Alaska Department of Fish and Game
Division of Wildlife Conservation
Federal Aid in Wildlife Restoration
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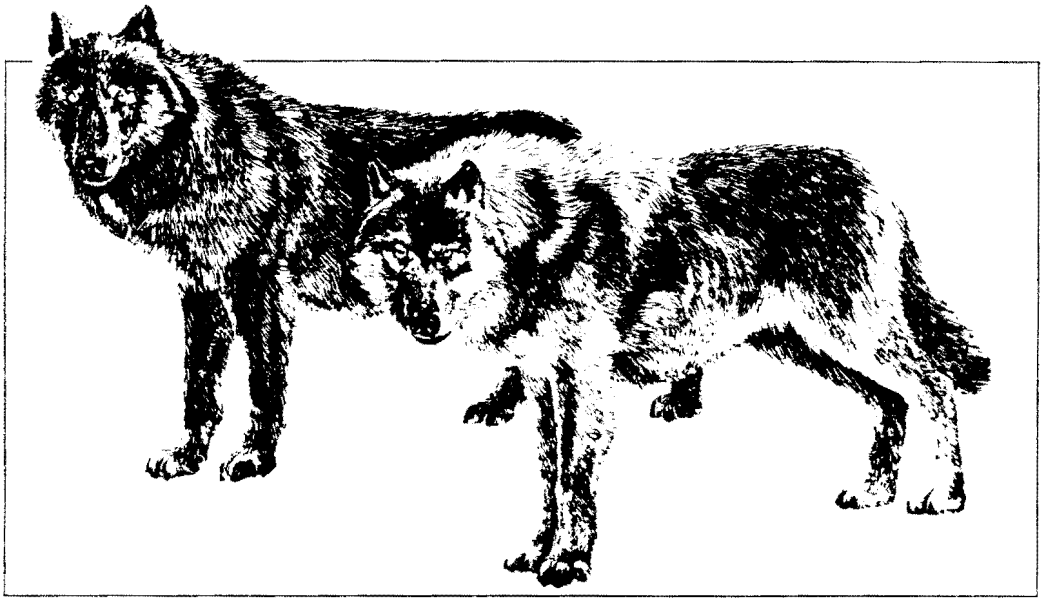
1 July 1990 - 30 June 1991

WOLF



Susan M. Abbott, Editor
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Project Title: **Southeast Wolf Population Management**

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

Project Objectives and Activities: Maintain wolf populations capable of sustaining harvests at the 1984-85 levels of 15 in Subunit 1A, and 43 in Unit 2.

Seal all wolves taken in Units 1A and 2 that are presented for sealing. Work to better understand the population status of wolves in Units 1A and 2, and apply this understanding to develop better population objectives.

Work Accomplished During the Project Segment Period: Fifteen wolves from Subunit 1A, and 66 from Unit 2 were sealed between July 1, 1990 and June 30, 1991. Information obtained included location and date of kill, method of take and transportation used, and sex and color. Anecdotal information was collected through discussions with hunters and trappers and from incidental observations by Department personnel.

Progress Toward 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 because of changes in trapping effort. The Unit 2 harvest of 66 wolves was substantially above the stated objective of 43, and the 15 wolves harvested from Subunit 1A equaled the objective for that subunit. All indications suggest that wolf populations in both units are at relatively high densities and continuing to increase at this time. This is supported by the high percentage of wolves taken by shooting (65%), and by the large pack sizes that are reported.

Project Location: Units 1B and 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 (Unit 1B) and 9 (Unit 3). Develop population objectives.

Work Accomplished During the Project Segment Period: All wolves harvested during the report period were examined and sealed. Anecdotal information on number and activities of wolves observed was collected from the hunters and trappers. In Subunit 1B

12 male and 7 female wolves were killed. This is more than the 9 taken in the previous year and also greater than the previous 5-year average of 9. No reasons for the increase in the harvest were apparent.

A total of 21 wolves were taken in Unit 3: 12 males, 8 females, and 1 unknown. The harvest was up from the previous year's take of 10 but about the average for the 1978-1983 harvest of 20. Again, there was no discernable reason for the increased harvest.

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

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

Project Objectives and Activities: Maintain wolf populations capable of sustaining harvest at the 1984-85 level of 10. Work on developing population objectives. Seal all wolves that are harvested and brought in for sealing.

Work Accomplished During the Project Segment Period: Five wolves were harvested and sealed during the 1990-91 season. A trapper questionnaire was used to gain additional information regarding target species abundance, prey abundance, trapping conditions, and trapping patterns. Trappers were also asked to comment on impacts of timber harvest or other development on their traplines. A trapper trapline calendar was also employed to gain insight into trapping pressure and success rates.

