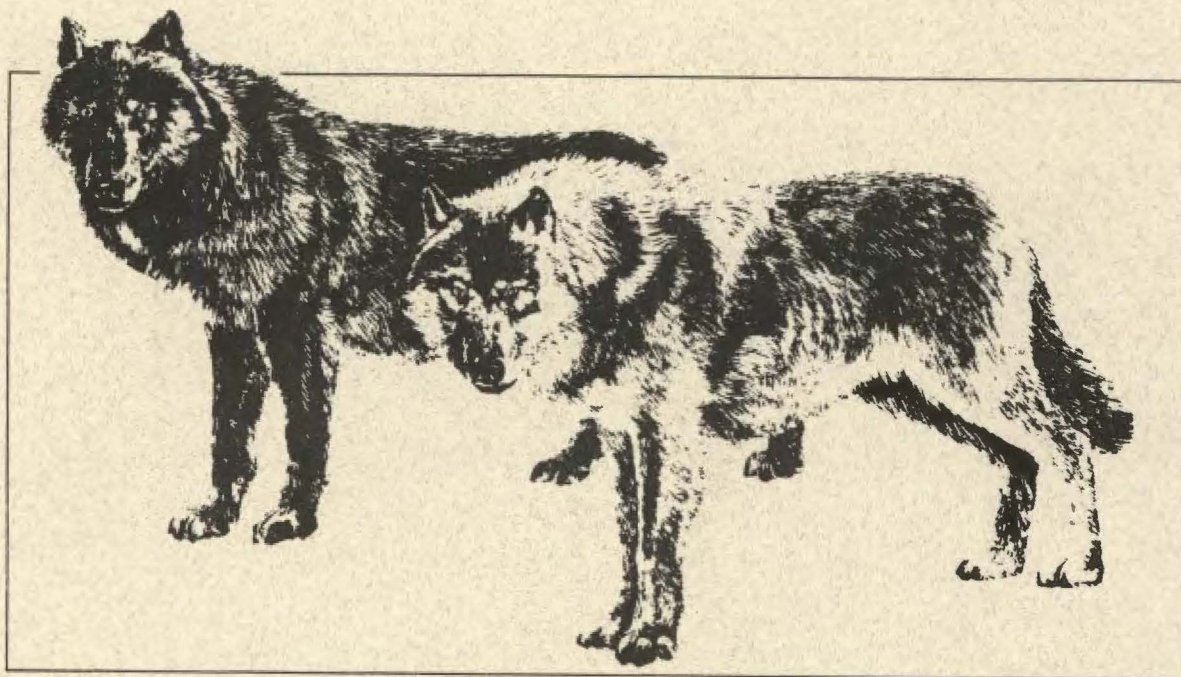

Alaska Department of Fish and Game
Division of Wildlife Conservation

Federal Aid in Wildlife Restoration
Annual Performance Report of
Survey-Inventory Activities
1 July 1992 - 30 June 1993

WOLF

Susan M. Abbott, Editor



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Project Title: Southeast Wolf Population Management

Project Location: Subunit 1A and Unit 2 (8,900 mi²)
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 and dynamics of wolves in Subunit 1A and Unit 2, and applying this understanding to developing better population objectives.
- 4) Contact reliable observers, including hunters and trappers, through an annual trapper survey to obtain general information about the status and trends of wolves in Subunit 1A and Unit 2.

Work Accomplished During the Project Segment Period: We sealed furs of 42 wolves from Subunit 1A and 105 from Unit 2 during this report period. Information obtained included location and date of kill, method of take and transportation used, and sex and pelt color. We collected anecdotal information from discussions with hunters and trappers and from incidental observations by ADF&G personnel. We obtained additional information through the annual trapper survey.

Progress Towards Meeting Project Objectives: Responses to our trapper survey indicated that trappers currently consider wolf populations in Subunit 1A at an intermediate level while Unit 2 populations are abundant. Harvests from Subunit 1A and Unit 2 were well above stated objectives, and constituted the highest annual harvests ever recorded for these areas. As part of an on-going graduate research project, 6 wolves were captured and radio-collared in Unit 2 during this report period. Relocations are being routinely obtained and will assist in providing information about wolf densities, movement patterns, and habitat use. Attempts will be made during the next report period to outfit additional wolves with radio-collars.

Project Location: Subunit 1B and Unit 3 (6,000 mi²)
Southeast Mainland from Cape Fanshaw to Lemesurier Point and adjacent islands

Project Objectives:

- 1) To maintain wolf populations capable of sustaining harvest at the 1984-85 level of 10 (Subunit 1B) and 9 (Unit 3).
- 2) To develop population objectives.

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

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

Progress Towards Meeting Project Objectives: Harvest was less than the management objectives. Fewer trappers were active compared to recent years. The population appears stable or increasing, and no additional restrictions are needed at this time.

Project Location: Subunit 1C (7,600 mi²)
The Southeast Alaska mainland and 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) Maintain wolf populations capable of sustaining harvest at the 1984-85 level of 10.
- 2) Work on developing population objectives.
- 4) Seal all wolves that are harvested and brought in for sealing.

Work Accomplished During the Project Segment Period: Five wolves (3 male, 2 female) were harvested and sealed during the 1992-93 season. We used a trapper

questionnaire to gain additional information about target species abundance, prey abundance, trapping conditions, and trapping patterns.

