of survey time, trapper reports, radio-telemetry data, and incidental sightings by ADF&G staff during moose and caribou surveys. We did not conduct any surveys in portions of the subunit and used last year's counts in the estimate. We derived the fall 1991 estimate of 175-206 wolves by adding the known overwinter harvest and the number of wolves known to have died from natural or unknown causes to the spring estimate.

We radio-collared 27 wolves in 16 packs during FY92 and are now collecting data on wolf movements in relation to caribou calving, wolf pack distribution, and territory size.

Progress Toward Meeting Project Objectives:

Unit 12: Management objectives in Unit 12 need to be refined to reflect the intent of the Draft Area-Specific Wolf Management Plan. In that plan, wolf reduction may occur only in the northwestern portion of Unit 12. Therefore, the unit wolf population would not be reduced below 100 and this objective should be modified to read, "temporarily reduce wolves in the northwestern portion of Unit 12 by 70-80% by the year 1995." All other project objectives in Unit 12 were met during FY92.

Subunit 20E: Moose and caribou populations in Subunit 20E are predator limited. The Draft Area-Specific Wolf Management Plan proposes to reduce wolves in portions of Subunits 20B, 20D, and 20E to increase the Fortymile caribou herd and the area's moose population. The Board of Game will decide on the plan during the fall 1992 meeting. If the board adopts the plan, the project objective of wolf reduction will be realized. All other objectives were met during FY92.

Project Location: Unit 19 and Subunits 21A and 21E

Project Objectives and Activities:

1. Determine distribution, abundance, and population trends of wolves in selected areas.
   a. Seal wolf hides taken by hunters and trappers; interview hunters and trappers to assess relative abundance of wolves.
   b. Conduct fixed-wing aerial surveys of wolves during winter in selected areas.
   c. Radio-collar and monitor selected wolf packs.
2. Maintain a harvestable population of wolves capable of continuing to sustain an annual harvest of at least 100 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 six subunits and attempt to survey these respective areas beginning in March 1991.

Work Accomplished During the Project Segment Period: Based on a preliminary analysis of sealing documents, incidental discussions with area trappers and hunters, incidental field operations, and trapper questionnaires, we estimated wolf population sizes at:

Subunit 19A - 100-120 wolves in 14-16 packs
Subunit 19B - 80-100 wolves in 9-11 packs
Subunit 19C - 120-150 wolves in 11-14 packs
Subunit 19D - 140-170 wolves in 14-18 packs
Subunit 21A - 160-190 wolves in 12-15 packs
Subunit 21E - 100-150 wolves in 10-14 packs

During the 1991-92 season, preliminary analyses of sealing documents indicated hunters and trappers took 102 wolves from Unit 19. This harvest represents 19-23% of the population. Harvest by subunit was Subunit 19A - 24; Subunit 19B - 20; Subunit 19C - 40; and Subunit 19D - 18. Wolf populations appear capable of sustaining current or slightly higher harvests. Reported wolf harvest was 7 in Subunit 21A and 11 in Subunit 21E. This is less than a 10% harvest rate. Throughout the area, only 20 of 120 (17%) wolves were taken by traps or snares. Most were harvested by land-and-shoot methods. One area in the upper Nowitna River (Subunit 21A) was surveyed.

Progress Toward Meeting Project Objectives: We estimated wolf distribution and abundance, sealed pelts, and issued same-day-airborne permits. Analyses of harvest data will be finalized once sealing documents are computerized. Because of lack of personnel, we did not gather statistically sound estimates of wolf densities over large expanses.

Objective 2 was met. Wolf area-specific management plans will be completed during the next report period, and objectives will be modified accordingly.

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.
2. Model the potential range of impacts wolf predation could have 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 reviewing 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.