Progress Toward Meeting Project Objectives: Wolf populations in Subunit 1C are thought to be stable. The management goal of sustaining a harvestable surplus of 10 wolves is apparently being met.

Project Location: Subunit 1D (2,670 mi^2)
That portion of the southeast Alaska mainland lying north of the latitude of Eldred Rock, excluding Sullivan Island and the drainages of Berners Bay.

Project Objectives and Activities: Maintain wolf populations capable of sustaining harvest at the 1984-85 level of 4. Work on developing population objectives. Seal all wolves that area harvested and brought in for sealing.

Work Accomplished During the Project Segment Period: One wolf was harvested and sealed during the 1989-90 season. A trapper questionnaire was used to gain additional information regarding target species abundance, prey abundance, trapping conditions, and trapping patterns. Trappers were also asked to comment on impacts of timber harvest or other development on their traplines. A trapper trapline calendar was also employed to gain insight into trapping pressure and success rates.

Progress Toward Meeting Project Objectives: Wolf populations in Subunit 1D are thought to be stable. The management goal of sustaining a harvestable surplus of four wolves is probably being met although only one animal was harvested this year. Local trappers and other sportsmen have reported an increase in numbers of wolves or wolf sign in recent years, however, harvests have remained stable.

Project Location: Subunits 5A and 5B (6,235 mi^2)
Cape Fairweather to Icy Bay, eastern Gulf Coast

Project Objectives and Activities: Maintain wolf populations capable of sustaining harvest at the 1984-85 level of 14. Work on developing population objectives. Seal all wolves that area harvested and brought in for sealing.

Work Accomplished During the Project Segment Period: Harvest was analyzed from wolf sealing certificates. Anecdotal information about abundance was collected opportunistically from hunters, Department staff and Fish & Wildlife Protection officers.

No planning meetings were held during the report period.

Although it was hoped that surveys could be flown during the winter, none were conducted. 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 Toward Meeting Project Objectives: Wolves were sealed in Yakutat and Slana. Residents of Yakutat as well as nonlocal outdoorsmen contributed anecdotal information concerning sighting of wolves. Four male and three female wolves were sealed during the year, from locations across Subunit 5A. One wolf was trapped and the remainder were shot. Four nonresidents, one nonlocal resident, and two local residents took one wolf each. The harvest was spread from September through May. Comments were submitted to the Habitat Division and the U.S. Forest Service regarding wolf habitat concerns. Roading and logging continues in Subunit 5A, which has consequences upon wolf and other species.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	$5.6	$1.8	$7.4
Actual	$5.6	$1.8	$7.4
Difference	0	0	0

Submitted by:

Bruce Dinneford
Management Coordinator

Project Title: **Southcentral Wolf Population Management**

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

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

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

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

Unit 13 (23,400 mi^2)
Nelchina Basin

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

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

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

Project Objectives:

Unit 6: Maintain a population in a minimum of 5 packs that will sustain an annual harvest of at least 10 wolves.

Units 7 and 15: 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 Units 15B and 15C at a maximum ratio of 1 wolf to 50 moose.

Unit 9: Maintain a population that will sustain a 3-year average annual harvest of up to 50 wolves.

Unit 11: Maintain the posthunting population at a minimum of 50 wolves.

Unit 13: Maintain the posthunting population at a minimum of 150 wolves.

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

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

Unit 16: Maintain a population that will sustain an annual harvest of up to 25 wolves.

Unit 17: Maintain a population that will sustain an annual harvest of up to 25 wolves.

Work Accomplished During the Project Segment Period:

Unit 6: Wolf harvest is derived from wolf sealing records. Although the records are currently incomplete, a summary of the information indicates a harvest of 4 wolves in Unit 6.

Units 7 and 15: An interagency survey conducted by the U.S. Fish and Wildlife Service (USFWS) and the Department resulted in an estimated minimum population of 48 wolves in Subunit 15A. Wolf surveys were not conducted in the remainder of Unit 15 or Unit 7. Reports from trappers suggested wolf numbers in these areas were stable or slightly increasing because of a reduction in the harvest during the past 3 years. The wolf population in Units 7 and 15 was estimated at 200 wolves.

The total harvest for Units 7 and 15 was 9 wolves. Four wolves were harvested (2 shot, 2 snared) in Subunit 15A, 2 animals were taken in Subunit 15B and 3 killed in Unit 7. The 1990-91 harvest was well below the 10-year average annual harvest of 43. The trapping season was extended to include 1-31 March 1991 since the management objective was not reached during the scheduled season. Although wolves were abundant, trappers showed no interest in trapping primarily because of poor weather conditions, lice-infested wolves and difficulties related to checking traps every 4 days on the refuge.