Progress Towards Meeting Project Objectives: We consider wolf populations in Subunit 1C are stable or increasing. The management goal of sustaining a harvestable surplus of 10 wolves is apparently being met.

Project Location: Subunit 1D (2,700 mi²)
Southeast Alaska mainland north of the latitude of Eldred Rock,
excluding Sullivan Island and the drainages of Berners Bay

Project Objectives and Activities:

- 1) Maintain wolf populations capable of sustaining harvest at the 1984-85 level of four.
- 2) Work on developing population objectives.
- 3) Seal all wolves that area harvested and brought in for sealing.

Work Accomplished During the Project Segment Period: Three female wolves were harvested and sealed in Subunit 1D during the 1992-93 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: Wolf populations in Subunit 1D are considered stable or growing. The management goal of sustaining a harvestable surplus of four wolves is being met. Local trappers and other sportsmen have reported an increase in numbers of wolves or wolf sign in recent years, although harvests have not grown significantly.

Project Location: Unit 5 (6,200 mi²)
Cape Fairweather to Icy Bay, eastern Gulf of Alaska coast

Project Objectives and Activities:

- 1) Maintain wolf populations capable of sustaining harvest at the 1984-85 level of 14.
- 2) Work on developing population objectives.
- 3) 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. No planning meetings were held during the report period.

Progress Towards Meeting Project Objectives: Wolves were sealed in Yakutat. Three male and two female wolves were sealed during the year from locations across Subunit 5A. The population is probably capable of sustaining the harvest specified in our management objectives, but trapper and hunter effort is not sufficient to harvest that number.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	\$5.2	\$1.8	\$7.0
Actual	\$10.0	\$4.6	\$14.6
Difference	\$4.8	\$2.8	\$7.6

Submitted by:

Bruce Dinneford
Management Coordinator

Project Title: Southcentral Population Wolf Management

Project Location: Unit 6 (10,100 mi²)
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: No wolf surveys were completed in Unit 6. Incidental observations and reports from trappers and guides suggested a minimum population of about 70 wolves in 9 packs.

Sealing records indicated a unitwide harvest of 3 wolves. Two were grey, 1 was black. Two were males, 1 was female, 2 were taken by ground shooting and 1 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 mi²)
Kenai Peninsula

Project Objectives: Maintain the posthunting population in Subunit 15A and the Kenai National Wildlife Refuge (KNWF) 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: Reports from trappers and staff observations suggest the wolf density is stable or slightly increasing because of reduced harvest over the past 5 years. We now estimate 200 wolves in Units 7 and 15.

Hunters and trappers took 19 wolves during the 1992-93 season in Units 7 and 15. 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 and snares every 7 days on the refuge.

Wolf harvests were: Unit 7 - 3, Subunit 15A - 8, Subunit 15B - 2, and Subunit 15C - 6. The 1992-93 harvest of 19 was 44% below the previous 10-year average of 34. Sixty-three percent (12) of the harvest was taken by hunters, the highest nontrapping harvest on record.

Progress Towards Meeting Project Objectives: To achieve population objectives, additional funding will be necessary to conduct thorough surveys after liberalization of USFWS 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 pelt damage caused by lice infestation and the complete closure for trapping lynx have also reduced trapping and hunting effort. Average annual harvest since the 4-day trapline check was initiated was 17 compared to 48 for the 10 years before the restriction.

The harvest of 19 wolves represents 9.5% 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 mi²)
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 report period. An indirect survey for estimating wolf abundance was accomplished by mail out questionnaires sent to a select group of trappers. Twenty four questionnaires were returned. Trappers' responses indicated localized increases and generalized stability in wolf numbers over last year.

Wolf harvest is derived from wolf sealing certificates. Preliminary data were available from sealing certificates. The preliminary harvest of wolves was 33 in Unit 9 and 0 in Unit 10. The harvest in Unit 9 is 63% below the previous year and nearly equal to the 10 year average of 32 wolves.

Progress Towards Meeting Project Objective: Lack of reliable snow conditions and funding hampered progress towards developing measurable objectives for wolf populations in Units 9 and 10. Research on wolves continues in other areas, but unless budgets increase that effort will probably 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 mi²)
Wrangell Mountains

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

Work Accomplished During the Project Segment Period: The spring 1992 posthunting season population estimate for Unit 11 was 60-70 wolves. This estimate was based on sightings obtained from both Department personnel and the general public along with hunter and trapper reports. Systematic wolf track transects are not conducted in Unit 11. This figure is lower than last year's estimated population of 85-95 wolves as well as the prior 5-year average of 105 wolves in the spring after hunting and trapping season.

Preliminary harvest data shows 33 wolves taken by 8 trappers during the 1992-93 season. This harvest is similar to the previous year's take of 30 wolves. This year's harvest rate is estimated to be about 26% of the extrapolated fall 1992 population of approximately 125 wolves. The 1991-92 harvest rate was estimated to be similar. Females accounted for 45% ($\underline{n} = 13$) of this year's take and males 55% ($\underline{n} = 16$) and 4 unknown sex. Two wolves were taken by a nonresident hunter during the fall, while all the remaining harvest was taken by locals living in the Park resident zone. Ninety-four percent ($n = 31$) of the wolves were trapped, and 6% ($n = 2$) shot. Snowmachines were the most popular method of transportation, accounting for 94% of the reported take.