Work Accomplished During the Project Segment Period: We estimated wolf population size for Subunits 20A and 20B using aerial survey data from these subunits. In Subunit 20A we estimated that 267 wolves (16.0 wolves/1,000 km^2) inhabited the subunit in fall 1991 (McNay memo to Eagan, 1 July 1992). This estimate was based on the results of a census using the traditional track count method between 15 February and 17 April 1992. To calculate the estimate from this census, we relied on (1) data from several radio-collared packs; (2) data on packs residing on the boundaries of the subunit; (3) data from pilots/observers and trappers regarding pack color combinations, size, and distribution; (4) addition of 10% to the spring population estimate to account for lone wolves; and (5) addition of the 1991-92 harvest of 67 wolves to the spring estimate. We also estimated that Subunit 20A contained 24-34 packs with an average of 6.5 wolves in each pack during spring 1992.

In Subunit 20B, we estimated the fall 1990 wolf population to include 222 wolves (9.4 wolves/1,000 km^2). This was calculated by summing a separate estimate for Subunit 20B West and Subunit 20B Central/East. In Subunit 20B West (8,840 km^2), the spring 1991 wolf density was estimated at 7.6 wolves/1,000 km^2, the midpoint between estimates from two surveys conducted in March 1991. A traditional track count method yielded estimates of 8.2 wolves/1,000 km^2 and a newer line transect technique yielded estimates of 7.0 wolves/1,000 km^2. To this estimate of 67 wolves, we added the 1990-91 harvest of 7 wolves from Subunit 20B West, resulting in a Subunit 20B West fall estimate of 74 wolves. In Subunit 20B Central/East (14,789 km^2), fall wolf densities were assumed to be more similar to the higher densities found in Subunit 20A in fall 1988 (10 wolves/1,000 km^2) than in Subunit 20B West; wolf control occurred in 20B West from

1984 to 1986 and the population may not yet have fully recovered. Therefore, the Subunit 20B Central/East fall 1990 estimate included 148 wolves.

Although wolf surveys were not conducted in Subunits 20C (except in Denali National Park by park biologists), 20F, or 25C, we estimated fall population sizes for these subunits by extrapolating from densities found in Subunit 20B West (7.6 wolves/1,000 km^2) and adding harvest. We extrapolated an estimate of 125 wolves in Subunit 20F (16,427 km^2) for spring 1991. Adding the 1990-91 harvest of 7 wolves to this spring estimate resulted in a fall 1990 estimate of 132 wolves in Subunit 20F.

In Subunit 25C (13,655 km^2), we extrapolated an estimate of 104 wolves in the subunit for spring 1991. Adding the 1990-91 harvest of 5 wolves to this spring estimate resulted in a fall 1990 estimate of 109 wolves in Subunit 25C.

In Subunit 20C, we estimated a fall 1990 population of 320 wolves. This includes a fall density estimate of 11.2 wolves/1,000 km^2 (130 wolves) for the suitable habitat in the Subunit 20C portion of Denali National Park (results of National Park Service study). It also includes a fall estimate of 190 wolves in the 19,224 km^2 outside Denali National Park, by extrapolating Subunit 20B West densities (7.6 wolves/1,000 km^2) to this area and adding the 1990-91 harvest of 45 wolves.

According to sealing certificates from the most recent winter (1991-92), trappers/hunters reported taking 161 wolves from this area. Fifty-seven percent (85/149) of the wolves were males. Harvest was distributed as follows: Subunit 20A - 67; Subunit 20B - 56; Subunit 20C - 21; Subunit 20F - 10; and Subunit 25C - 7. We have not summarized the number of wolves taken with same-day-airborne permits issued for this area.

We did preliminary work on modeling the potential impacts of wolf predation on ungulates in these subunits. These preliminary results will be reviewed as a Draft Area-Specific Wolf Management Plan by the public, staff, and Board of Game in 1992-93 to evaluate what population objectives will reasonably meet public needs for consumptive and nonconsumptive uses of wolves and their prey.

Progress Toward Meeting Project Objectives: Aerial surveys of wolves in Subunits 20A and 20B during the last 2 years yielded density estimates used to extrapolate wolf population estimates for these and other subunits. However, because prey density and diversity may vary considerably from area to area, additional wolf surveys should be conducted in the other subunits when more precise estimates are needed.

In Subunit 20A, our estimate of 267 wolves (16.0 wolves/1,000 km^2) for fall 1991 represents a substantial increase from the fall 1988 estimate of 180 wolves (10.9 wolves/1,000 km^2).