Units 9 and 10: Direct observational surveys were not conducted during this report period. An indirect survey for estimating wolf abundance was accomplished by questionnaires mailed to a select group of trappers. Twenty-eight questionnaires were returned. Trappers' responses were inconclusive as to any trends in wolf populations. Wolf harvest information is derived from wolf sealing certificates. At this time, the information available from sealing certificates is incomplete. The preliminary harvest of wolves from sealing certificates is 22 in Unit 9 and 3 in Unit 10.

Unit 11: Preliminary harvest data indicate that 37 wolves, 23 females and 14 males, were taken by 12 trappers during the 1990-91 season. All wolves were taken by locals living in the Park resident zone. This is somewhat higher than the previous year's harvest of 24 wolves. All wolves were either trapped or snared. Snow machines were used as transportation for 90% of the harvest.

The spring 1991 estimate, after the hunting and trapping seasons, was 90-95 wolves. This figure was slightly below last year's estimate of 100 wolves and the average annual estimate over the past 5 years of 105 wolves.

Unit 13: Preliminary harvest data indicated that 145 wolves (83 males, 57 females, and 5 sex unknown) were reported taken by 82 hunters and trappers during the 1990-91 season. This was appreciably higher than both the 1989-90 harvest of 84 and the average harvest between 1985 and 1990 of 76 wolves. This increase was primarily because of a registration permit hunt established by the Board of Game that allowed hunters to take wolves the same day airborne (SDA) in Unit 13. A total of 157 permits were issued and 88 wolves were taken by SDA permit holders. Units 13A, 13B, and 13D had the highest harvests. Subunit 13A was closed by Emergency Order on January 4 and Subunit 13C was closed on February 11 after the desired harvests were reached. The entire unit was closed on March 1. The overall harvest rate for Unit 13 was about 36% of the estimated fall population.

Wolf track surveys were conducted on the Upper Susitna River Trend Count Area during late March and resulted in a density estimate of about 6 wolves/1,000 km^2. Extrapolation of this density estimate to the entire unit produced a total Unit 13 estimate of 270-285 wolves. This was probably a high estimate as the area was harvested at a lower intensity than most of the unit.

Wolf track surveys were flown in a portion of the unit as part of a research project designed to estimate wolf densities. The study area covered 5,335 km^2 in Subunits 13B and 13C, extending from the Chistochina River west to the McLaren River and encompassing the Alphabet Hills. The wolf density in this area was estimated as 9.2 wolves/1,000 km^2.

Reports from hunters and trappers, along with incidental sightings by Department personnel, were used in addition to the survey-based density estimates to generate a unitwide population estimate. The spring (postharvest) 1991 wolf population estimate for Unit 13 was 227 to 251 wolves in 39 packs which results in a unitwide density estimate of 5.3 to 5.9 wolves/1,000 km^2.

Unit 14: During 1990-91 2 wolves (both females taken in Subunit 14A) were sealed in Unit 14. One of these, killed in Wasilla, was probably a hybrid wolf that escaped from captivity. Both were taken by trappers using highway vehicles for transportation who shot the wolves from the ground.

A questionnaire was mailed to all trappers who sealed fur taken in Unit 14. Thirty-one trappers, with an average of 20 years trapping experience, responded to the questionnaire; 19 trapped during 1990-91. Only 2 respondents made sets specifically for wolves (both in Subunit 14B). When asked to categorize the number of wolves on their trapline, 8 of 16 respondents listed them as "scarce", 4 as "common", and 4 said they were not present.

When asked to compare the number of wolves in their area during 1990-91 with 1989-90, 6 of 9 said the "same", 2 reported "more', and 1 said "fewer".

A single wolf-tracking survey was flown in the southern Talkeetna Mountains in February. Two wolves and tracks of up to 5 wolves were seen on the Kashwitna River. On 2 other occasions "many" wolf tracks were reported on the Matanuska River at the eastern border of Subunit 14A. Five wolves were seen near Muldoon in Subunit 14C during fall moose surveys.

Unit 16. Three trappers reported taking 5 wolves; 4 males and 1 female. Three were taken in Subunit 16A and 2 in Subunit 16B. Three were snared and 2 were trapped. Four successful trappers used aircraft for access and 1 used a snowmachine. Observations by biologists, pilots, and trappers indicated that there were at least 34 wolves in the Unit, 20 in Subunit 16A and 14 in Subunit 16B.