Progress Towards Meeting the Projected Objectives: Wolf population estimates in Unit 11 have fluctuated little during 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. In addition, ungulate numbers are lower in Unit 11 than in the adjacent Unit 13. Dispersal of wolves into suitable habitat in Unit 13 where ungulate numbers are higher is known to occur and may serve to 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. Additionally 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 Unit 11's wolf population to remain at current levels or decline somewhat because of the low prey base currently available to wolves in this unit.

Project Location: Unit 13 (25,000 mi²)
Nelchina Basin

Project Objective: 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 during spring 1993. We estimated 27 wolves to be in the study area, resulting in a density estimate of 5.6 wolves:1,000 km². Extrapolation of the Upper Susitna population estimate to the remainder of Unit 13 would result in an overall unitwide estimate of 240 wolves for spring 1993. This method probably resulted in an over estimate, as Subunit 13E was harvested at a lower intensity than the rest of the unit.

We conducted wolf survey flights in Unit 13 during mid-October 1992 after an early snowfall provided excellent tracking conditions. The area covered during these fall 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 247 wolves. Portions of Subunit 13B had the highest observed wolf numbers in the unit, with a density estimate of between 20.5 and 29.5 wolves:1,000 km².

Reports from hunters and trappers along with incidental sightings by Department personnel were used in conjunction with track survey data to estimate wolf densities for all of Unit 13. A final spring 1993 Unit 13 population estimate was between 190 and 240 wolves in 31-42 packs. This would result in a unitwide density estimate of 4.4 to 5.6 wolves:1,000 km².

Preliminary harvest figures show a total 93 wolves (50 males, 43 females) were reported taken to date by 48 hunters and trappers during the 1992-93 season. This harvest was lower than the 116 wolves taken during the 1991-92 season but well above the 5-year (1985-1989) average take of 76 wolves. This was also the greatest harvest in Unit 13 without land-and-shoot taking of wolves. However, unlike under land-and-shoot harvests, kill locations suggest packs accessible to the road system were heavily harvested while more remote packs had few, if any, wolves taken. Forty-eight (52%) wolves were trapped and 45 (48%) shot. The average take per trapper was 1.9 wolves; however, one individual sealed 13 wolves. Subunit 13E and 13D had the highest harvests. The preliminary overall wolf harvest rate in Unit 13 was approximately 28% of the estimated fall population.

Progress Towards Meeting the Projected Objectives: The spring 1993 population estimate of 215 wolves in Unit 13 exceeds the minimum population objective of 150 wolves for this unit by 65 wolves. Between 1979 and 1989 spring population estimates fluctuated between 100 and 175 wolves depending upon the 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. During the past 2 years, wolf numbers were allowed to decline in an attempt to reduce the spring population to within management guidelines.

Unit 13 wolves are not currently considered limited by prey availability as moose and caribou numbers are high. Although we estimate the Nelchina caribou herd at 40,000 animals, a large portion of the herd migrated into Unit 12 and Canada during winter. As a result, caribou are often unavailable to wolves in portions of Unit 13 and moose become the most important prey species from early October until late April. Wolves readily prey on caribou when they are available in Unit 13 during winter months. In years when a portion of the herd remains in Unit 13, predation rates on caribou can be quite high.

Managing wolves by establishing a subunit harvest quota started during the 1990-91 season in Unit 13. The annual wolf harvest quota was an attempt to restrict the yearly take to 30 to 35% of the fall population estimate. This quota was then divided up on a subunit basis to prevent overharvesting areas accessible by snowmachine, dog sled and highway vehicle as well as more open portions of the unit, with few trees, where wolves could be more vulnerable to land-and-shoot taking. The intent was 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. This management strategy was dropped in 1992-93 when same-day-airborne hunting became illegal.

Project Location: Unit 14 (6,600 mi²)
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 1992-93 trapping season, 10 wolves were sealed from Unit 14. Five were taken in Subunit 14A; all were pups from the Knik River pack, which first denned there during spring 1992. Four were taken from the Kashwitna River drainage in Subunit 14B and 1 was taken in Subunit 14C. 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.

We radio-tracked the 2 adult wolves along the Knik River periodically until their radios failed in December 1992 and February 1993. Six pups were seen as late as October 1992. The adults survived the trapping season and denned in the same den used in 1992. During June 1993 the 2 adults, 3 pups and 1 other adult (possibly a yearling) were observed near the den.

Progress Towards Meeting Project Objectives: No post-harvest wolf surveys were flown in Unit 14. Through incidental observations and discussions with trappers and hunters, we estimate the wolf population in Unit 14 at 50-60 wolves, including 20-25 in Subunit 14C. To adequately track and manage wolf numbers, the ADF&G should refine a systematic method to estimate wolf numbers, and apply this method every 5 years.

Project Location: Unit 16 (12,300 mi²)
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: During March 1993, the number of wolves in Unit 16 was estimated using a probability-network sampling scheme. Six packs were located, and the population was estimated at 39-42 wolves (80% C.I.), a very low density when compared with other wolf studies. This estimate is probably low, but with further development and testing, the sampling method shows great promise.