A final Area-Specific Wolf Management Plan is expected to be adopted by the Board in fall 1992. This 5-year plan will guide future wolf management and specify objectives for wolves and ungulates throughout the area.

Project Location: Subunit 20D

Project Objectives and Activities:

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

Work Accomplished During the Project Segment Period: Draft area-specific wolf management plans were written, and implementation plans are being written. Under the draft plan, Subunit 20D south of the Tanana River except the Robertson River drainage, the northwestern portion of Subunit 20D including Shaw Creek Flats, and the lower Goodpaster River would be managed as a Zone 6. The Robertson River drainage in southeastern Subunit 20D and the northeast portion of Subunit 20D would be managed as a Zone 7.

We sealed nine wolves taken by hunters and trappers in southern Subunit 20D. We estimated relative abundance of wolves using aerial surveys and results of trapper interviews. We flew aerial surveys in northern Subunit 20D during March 1992 and estimated a minimum population of 52-55 wolves in eight packs. Six wolves were radio-collared from three packs in northern Subunit 20D. Snow conditions were inadequate to conduct aerial surveys in southern Subunit 20D during spring 1992. Trapper interviews are being conducted but have not been completed at this time.

Progress Toward Meeting Project Objectives: We sealed wolves harvested by hunters and trappers, radio-collared six wolves, and calculated a population estimate for northern Subunit 20D. We wrote area-specific wolf management plans and are drafting implementation plans. More specific objectives will be developed after the Board of Game adopts a final management plan.

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

Project Objectives and Activities:

Objectives

Subunits 21B, 21C, and 21D:

1. Maintain at least 50 moose per wolf until the moose population objective of 4,000-4,500 is attained in Subunit 21B.
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 objective has been attained.

Unit 24:

1. 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).
2. Reduce wolf density to 1 wolf/100 mi^2 to achieve a moose:wolf ratio of 50:1 in the central part of the unit; i.e., Hughes to Bettles.

Activities

1. Seal wolf hides taken by hunters and trappers; interview hunters and trappers to assess relative abundance of wolves.
2. Conduct fixed-wing aerial surveys of wolves during winter in selected areas.
3. Radio-collar and monitor selected wolf packs.

Work Accomplished During the Project Segment Period: Hunters and trappers harvested 138 wolves during the 1991-92 season. Although this was the last year the land-and-shoot method was allowed by state regulation, the question over the legality of the method kept several hunters from participating. Sealing compliance in some of the rural villages appears to be increasing. In one village 9 out of 17 wolves taken were sealed.

Based on sealing documents, wolf surveys, and radio-collared wolves within packs, the size of the wolf populations were estimated at:

Subunit 21B - 75-80 wolves in 9-10 packs
Subunit 21C - 40-45 wolves in 6-7 packs
Subunit 21D - 190-450 wolves in 35-36 packs
Unit 24 - 420-450 wolves in 68-70 packs

The population estimates are slightly higher in some areas because of increases in wolf populations. U.S. Fish and Wildlife Service staff estimated population in the Koyukuk and Nowitna National Wildlife Refuges.

We darted eight wolves from five packs, fitted them with radiocollars, and monitored them periodically to help define pack home ranges and to contribute to the population estimate. During March 1992 we monitored five packs daily to determine prey and rates of predation. Prey species ranged from moose to spawned-out salmon.

Progress Toward Meeting Project Objectives: We conducted wolf radio-telemetry projects in cooperation with the U.S. Fish and Wildlife Service. These projects have provided better population estimations and distribution data than in the past. One project documented the major sources of mortality and predation rates.

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

Project Objectives and Activities:

1. Estimate the population size, trend, and distribution of wolves by 1991.
2. Establish accurate wolf harvest estimates by 1991 in Unit 25 and Subunit 26C.

Work Accomplished During the Project Segment Period: Hunters and trappers reported harvesting 24 wolves in Subunit 25A, 17 in Subunit 25B, 17 in Subunit 25D, 14 in Subunit 26B, and 2 in Subunit 26C. The ratio of males:females in the overall harvest was 100:100. Fifty percent of wolves taken in all areas were gray, 41% were black, and 3% were white. Thirty-seven percent of the wolves were snared, 35% were shot, and 28% were trapped. Most hunters and trappers used snowmachines (58%), and the rest used aircraft (19%), highway vehicle (13%), dogsled, skis or snowshoes (8%), and boat (3%).