Unit 17. Preliminary data indicate a reported harvest of 18 wolves, including 9 males (69%), 4 females (31%), and 5 of unknown sex during the report period. Seventeen wolves (94%) were harvested in Subunit 17B and 1 (6%) was taken in Subunit 17C. Local residents reported killing 17 wolves and a nonresident harvested 1 animal.

Most trappers (56%, N = 10) used aircraft for access. Four wolves were shot under SDA provisions. Ground shooting was the most common method of take (83%, N = 15). Wolves were harvested during September (1), January (1), February (8), and March (8).

Progress Toward Meeting Project Objectives:

Unit 6: Wolf population objectives have been achieved. The estimated number of wolves in the unit in fall 1990, was between 83 and 125 animals in 18 packs. The preliminary harvest of 4 animals is well below the harvest quota of 16 wolves allowed under a conservative management strategy.

Units 7 and 15: A survey of Subunit 15A indicated the management objective was exceeded by the end of the 1991 season. The extended season also failed to provide an adequate harvest to achieve the population objective. This was the second year the season was extended and wolves were not harvested.

To achieve population objectives, additional funding will be necessary to conduct thorough surveys followed by liberalization of USFWS restrictions on trapping. The current refuge requirement of checking traplines every 4 days has virtually eliminated recreational trappers' opportunity to pursue wolves over most of the refuge. The average annual harvest declined from 48 (10 year mean prior to restriction) to 18 since the 4-day trapline check was initiated. The low value of a lice infested pelt has further reduced hunting and trapping effort.

The harvest of 9 wolves represents 5% of the early winter population estimate of 200 for Units 7 and 15. It is the lowest reported harvest since 1974-75, when wolves were taken under a permit system for hunting only. The wolf population is expected to increase where prey are available with this low rate of harvest.

Units 9 and 10: The 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, but unless budgets increase it is unlikely efforts will 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 relatively light. If pelt prices and other factors lead to increased harvest, more intensive management may be required.

Unit 11: Wolf population estimates have fluctuated little over the past 5 years. Wolves are thought to be abundant and further increases in abundance will probably be limited by habitat and prey restraints. Dispersal of wolves into suitable habitat in Unit 13 where ungulate numbers are higher is thought to occur and may serve to limit wolf abundance in Unit 11. Human harvest of wolves is limited to a few packs which occur along the Nabesna and McCarthy Roads and overall hunting and trapping pressure is low. I expect the Unit 11 wolf population to remain high, well above the population objective.

Unit 13: The midpoint of the spring 1991 population estimate was 239 wolves which exceeded the minimum population objective of 150 wolves by 89. Between 1979 and 1989 spring estimates fluctuated between 100 and 175. Wolf populations were controlled primarily by human harvest. Wolf numbers increased between 1988 and 1990 because of restrictions on SDA hunting. Wolves are not considered limited by prey availability as moose numbers are relatively high. The Nelchina Caribou Herd is large, however it has migrated into Unit 12 during the past 2 years and few caribou have been available to Unit 13 wolves from mid-October until late April. Therefore wolf predation has recently been targeted primarily on moose for much of the year.

Managing wolf harvest by subunit quotas was never done before in Unit 13. The overall quota was established at 130 wolves to restrict the harvest to about 35% of the fall population estimate. The harvest quota was then divided into subunit quotas to prevent overharvest in accessible areas and sparsely vegetated areas where wolves are more vulnerable to SDA hunting. The intent was to disperse harvest throughout the Unit and to avoid areas of local overharvest.

The Unit 13 wolf population is well above the minimum population objective and the harvest quota should be increased slightly to reduce the population to levels comparable to those of the past decade.

Unit 14: Biologists have recently estimated the wolf population in Unit 14 at 50 to 60, including 20 to 25 in Unit 14C. However, lacking systematic surveys the exact size of

the wolf population is not known and it is impossible to say whether the population objective is being met. Harvests are very low; few trappers work the more remote portions of the unit where wolves are most abundant.

Unit 16: 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.

Unit 17: Objective data are not available on the population density of wolves in the unit. Local trappers noted that wolf populations appeared relatively low during this report period. Conditions were good for aerial hunting during the late-winter and spring of 1991. Wolves were not observed during moose and caribou surveys. The Unit 17 wolf population apparently continues to be low in spite of increasing caribou and moose populations in many areas.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	11.6	8.5	20.1
Actual	11.6	4.9	16.5
Difference	0.0	3.6	3.6

Less was spent than planned on wolf track surveys in Unit 13 because of unsatisfactory snow cover during the spring survey period.