During the 1992-93 trapping season, 8 wolves (4 from each subunit) 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 indicated the number of wolves appeared to be increasing.

Progress Towards Meeting Project Objectives: It has been speculated that, although illegal, land-and-shoot wolf hunting occurred regularly in Unit 16 before a statewide prohibition of that method of take in 1992. Wolf density in this area was probably low before 1992. A population of 65-75 wolves could sustain a harvest of 25 wolves per year, though trapper effort depends heavily on variables other than wolf density. The population appears to be increasing, and prey densities are adequate to support a higher wolf population. Current reported harvest will not restrict the growth of this wolf population. 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 mi²)
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 19 wolves, including 12 males (63%), 5 females (26%), and 2 of unknown sex during the 1992-93 season. This level of harvest is below the 5-year average of 35.6. No wolves were killed in Subunit 17A, 14 (74%) in Subunit 17B, and 5 (26%) in Subunit 17C. Local residents reported killing 16 wolves (84%), 2 wolves were harvested by nonlocal residents, and 1 was killed by a nonresident hunter.

Most trappers used snowmachines for access (n=16; 84%). No wolves were shot under same-day-airborne provisions. Ground shooting was the most common method of take (n=15; 79%). Eleven wolves were killed in February (53%), 4 were killed in January (21%), and 2 were killed in March (11%).

Progress Towards Meeting Objectives: We have no objective data on the population density of wolves in the unit. Local trappers noted that wolf populations appeared to be increasing unitwide during this report period. I also saw more wolves during moose and caribou surveys than in previous years. It appeared that the Subunits 17B and 17C wolf populations were responding favorably to increasing caribou and moose populations and the prohibition on same-day-airborne trapping.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	10.8	14.8	25.6
Actual	10.8	14.5	25.3
Difference	0.0	+0.3	+0.3

Explanation: Unusual weather conditions were inadequate for completing surveys.

Submitted by:

Jeff Hughes
Wildlife Biologist

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.
 - 1a. Monitor harvest through sealing records and trapper questionnaires.
 - 1b. Conduct fixed-wing aerial surveys during the winter in selected areas.
 - 1c. Radio-collar 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.
 - 1a. Monitor harvest through sealing records and trapper questionnaires.
 - 1b. Conduct fixed-wing aerial surveys during the winter in selected areas.
 - 1c. Radio-collar 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:

- 1a. During FY93, 15 hunters and trappers harvested 60 wolves (30 males, 27 females, 3 unknown sex) in Unit 12, exceeding the 5-year average harvest of 40 wolves. Snaring and trapping accounted for 78% and 20% of the harvest, respectively. One wolf was harvested by ground shooting. The harvest removed about 28% of the fall population estimate of 210-230 wolves. This harvest rate was slightly higher than sustainable (25%).
- 1b. The Unit 12 wolf population estimate was derived from 20 hours of wolf-track survey during February 1992, trapper reports, radio telemetry data, and incidental sightings of wolves or tracks by ADF&G personnel. A spring 1993 population estimate of 140-160 wolves (includes a 10% addition for lone wolves) in 29 established packs was obtained. Based on this estimate, the Unit 12 wolf population has declined by 15-20% since spring 1992.

The fall 1991 estimate, derived by adding the known overwinter harvest and wolves that died of natural causes to the spring estimate, was 210-230 wolves. The 1992 Unit 12 fall wolf population was comparable to the 1991 population.
- 1c. Four wolves in 2 packs carried radiocollars during FY93. We monitored these collared wolves periodically during winter 1992-93 to help define pack distribution and to contribute to the population estimate.

Subunit 20E:

- 1a. During FY93, 21 hunters and trappers harvested 55 wolves (26 males and 28 females, and 1 unknown sex). Snaring and trapping accounted for 53% and 42% of the harvested wolves, respectively. Ground shooting accounted for 3 wolves. The harvest of 55 wolves represented 28-32% of the fall population estimate of 170-195 wolves. This harvest rate exceeds sustainable (< 25%) and has caused the population to decline.
- 1b. The FY93 Subunit 20E spring wolf estimate of 110-120 was derived from over 50 flight hours of survey time, trapper reports, radio telemetry data, and incidental sightings by ADF&G personnel. In portions of the unit, surveys were not conducted and we used counts made in prior years in the estimate. The fall 1992 estimate, derived by adding the known overwinter harvest and the number of wolves known to have died from natural or unknown causes to the spring estimate, was 170-195 wolves.

- 1c. During FY93, we radiocollared an additional 7 wolves and 5 packs bringing the total of collared wolves and packs to 23 and 19, respectively. We collected data on wolf movements in relation to caribou calving, and on wolf pack distribution and territory size.

Progress Toward Meeting Project Objectives:

Unit 12:

In June 1993, the Alaska Board of Game rejected a wolf reduction program in northwestern Unit 12. Management objectives will be refined next year to better reflect biological realities and public demands. All other project objectives in Unit 12 were met during FY93.

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 rejected the plan during its January 1993 meeting. Project objectives for intensity of wolf management will be redefined during FY94. All other objectives were met during FY93.

Unit 19 and Subunits 21A and 21E

Project Objectives and Activities:

1. Determine distribution, abundance, and population trends of wolves in selected areas.
 - 1a. Radio-collar and monitor selected packs.
2. Maintain a harvestable population of wolves capable of continuing to sustain an annual harvest of at least 100 wolves.
 - 2a. 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 Units and attempt to survey these respective areas beginning in March 1991.
 - 5a. Conduct fixed-wing aerial surveys during the winter in selected areas.