ADF&G and the USFWS conducted a wolf survey in Subunit 25D during 18-23 March 1992. Together we flew three PA-18 aircraft 76 hours in a 16,500-mi^2 survey area and estimated wolf population density at 1/90-110 mi^2. We identified 29 packs of 3-12 wolves and 5 pairs in and adjacent to the survey area. The survey was funded primarily by USFWS ($10,500) with ADF&G contributing $3,850.

We did not radio-collar any wolves in these subunits during this report period.

Progress Toward Meeting Project Objectives: Only project objectives 1.a and 1.b. were met in these subunits during fiscal year 1992. No work was attempted on project objective 1.c.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	66.6	24.0	90.6
Actual	66.6	32.1	98.7
Difference	0.0	-8.1	-8.1

Submitted by:

Kenton P. Taylor
Management Coordinator

Project Title: **Western Alaska Wolf Survey and Inventory**

Project Location: Unit 18 (42,000 mi^2)
Yukon-Kuskokwim Delta

Project Objectives:

1. Establish and maintain viable wolf populations in Unit 18.
   a. Monitor harvests through the sealing program, contacts with the public, and an 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 upon implementation of the statewide wolf management plan.

Work Accomplished During the Project Segment Period: Sealing certificate data indicate that 1 wolf was harvested in Unit 18 during the report period. Sightings of wolves and prey believed to be killed by wolves were also reported by local trappers, hunters, pilots, and by department and U.S. Fish and Wildlife Service (FWS) staff engaged in other activities.

We sent trapper questionnaires to 200 local Unit 18 trappers and hunters. Of the 76 individuals that responded, most people believed the wolf population status remained similar to last year. They considered wolves uncommon. However, reported wolf sightings increased during the report period, especially near villages along the Kuskokwim River and the coast between Chevak and Toksook Bay. Another interesting phenomenon is the increased sightings of coyotes south and east of the Kuskokwim River. These coyotes apparently are occupying habitat normally used by wolves, and apparently are recent immigrants from Units 19 and 17. Wolf numbers may be at carrying capacity in Unit 18 because of the scarcity of larger prey such as caribou and moose. However, with the recent increases observed in the Kilbuck and Mulchatna caribou herds, we should begin seeing greater numbers of wolves in Unit 18.

Public notices were sent to all villages for the second year informing the public that wolves and some furbearers taken by hunters and trappers need to be sealed.

Progress Towards Meeting Project Objectives: Observations reported by the staff and public indicate that several wolf packs occupied the entire length of the Yukon River, and portions of the Kilbuck Mountains and Delta lowlands near the mouth of the Kuskokwim River. Most wolves, however, were observed on the periphery of Unit 18 near Subunits

19A and 21E where ungulate densities are substantially greater. We estimated the overall Unit 18 population to range from 75 to 100 wolves in 6-7 packs. Several wolf kills of moose and caribou were documented during the report period.

Sealing certificate data indicate that the reported harvest of wolves in Unit 18 was the same in 1992 as the previous year. One wolf was reportedly harvested during the 1990-91 season, compared to 4 during the 1989-90 seasons, 17 wolves during 1988-89, 10 wolves during the 1987-88, 2 wolves during 1986-87, 1 wolf during 1985-86, and 3 wolves during 1984-85. The magnitude of the reported wolf harvest seems related to fur prices. We correlated the increase in reported harvest noted for 1988 and 1989 with higher prices paid for some furs. During 1990, 1991 and 1992, fur prices fell dramatically and either fewer trappers pursued wolves or fewer trappers had their wolves sealed and sold. When fur prices are low, proportionately more furs are used domestically, and usually are not sealed.

The public notices that were sent to all villages did not appear to increase compliance with the sealing requirement. A separate notice about wolves will be sent out during the upcoming season.