Submitted by:

Kenneth W. Pitcher and John N. Trent
Regional Management Coordinators

Project Title: **Region III Wolf Population and Habitat Management**

Project Location: Units 12, 20E, 25A, 25B, 25D, 26B, and 26C

Project Objectives and Activities:

Units 12 and Subunit 20E

Unit 12: Provide for an optimum harvest of wolves. Provide maximum opportunity to participate in hunting and trapping wolves. Monitor wolf numbers, population characteristics, and harvests. Temporarily reduce wolf numbers to less than 100 by 1993. Maintain sustained yield objectives after population objectives are achieved. Increase human-use opportunities of wolves and moose by significantly increasing moose numbers and by maintaining a healthy, productive wolf population.

Subunit 20E: Monitor wolf numbers, population characteristics, and harvests. Temporarily reduce wolf numbers to less than 100 by 1993 and thereby increase the growth rates of both caribou and moose populations.

Monitor harvest through sealing records and trapper questionnaires. Conduct fixed-wing aerial surveys during the winter in selected areas. Radio-collar and monitor selected packs.

Work Accomplished During the Project Segment Period:

Unit 12: Twenty-five hunters and trappers harvested 73 wolves (43 males, 29 females, 1 unknown sex) during the 1990-91 seasons. Land-and-shoot taking was reinstated for regulatory year 1990-91 and contributed 18 wolves to the nearly fourfold increase in harvest over 1989-90. However, most of the harvest was taken by conventional trapping (n = 18) and snaring (n = 38). The number of trappers almost tripled over that of the previous year and the success rate increased significantly. Approximately 30,000 Nelchina caribou spent part of the winter in Unit 12 and provided a focal point for wolf activity that trappers were able to capitalize on. The harvest of 73 wolves during the 1990-91 season removed about 31% of the fall population estimate of 238 wolves. This level of harvest is not expected to adversely affect the population.

Thirty hours of wolf-track surveys were flown in a PA-18 Super Cub aircraft from February to April 1991. Wolf sign was also observed and recorded during lynx and moose work throughout the winter. A spring 1991 estimate of 165 wolves was prepared from these pack observations plus a 10% addition for lone wolves. This estimate compares with 157 and 113 for spring 1990 and 1989, respectively. There were 29 established packs and 2 packs which were believed to have followed the caribou from Unit 13.

The fall 1990 point estimate, derived by adding the known overwinter harvest to the spring estimate, was 238 wolves, up from similarly derived estimates of 136 and 178 for fall 1988 and 1989, respectively.

Radio collars remained on 6 wolves in 3 packs as a result of an earlier study to assess prey consumption rates. These radio-collared wolves were monitored periodically during winter 1990-91 to help define pack home ranges and contribute to the population estimate.

Subunit 20E: Thirteen hunters and trappers harvested 24 wolves (13 males, 10 females, 1 unknown sex) during the 1990-91 seasons. Land-and-shoot taking was reinstated for regulatory year 1990-91 and contributed 11 wolves to the increase in harvest over 1989-90. Twelve other wolves were taken by conventional trapping and snaring. The harvest of 24 wolves during the 1990-91 season represented about 10% of the fall population estimate of 231 wolves. This continued low harvest rate will probably result in continued increases in the population over the next several years.

Thirty-two hours of wolf track surveys were flown in a PA-18 Super Cub aircraft during March and April 1990. Evidence of 33 packs was found. These surveys did not include the Yukon-Charley Preserve in the northern portion of the subunit. Thus, the previous year's estimates were reused for this area. Incidental observations were also recorded during early winter moose surveys and at other opportunities throughout the winter. A spring 1991 estimate of 207 wolves was prepared from these observations plus a 10% addition for lone wolves. The fall 1990 point estimate, derived by adding the known overwinter harvest to the spring estimate, was 231 wolves. Radio-collar and monitor selected packs.

Progress Toward Meeting Project Objectives:

Unit 12 and Subunit 20E: Project objectives were met in these subunits during FY 91. However, ungulate populations remain below carrying capacity and moose, at least, are being primarily limited by wolf predation based upon research in the Northway-Tetlin Flats area. Failure to achieve a moose:wolf ratio more favorable for growth of the moose population has resulted in restricted ungulate hunting regulations to favor subsistence hunters.

Unit 19 and Subunits 21A and 21E: Maintain an average wolf:moose ratio of 1:40 on important winter and calving ranges. Determine distribution, abundance, and population trends of wolves in selected areas. Maintain a harvestable population of wolves capable of continuing to sustain an annual harvest of at least 100 wolves. Reduce wolf numbers in areas where wolf predation is thought to be significantly affecting ungulate populations through calf or adult mortality.