Work Accomplished During the Project Segment Period:

- 1a. Based on a preliminary analysis of sealing documents, incidental discussions with area trappers and hunters, incidental field operations, and trapper questionnaires, we estimated the size of the wolf populations at:

Subunit 19A - 110-140 wolves in 14-17 packs
Subunit 19B - 100-120 wolves in 9-12 packs
Subunit 19C - 120-150 wolves in 11-14 packs
Subunit 19D - 150-190 wolves in 15-19 packs
Subunit 21A - 160-190 wolves in 12-15 packs
Subunit 21E - 110-160 wolves in 10-15 packs

During the 1992-93 season preliminary analyses of sealing documents indicated hunters and trappers took 39 wolves from Unit 19. This harvest represents approximately 4-5% of the population. Harvest by subunit was 19A - 13; 19B - 7; 19C - 10; and 19D - 3. Reported harvests in Subunits 21A and 21E were zero and 1 wolf, respectively.

Last year, we sealed 16 wolves in these same units. Thus, the harvest more than doubled even though fewer trappers were in the field. This, along with the trapper questionnaires, indicates an increasing wolf population. A higher harvest could be sustained. Previously, when land-and-shoot methods were allowed, harvests were commonly between 100 and 150 per year.

Progress Toward Meeting Project Objectives: We made estimates of wolf distribution and abundance. We sealed pelts 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.

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.

- 2a. Estimate wolf and ungulate populations for each Unit.
- 2b. 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:

1. We did not complete the wolf surveys we had planned for spring 1993 because of poor tracking conditions due to a lack of snowfall in March and April. Based on trapper, biologist, and pilot reports from Subunit 20A, we believe that the wolf population is the same size as, or slightly larger than, in spring 1992.

According to sealing certificates from this report period (1992-93), trappers/hunters reported taking 141 wolves from this area. Harvest was distributed as follows: 55, 42, 16, 2, and 26 wolves taken in Subunits 20A, 20B, 20C, 20F, and 25C, respectively. We expected the harvest to be lower than this because same-day-airborne hunting was prohibited in 1992-93. During the previous 2 years, 21% (1991-92) to 71% (1990-91) of the wolves harvested in Subunit 20A were taken under same-day-airborne permits.

Approximately 35 trappers attended a Wolf Trapping School co-sponsored by ADF&G and the Alaska Trappers Association in October 1992.

2. A research project was initiated to develop and test a predator-prey computer model for use in making management decisions. We used this model to examine the potential effects of various management scenarios for wolves and their prey in Subunit 20A. These results will be summarized during the next report period.
3. The public, department staff, and Board of Game discussed what population objectives would reasonably meet public needs for consumptive and nonconsumptive uses of wolves and their prey. Documents of a strategic management plan, an area-specific plan, and implementation plans for wolf control were drafted based on this information.

Progress Toward Meeting Project Objectives: In Subunit 20A, our estimate of 267 wolves (16.0 wolves/1000 km²) for fall 1991 represented a substantial increase from the 180 (10.9 wolves/1000 km²) wolves estimated for fall 1988.

An Area-Specific Wolf Management Plan was adopted by the Board of Game in November 1992. This 10-year plan was intended to guide future wolf management and

specify objectives for wolves and ungulates throughout the area. The board also adopted an Implementation Plan for a wolf control program in Subunit 20A. Board actions, however, were challenged and a public outcry against the wolf control programs resulted in a Wolf Summit called by the Governor. Following the summit, the Board of Game met and voted to rescind the Area-Specific Wolf Management Plan and the Implementation Plan for the area within a portion of Subunit 20A. The Board of Game met again in June to consider alternatives to an aerial control program for wolves as was recommended by the Wolf Planning Team. After careful deliberation of the issues, the Board approved a proposal for a ground-based control program in a portion of Subunit 20A that would rely heavily on conventional hunting and trapping techniques.

The "Project Objectives and Activities" section should be revised to include activity 1.a. which was inadvertently omitted from last year's report. An additional objective should also be added if control as authorized by the Board of Game is to be implemented in portions of Subunit 20A. While this objective would not qualify for nor be funded by Federal Aid, all population management objectives are listed in this section for all of the region's Federal Aid Performance Reports to help clarify management direction.

We recommend adding the following objective and activity:

- 1a. Analyze data from wolf harvest, wolf aerial surveys, and observations by public, pilots, and staff.
4. Implement policies and programs for wolf management as directed by the Board of Game.

Subunit 20D

Project Objectives and Activities:

1. Determine distribution, abundance, predation rates, and population trends in selected areas.
 - 1a. Seal hides taken by hunters and trappers; interview hunters and trappers to assess relative abundance of wolves.
 - 2b. Conduct fixed-wing aerial surveys during the winter in selected areas.
 - 2c. Radio-collar and monitor selected packs.

Work Accomplished During the Project Segment Period: Hunters and trappers took 16 wolves, based on preliminary harvest data. Four wolves were taken from southern Subunit 20D, and 12 were taken from northern Subunit 20D.