Project Location: Unit 22 (25,000 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 obtained from furbearer sealing records indicate that 48 wolves (18 males, 10 females, and 20 of unknown sex) were harvested in Unit 22 during the report period by 17 hunters/trappers. Information on residency status of those taking wolves showed all were residents of the unit. A breakdown of the harvest by subunit was as follows: Subunit 22A - 40; Subunit 22B - 6; and Subunit 22D - 2. Forty-five of the wolves were reported ground shot, one was trapped, and the remaining 2 were taken in snares. Snowmachines were listed as the

major transportation type used. Hunters reported taking 44 using snowmachines as transportation, 2 using dog teams, and 2 with the aid of highway vehicle.

A school program developed several years ago explaining the importance of wildlife management concepts, rules, and regulations was used throughout Unit 22 schools. Staff made several trips to villages explaining the need for regulations and harvest reporting as well as assisting license vendors.

Staff spent considerable time answering and making phone calls, writing articles, mailing out regulatory materials, and supporting local license vendors. We held numerous meetings and impromptu discussions with reindeer herders and the National Park Service to discuss possible ways of reducing wolf/reindeer interactions.

Progress Towards Meeting Project Objectives: The magnitude of unreported harvests of wolves each year in Unit 22 is considered 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 if more complete compliance with current regulations is to become a reality.

Limited progress was made in reducing confrontations between wolves and reindeer. Discussions with local reindeer herders resulted in some herders attempting to reduce wolf/reindeer interactions by spending more time with the reindeer, particularly at fawning time, and keeping reindeer in areas where wolf densities seem lower.

Actual development of an area specific wolf management plan has not occurred although initial steps were taken during the past year by communicating our intent 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:

1. Maintain existing wolf densities in Unit 23.
   a. Maintain the wolf sealing program to monitor harvest.
   b. Complete cooperative research project on the relation of wolves to the Western Arctic Herd.
2. Minimize adverse interactions between the public and wolves in Unit 23.
3. Develop updated management objectives for Unit 23 upon completion of the statewide wolf management plan.

Work Accomplished During the Project Segment Period: Sealing certificate data indicated that hunters/trappers reported taking 56 wolves (30 males, 22 females, and 4 of unknown sex) in Unit 23. Forty-three were ground shot, 7 were trapped, and the method of take for 6 wolves was unknown. Hunters harvested 47 using snowmachines, and nine using aircraft as a means of transportation. Fifty-three percent of the harvest occurred in the Kobuk River drainage, and 25% in the Buckland River drainage.

The following reports and scientific papers have been prepared as part of the reporting requirements for the research study conducted in Unit 23 in cooperation with the NPS and FWS:

Ballard, W. B., L. A. Ayres, S. G. Fancy, D. J. Reed, K. E. Roney, and M. A. Spindler. 1990. Demography and movements of wolves in relation to the Western Arctic Caribou Herd of Northwest Alaska. Alaska Dept. of Fish and Game Spec. Rep. Nome, AK. 150pp.

Ballard, W. B., L. A. Ayres, K. E. Roney, and T. H. Spraker. 1991. Immobilization of free-ranging gray wolves with a mixture of tiletamine hydrochloride and zolazepan hydrochloride. J. Wildl. Manage. 55:71-74.

Ballard, W. B. and S. G. Fancy. 1988. Satellite radio-tracking of wolves. IUCN/SSC Wolf Specialist Group, Univ. of Alaska, Fairbanks, AK. 17pp.

Fancy, S. G. and W. B. Ballard. In prep. Monitoring wolf activity by satellite.

Ballard, W. B., D. J. Reed, S. G. Fancy, and P. Krausman. In prep. Accuracy, precision, and performance of satellite telemetry for monitoring wolf movements. 48pp.

Ballard, W. B., C. L. Gardner, and D. J. Reed. In prep. Use of line-intercept track sampling for estimating wolf densities. 22pp.

Ballard, W. B., G. M. Matson, and P. R. Krausman. In prep. Comparison of two methods to age gray wolf (Canis lupus) teeth. 15pp.

Blood serum collected from captured wolves was submitted for analyses of rabies virus. Results of these analyses should be completed by October 1992.

We continued to relocated radio-collared wolves. A second test of the line-transect, sampling method for estimating wolf densities as scheduled for April 1991. However, snow conditions were unfavorable and the project was cancelled. We maintained license vendors and furbearer sealers in Unit 23.