Refine annual wolf population estimates in the area based on incidental sightings, hunter interviews, and sealing documents. Delineate wolf survey area boundaries in each of the

6 subunits and attempt to survey these respective areas beginning in March 1991. Seal hides taken by hunters and trappers; interview hunters and trappers to assess relative abundance of wolves. Conduct fixed-wing aerial surveys during the winter in selected areas. Radio-collar and monitor selected packs.

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

Subunit 19A	95-125 wolves in 14-16 packs
Subunit 19B	75-100 wolves in 9-11 packs
Subunit 19C	110-135 wolves in 10-12 packs
Subunit 19D	150-170 wolves in 14-18 packs
Subunit 21A	190-260 wolves in 15-20 packs
Subunit 21E	100-150 wolves in 10-14 packs.

During the 1990-91 season preliminary analyses of sealing documents indicated hunters and trappers took 125 wolves from Unit 19. This harvest represents approximately 25-30% of the population. Harvest by subunit was:

Subunit 19A	38
Subunit 19B	11
Subunit 19C	45
Subunit 19D	31

Wolf populations appear to be capable of sustaining the current harvest levels. Reported harvests in Subunits 21A and 21E were 35 and 27 wolves, respectively. This represents less than a 20% harvest rate from the area. The instigation of a registration system for aircraft use did not seem to lead to reductions in harvest rates, although many area hunters were unaware of, and/or confused about, the new regulation.

Progress Toward Meeting Project Objectives: Estimates of wolf distribution and abundance were made. Sealing of pelts and issuance of SDA permits was conducted. Analyses of harvest data will be finalized once sealing documents are computerized. Statistically sound estimates of wolf densities were not achieved because of lack of funding and manpower. Selected areas should be surveyed to attain wolf density estimates.

Subunits 20A, 20B, 20C, 20F, and 25C

Project Objectives and Activities: Determine population size by 1991, estimate impact of current population on prey species by 1991, improve the efficiency of wolf harvest by the public, and develop population objectives by 1991 for Subunits 20A and 20B.

Develop estimates of population size by 1992 and population objectives by 1993 in Subunits 20C and 20F. Determine population size and objectives by 1992 for Subunit 25C.

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

Work Accomplished During the Project Segment Period:

Subunits 20A and 20B: Fifty-five wolves (29 males, 19 females and 7 wolves of undetermined sex) were taken in Subunit 20A during FY 91. Thirty-six (65%) of the 55 wolves sealed from Subunit 20A were taken by 16 successful hunters under the authority of SDA permits for hunting wolves. Ninety SDA permits were issued for hunting in this area, however it is unknown how many hunters actually participated in hunting those subunits.

Of 9 wolves harvested by trapping in Subunit 20A, 6 were taken in snares and 3 were taken in traps. Five wolves were shot in September, presumably incidental to other big game hunting, and 4 wolves were shot in the spring using transportation methods other than aircraft. One wolf died because of capture efforts by researchers from the National Park Service.

Observations of pack sizes and locations in Subunit 20A were collected from trappers, pilots, and biologists. Those observations will be compiled and estimates of fall 1990 population sizes will be made during summer/fall 1991. Similarly derived estimates for Subunit 20A for fall 1989 were 180-220 wolves.

In Subunit 20B, 11 wolves (5 males and 6 females) were reported taken during FY91. Only 1 wolf was taken under the authority of a SDA permit. One wolf was trapped, 1 wolf was shot in September, presumably incidental to hunting other game. One wolf was shot using ground transport in the winter, and 7 wolves were snared.

A census of wolves in a 3,412 mi^2 area of western Subunit 20B was completed on 1 April 1991. Preliminary analysis of those results suggested a density of 1 wolf per 55-64 mi^2. Applying that density estimate to the entire subunit resulted in a spring 1991 wolf population estimate of 141-165 wolves in Subunit 20B. No aerial surveys were completed in Subunit 20A during FY91.

Subunits 20C and 20F: Hunters and trappers reported taking 35 wolves (15 males 17 females), and 3 of undetermined sex in Subunit 20C during FY91. Two additional female wolves that died of natural causes were salvaged and sealed. One of those wolves was radio-collared monitored by the National Park Service and died in an avalanche, the second was apparently killed by other wolves at the mouth of the Cosna River. Of the

hunter/trapper harvest, 14 were taken SDA by 5 successful hunters, 11 were trapped, 5 were snared, 4 were shot using ground transportation in winter, and 1 was killed in the September, presumably incidental to hunting for other game.