We radio-collared 7 wolves from 5 packs in northern Subunit 20D to estimate relative abundance and territory size of wolves. We also conducted trapper interviews to estimate wolf abundance in southern Subunit 20D. Fall 1992 wolf minimum population size was estimated to be 8 packs with 42 wolves in northern Subunit 20D and 3 packs with 26-30 wolves in southern Subunit 20D.

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

Subunits 21B, 21C, and 21D and Unit 24

Project Objectives and Activities:

Subunits 21B, 21C, and 21D:

1. Maintain at least 50 moose per wolf until the moose population objective of 4,000 to 4,500 is attained in Subunit 21B.
2. Maintain a stable fall wolf density of approximately 1 wolf/50 mi² 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 mi² with the intent to sustain an annual harvest of 30 wolves in the southern part of Unit 24, south of Hughes (6,150 mi²).
2. Reduce wolf density to 1 wolf/1000 mi² to achieve a moose:wolf ratio of 50:1 in the central part of the unit; i.e., Hughes to Bettles.
 - 2a. Seal hides taken by hunters and trappers; interview hunters and trappers to assess relative abundance of wolves.
 - 2b. Conduct fixed wing aerial surveys during winter in selected areas.
 - 2c. Radio-collar and monitor selected packs.

Work Accomplished During the Project Segment Period:

- 2a. Hunters and trappers harvested 108 wolves during the 1992-93 season. Sealing compliance in some of the rural villages appears to be increasing.

- 2b. Based on sealing documents, wolf surveys, and radio collared wolves within packs the size of the fall wolf populations was estimated at:

Subunit 21B - 75-80 wolves in 9-10 packs
Subunit 21C - 40-45 wolves in 6-7 packs
Subunit 21D - 200-240 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. A population estimate in the Koyukuk/Nowitna NWRs was made by USFWS in 1991.

- 2c. Eight wolves from 5 packs were darted and fitted with radio collars and were monitored periodically to help define pack home ranges and to contribute to the population estimate. During March 1993 the USFWS daily monitored 5 packs to determine prey and rates of predation. Prey species were mainly moose with a few caribou. I aged all the moose kills.

Progress Toward Meeting Project Objectives: The wolf radio-telemetry projects were done in cooperation with the USFWS and have provided better population estimations and distribution data. One project has documented the major sources of mortality and predation rates.

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: Based on sealing forms on file in early June 1993, hunters and trappers reported harvesting 24 wolves in Subunit 25A, 15 in Subunit 25B, 10 in Subunit 25D, 30 in Subunit 26B, and 3 in Subunit 26C. These harvests are the same or lower than the previous years except in Subunit 26B where the number reported taken increased from 14 to 30. The harvest of wolves in Unit 26B was the focus of some media coverage and will require close monitoring in the future.

No surveys were conducted during this report period, but the status of wolves was discussed informally with numerous local and nonlocal residents. Public meetings were also held during summer 1992 in the villages of Kaktovik, Anaktuvuk Pass, and Nuiqsut

to help develop an area-specific wolf management plan for Unit 26. These meetings were productive and the results were incorporated into a draft plan.

Progress Toward Meeting Objectives: No additional surveys have been conducted since March 1992 when wolf numbers were estimated in Subunit 25D.

Some progress has been 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 that wolves are routinely sealed in this area. In Subunits 26B and 26C wolf pelts obtained by local residents are more 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.

Revised project objectives are as follows:

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.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	77.7	71.0	148.7
Actual	141.0	7.0	148.0
Difference	-63.3	64.0	0.7

Submitted by:

Kenton P. Taylor
Regional Management Coordinator

Project Title: Western and Arctic Alaska Wolf Survey and Inventory

Project Location: Unit 18 (42,000 mi²)
Yukon-Kuskokwim Delta

Project Objectives:

1. Establish and maintain viable wolf populations in Unit 18.
 - 1a. Monitor harvests through the sealing program, contacts with the public, and the annual trapper questionnaire.
 - 1b. Explain and promote compliance with the sealing requirement among local hunters and trappers.
 - 1c. 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 no wolves were harvested in Unit 18 during the 1992-93 season. Sightings of wolves and prey believed to be killed by wolves were reported by local trappers, hunters, pilots, and by ADF&G and USFWS staff engaged in other activities.

We will send out a trapper questionnaire in August 1993 to evaluate wolf abundance.

We sent public notices to all Unit 18 villages informing hunters and trappers that wolves needed to be sealed after they are harvested.

Progress Toward Meeting Project Objectives: Observations reported by the staff and members of the public indicate that several wolf packs occupied the Yukon River drainage within Unit 18, portions of the Kilbuck Mountains, and the Kuskokwim River drainage near the Subunit 19A boundary. We estimate the overall Unit 18 population to range from 75-100 wolves in 6-8 packs. Several wolf kills of Kilbuck herd caribou were documented during the report period.

Sealing certificate data indicate that no wolves were reported harvested during the report period. However, because of low fur prices and the high demand locally for wolf pelts for parka ruffs, many trappers may have not sealed and reported their harvest. Wolf

harvest is normally very low in Unit 18. Most wolves found in Unit 18 are migrants from nearby Units 17, 19, 21, and 22.