Progress Towards Meeting Project Objectives: The Unit 23 management objective to maintain a healthy population of wolves and maximize consumptive and nonconsumptive

uses of wolves is being met. Unit 23 wolf population densities appeared relatively high and increasing during the report period in the Noatak and Upper Kobuk river drainages.

Although the Western Arctic caribou herd continues to grow in size, moose and sheep populations declined dramatically during the winter of 1990-91. Caribou only occur seasonally in Unit 23. Therefore, wolf predation will probably continue to affect the magnitude of the decline in moose and sheep numbers, and how quickly these ungulate populations rebuild 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. Regulatory changes simplifying the regulations should result in improved harvest reporting.

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

Project Objectives:

1. Maintain existing densities of wolves in Subunit 26A.
   a. Monitor the harvest through the statewide sealing program.
   b. Examine harvest information collected from Anaktuvuk Pass.
   c. Conduct a wolf census in the key management area between Umiat and Anaktuvuk Pass every two to three years.
   d. Interview hunters, guides, and pilots to collect harvest and population status information.
   e. Record wolf observations during moose counts.
2. Minimize adverse interactions between wolves and the public.
3. Develop updated population management objectives in Subunit 26A upon completion of the statewide wolf management plan.

Work Accomplished During the Project Segment Period: During the report period, we sealed 18 wolves. Twelve (67%) were males, 5 (28%) were females, and 1 was unknown. Eleven (61%) animals were ground shot, and 7 (39%) were trapped. Seventeen (94%) animals were taken using snowmachines for transportation, and 1 (6%) was taken using an aircraft. The chronology of the harvest was: September - 1, January - 2, February - 1, March - 11, and April - 3. Thirteen of the wolves were gray, 4 were black, and 1 was white.

We interviewed knowledgeable individuals in each village to estimate how many wolves were harvested by local residents. At least 4 wolves were taken by Atqasuk hunters, 9 by Wainwright hunters, 17 by Nuiqsut hunters, 3 by Point Lay hunters, 5 by Barrow hunters, and 35 by Anaktuvuk Pass hunters for a total of 55 wolves during 1991-92.

We used line intercept and probability sampling surveys to census wolves in a 4,007 mi^2 area south of Umiat from 23-27 April 1992. During the line intercept survey conducted on 27 April, we saw 37 wolves in 5 packs, resulting in an estimate of 53 wolves in the area, with a range of 41-65 with 80% confidence. We calculated a density estimate at 1 wolf per 76 mi^2 (62-97 wolves/100 mi^2 at 80% confidence). Traditional surveys conducted during 1986 and 1987 in approximately the same area resulted in density estimates of 1 wolf/147 mi^2 and 1 wolf/119-144 mi^2, respectively.

Progress Towards Meeting Project Objectives: A population survey indicated that wolf density increased between Umiat and Anaktuvuk Pass which is one of the most heavily hunted areas in Subunit 26A during the last 6 years. The results of this survey and the following factors indicate that harvest levels will remain within sustained yield limits: 1) same-day airborne hunting for wolves is no longer permitted and extensive areas of Subunit 26A receive little impact from hunters; 2) hunters, guides, and pilots who spend time in the area indicate increasing wolf densities in Subunit 26A; and 3) the number of wolves seen during moose surveys has steadily increased during the last 14 years.

We will continue to conduct wolf and moose surveys in the key management area between Umiat and Anaktuvuk Pass both to monitor the impact of hunters on wolves, and to monitor the combined impact of hunters and wolves on moose.

After an above-average wolf harvest in 1990-91, the harvest in 1991-92 returned to the level of previous years for Subunit 26A. Interest in wolf hunting is increasing in many of the villages. This could lead to a decline in wolf populations in localized areas. The state sealing program is not effective in most of the villages, and a more effective harvest monitoring program needs to be developed.