Hunters and trappers reported taking 4 wolves (2 males and 2 females) in Subunit 20F during FY91. Two wolves were snared, 1 was trapped, and method of take was not reported for 1 wolf.

Observations of pack sizes and locations in Subunits 20C and 20F were collected from trappers, pilots, and biologists. Those observations will be compiled and estimates of fall 1990 population sizes will be made during summer/fall 1991. Similarly derived estimates for Subunits 20C and 20F for fall 1989 were 175-225 and 75-110 wolves, respectively. No aerial surveys were completed in Subunits 20C and 20F during FY91.

Subunit 25C: Hunters and trappers reported taking 3 female wolves during FY91 in Subunit 25C. Two of those wolves were taken in September, presumably incidental to hunting for other game. One wolf was snared in winter.

Observations of pack sizes and locations in Subunit 25C were collected from trappers, pilots, and biologists. Those observations will be compiled and estimates of fall 1990 population sizes will be made during summer/fall 1991. Similarly derived estimates for Subunit 25C for fall 1989 were 75-110 wolves. No aerial surveys were completed during FY91 in Subunit 25C.

Progress Toward Meeting Project Objectives:

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

Project objectives were refined during FY91 as follows:

Establish estimates of population size based on aerial surveys for wolves in all subunits of the management area by 1993.

Use wolf and ungulate population estimates, combined with literature and survey data on predation rates, to derive models of the potential range of impacts wolf predation has on ungulates in each of the subunits within the management area by 1993.

Determine wolf population objectives which will reasonably meet public needs for consumptive and nonconsumptive uses of wolves and their prey in all subunits of the study area by 1993.

A survey-based wolf population estimate was derived in Subunit 20B during the reporting period. During the next period, survey-based estimates are planned for Subunits 20A and 25C. Funding for radio-collaring wolf packs to aid in population estimates was not

available. Interviews of hunters, trappers, pilots, and biologists were collected during the report period and will be used to derive spring 1991 population estimates.

Subunit 20D

Project Objectives and Activities: Manage the number of wolves to sustain a prey:wolf ratio of at least 30 moose or moose-equivalents per wolf.

Work Accomplished During the Project Segment Period: Management objectives were established specifically for Subunit 20D that included managing the number of wolves in Subunit 20D to sustain a prey:wolf ratio of at least 30 moose-equivalents per wolf going into winter.

Twenty-five wolves were sealed that were taken by hunters and trappers in Subunit 20D. Twenty-two wolves were harvested from Subunit 20D packs, and an additional 3 wolves were harvested in Subunit 20D from packs with territories predominantly outside Subunit 20D.

Relative abundance of wolves was estimated by using aerial surveys and trapper interviews. Minimum population estimates were 97 wolves in 13 packs during fall/winter 1990-91 and 77 wolves in 13 packs after closure of the 1990-91 hunting and trapping season.

Progress Toward Meeting Project Objectives: Harvested wolves were sealed and a population estimate was calculated for Subunit 20D. Prey population data, primarily that for moose, are inadequate to determine a prey:wolf ratio. A more accurate moose population estimate is needed to determine progress toward this objective.

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

Project Objectives and Activities:

Subunits 21B, 21C, and 21D: Maintain at least 50 moose per wolf until the moose population objective of 4,000 to 4,500 is attained in Subunit 21B. Maintain a stable fall wolf density of approximately 1 wolf/50 mi^2 and 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: 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).

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 (Hughes to Bettles). Maintain a stable fall wolf density of approximately 1 wolf/50 mi^2 and sustain an annual harvest of 30 wolves, while providing for nonconsumptive uses within the Gates of the Arctic National Park (the northern part of Unit 24 north of Bettles).

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

Work Accomplished During the Project Segment Period: Hunters and trappers harvested 61 wolves during the 1990-19 season. The question over legal methods for land and shoot harvest kept several hunters from participating. Other hunters quit hunting wolves after finding most of the wolves had poor pelt quality.

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

Subunit 21B - 65-75 wolves in 13-15 packs
Subunit 21C - 40-45 wolves in 6-7 packs
Subunit 21D - 190-215 wolves in 35-36 packs
Unit 24 - 420-450 wolves in 68-70 packs

The population estimates are higher in all areas because of both increases in wolf populations and better coverage during wolf surveys to include previously unsurveyed areas. A population estimate in the Nowitna National Wildlife Refuge was made. The estimate covered 2 subunits and the data included above. Eighteen wolves from 9 packs were darted and fitted with radio collars and have been tracked on a biweekly basis.

Progress Toward Meeting Project Objectives: The wolf radio-telemetry project in cooperation with the USFWS distribution data. The project has documented the major sources of mortality to wolves in the area.