Project Location: Unit 22 (25, 230 mi²)
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.
 - 1a. Assess harvest, interview hunter/trappers, and seal all pelts brought in for sealing.
 - 1b. Establish and maintain license vendors and sealers in all Unit 22 villages.
 - 1c. Improve compliance with current sealing requirements through public communication and education.
2. Cooperate with reindeer herders to 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 trappers and hunters harvested 18 wolves (12 males, 5 females, and 1 of unknown sex) in Unit 22 during the report period. All the trappers/hunters were residents of Unit 22. A breakdown of this harvest by Subunit is as follows: Subunit 22A - 13, 22B - 4, and 22D - 1. Data pertaining to type of take was listed as follows: ground shooting - 16, trapping - 1, and take unknown - 5. Snowmachines continue to be the major transportation type used by resident wolf hunters.

The educational program developed several years ago explaining the importance of wildlife management concepts, rules, and regulations continued to be used in 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 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 were held throughout the year with reindeer herders and National Park Service staff to address possible ways of reducing wolf/reindeer interactions.

Progress Toward Meeting Project Objectives: We think the magnitude of unreported harvests of wolves 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 if more complete compliance with current regulations is to become a reality.

We are making limited progress in reducing confrontations between wolves and reindeer. Discussions with local reindeer herders has resulted in some herders making attempts at reducing wolf/reindeer interactions by spending more time with the reindeer, particularly at fawning time, and keeping reindeer in areas where wolf densities appear lower.

Although initial steps were taken during the past year by communicating our intent with local residents and representatives of several governmental agencies, the actual development of an area specific wolf management plan has not taken place.

Project Location: Unit 23 (43,000 mi²)
Kotzebue Sound and the Western Brooks Range

Project Objectives:

1. Maintain existing wolf densities in Unit 23.
 - 1a. Maintain the wolf sealing program to monitor harvest.
 - 1b. Complete the cooperative research project concerning the relationship between wolves and 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 indicate that 71 wolves (28 males, 32 females, and 11 of unknown sex) were reported taken by hunters/trappers in Unit 23. Sixty-nine were ground shot and 2 were trapped. Twenty-four hunters harvested 69 wolves using snowmachines, and 1 hunter took 2 wolves using aircraft as a means of transportation. Forty-six percent of the harvest

occurred in the Kobuk River drainage, 33% in the Buckland and Selawik River drainages, and the remaining 17% in the Noatak and Kivalina river drainages.

We completed a draft final report for the cooperative wolf research study and it is under review. This report will be printed and distributed in addition to several previous project progress reports and publications. We completed a final wolf radio tracking survey.

License vendors and furbearer sealing agents were maintained in Unit 23.

Progress Toward Meeting Project Objectives: The management objective to maintain a healthy population of wolves in Unit 23 while allowing for consumptive and nonconsumptive uses of wolves is being met. Unit 23 wolf population densities appeared relatively high and increasing during the report period, especially in the Noatak and upper Kobuk river drainages.

Although the Western Arctic Caribou Herd continued to grow in size, moose and sheep populations declined dramatically during winter 1990-91. For the third year significant numbers of overwintering caribou were absent in the Kobuk and Noatak drainages. Therefore, wolf predation will probably continue to adversely affect moose and sheep populations and how quickly they can rebuild to 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 mi²)
Western North Slope

Project Objectives:

1. Maintain existing densities of wolves in Subunit 26A.
 - 1a. Monitor the harvest through the statewide sealing program.
 - 1b. Examine harvest information collected from Anaktuvuk Pass.
 - 1c. Conduct a wolf census in the key management area between Umiat and Anaktuvuk Pass every 2 to 3 years.
 - 1d. Interview hunters, guides, and pilots to collect harvest and population status information.

- 1e. Record wolf observations during moose counts.
2. Minimize adverse interactions between wolves and the public.
3. Develop updated population management objectives in Unit 26A upon completion of the statewide wolf management plan.

Work Accomplished During the Project Segment Period: During this report period, we sealed 27 wolves: 16 (59%) males, 8 (30%) females, and 3 (11%) sex unknown. Seventeen (63%) wolves were ground shot, 8 (30%) were trapped, and 2 (7%) were unknown. Twenty-two (81%) wolves were taken using snowmachines for transportation, 2 (7%) were taken using an aircraft, and 1 (4%) was unknown. The chronology of the harvest was: September - 2, November - 2, December - 2, March - 17, April - 3, and 1 unknown. Twenty-one wolves were gray, 4 were black, 1 was white, and 1 was unknown.

We interviewed knowledgeable individuals in each village to estimate how many wolves were harvested by local residents. At least 6 wolves were taken by Atqasuk hunters, 8 by Wainwright hunters, 15 by Nuiqsut hunters, 2 by Point Barrow hunters, 5 by Barrow hunters, and 35 by Anaktuvuk Pass hunters for a minimum total of 71 wolves in 1992-93.

A line intercept, probability sampling survey was used to census wolves in a 4,007 mi² area south of Umiat from 23 to 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/76 mi² (62 to 97 wolves/100 mi² at 80% confidence). Traditional surveys conducted during 1986 and 1987 in approximately the same area resulted in density estimates of 1 wolf/147 mi² and 1 wolf/119 to 144 mi².

Progress Towards Meeting Project Objectives: Population surveys indicate that the density of wolves has increased in the area between Umiat and Anaktuvuk Pass, which is among the most heavily hunted areas in Subunit 26A, during the last 6 years. Results of this survey and the following factors indicate that harvest levels are 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 that 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.