Project Segment Period Project Costs:

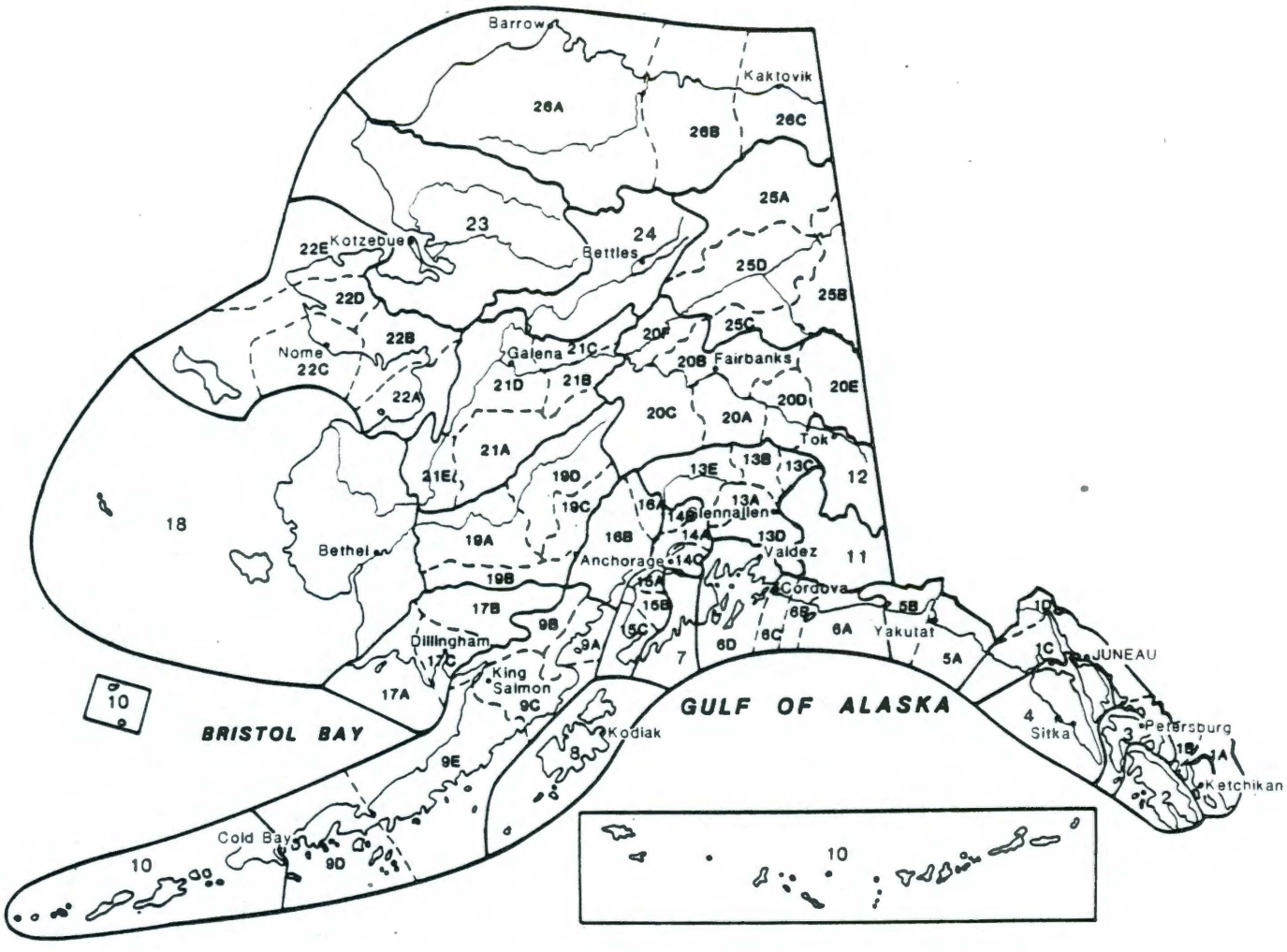
	Personnel	Operating	Total
Planned	29.0	10.0	39.9
Actual	29.9	16.8	46.7
Difference	0	+6.8	+6.8

Explanation: A supplemental legislative appropriation enabled staff to conduct a wolf census in Subunit 26A.

Submitted by:

Steve Machida
Survey-Inventory Coordinator

Alaska's Game Management Units



WILDLIFE RESTORATION

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