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 the combined impact of hunters and wolves on moose.

After a higher than normal wolf harvest in 1990-91, the harvest in 1991-92 and 1992-93 was back to the level of previous years for Subunit 26A. Interest in wolf hunting is

increasing in many villages. This could lead to a decline in wolf populations in localized areas. The ADF&G sealing program is not effective in most villages and a more effective harvest monitoring program needs to be developed.

Segment Period Project Costs:

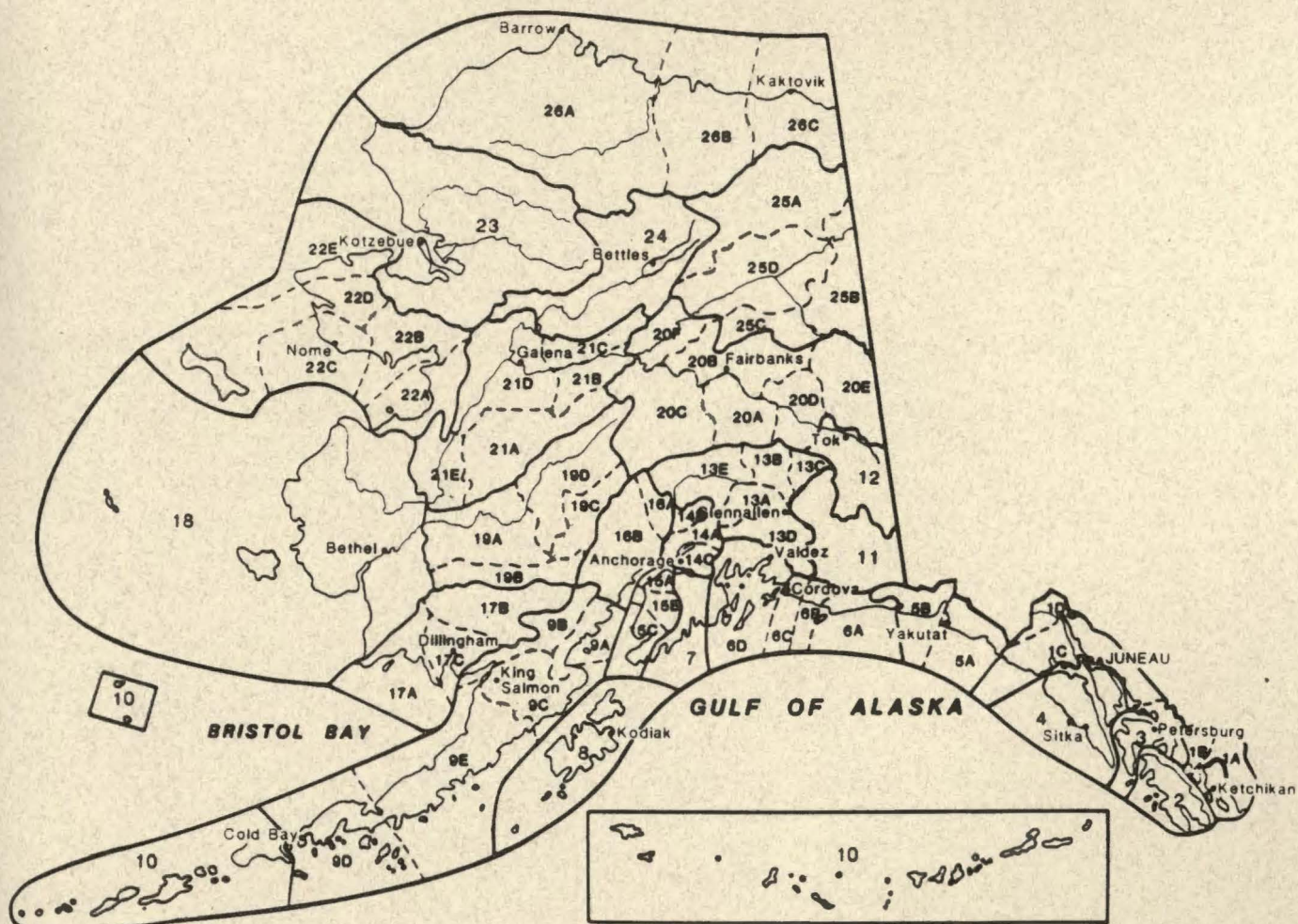
	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	6.0	16.0	226
Actual	6.6	3.7	103
Difference	0	12.3	123

Explanation: Costs for sealing agents were paid from another project account. Planned wolf survey costs for Unit 23 were paid by another agency.

Submitted by:

Steve Machida
Survey-Inventory Coordinator

Alaska's Game Management Units



Federal Aid in Wildlife Restoration

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program then allots the funds back to states through a for-

each state's area and of paid censehold-s t a t e . ceives 5% enues col-year, the lowed. The



ment of Fish and Game uses the funds to help restore, conserve, manage, and enhance wild birds and mammals for the public benefit. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes necessary to be reponsible hunters. Seventy-five percent of the funds for this project are from Federal Aid.

mula based on geographic the number hunting li-ers in the Alaska re-of the rev-lected each maximum al-Alaska Depart-