Subunits 25A, 25B, 25D, 26B, and 26C

Project Objectives and Activities: Estimate the population size, trend, and distribution of wolves by 1991. Establish accurate harvest estimates by 1991 in Unit 25 and Subunit 26C.

Work Accomplished During the Project Segment Period: Hunters and trappers reported harvesting 16, 4, 22, 23, and 10 wolves from Subunits 25A, 25B, 25D, 26B, and 26C, respectively. The ratio of males:females in the overall harvest was 139:100, due to a greater take of males in Unit 26 (64% males vs. 36% females). Sixty-seven percent of

wolves taken in all areas were gray, 26% were black, and 7% were white. Fifty-four percent of the wolves were shot, 31% were trapped, and 15% were snared. Most hunters and trappers used snowmachines (61%) and the rest used aircraft (21%), dogsled, skis, or snowshoes (7%), highway vehicle (7%), and boat (5%). No aerial surveys were conducted nor were any wolves radio-collared in these subunits during this report period.

Progress Toward Meeting Project Objectives: Only project objective 1a was met in these subunits during fiscal year 1991. No work was attempted on project objectives 1b and 1c.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	69.0	23.5	92.5
Actual	69.0	18.9	87.9
Difference	0. 0	4.6	4.6

Explanation: Wolf surveys were not flown in Subunit 20D from the Delta office in Subunit 20D.

Submitted by:

John Trent and Kenneth Pitcher
Management Coordinator

Project Title: **Wolf Survey and Inventory**

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

Project Objectives: Establish and maintain viable wolf populations in Unit 18. Monitor harvests through the sealing program, contacts with the public, and an annual trapper questionnaire. Explain and promote compliance with the sealing requirement among local hunters and trappers. Monitor the size and population status of wolves and wolf packs in Unit 18.

Work Accomplished During the Project Segment Period: Sealing certificate data indicate that 1 wolf was harvested in Unit 18 during the segment period. In addition, sightings of wolves and of prey believed to be killed by wolves were reported by local trappers, hunters and pilots, and by Department and USFWS staff engaged in other activities.

A trapper questionnaire was sent to 200 local Unit 18 trappers and hunters. Results of that questionnaire from the 76 trappers and hunters that responded indicated that most people believed that wolf population status remained similar to last year. Wolves were still considered uncommon. However, wolf sightings increased during the segment period, especially near villages along the Kuskokwim River and the coast between Chevak and Toksook Bay.

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 Toward Meeting Project Objectives: Information reported by the staff and the 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, remained on the periphery of Unit 18 near Subunits 19A and 21E where ungulate densities are substantially greater. The overall Unit 18 population was estimated to range from 50 to 75 wolves in 6-7 packs. Several wolf kills of moose and caribou were documented during the previous 2 years. However, no sightings of predation activity were reported for the current segment period.

Sealing certificate data indicate that the reported harvest of wolves in Unit 18 was substantially lower in 1991 compared to 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 and the increase in reported harvest noted for 1988 and 1989 correlated with higher prices paid for some furs. During 1990 and 1991, 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 therefore are usually 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 wolf pelt sealing will be sent out during the upcoming season.

Project Location: Unit 22 (23,000 mi^2)
Seward Peninsula and that portion of the Nulato Hills draining west into Norton Sound.

Project Objectives: Establish and maintain viable wolf populations in Unit 22. Assess harvest, interview hunter/trappers, and seal all pelts brought in for sealing. Establish and maintain license vendors and sealers in all Unit 22 communities. Improve compliance with current sealing requirements through public communication and education.

Cooperate with reindeer herders to develop methods which will reduce adverse interactions between wolves and reindeer.

Develop updated wolf population management goals in consultation with the public, interested local organizations, and other agencies.

Work Accomplished During the Project Segment Period: Sealing certificate records indicate that 31 wolves (14 males, 11 females, 6 of unknown sex) were taken in Unit 22 during the report period by 12 hunter/trappers. Information on the residency status of those taking wolves indicated that 11 were residents of the unit and 1 was a resident of Alaska. A breakdown of the harvest by subunit is as follows:

Subunit 22A	21
Subunit 22B	8
Subunit 22D	2.

Twenty-six of the wolves were reportedly ground shot while the remaining 5 were reportedly taken in traps. Snowmachines were listed as the only transportation type.

A school program developed several years ago explaining the importance of wildlife management concepts, rules, and regulations was taught extensively in Unit 22 schools. Several trips were also made to villages explaining the need for regulations and harvest reporting as well as to assist license vendors.

Considerable time was expended answering and making phone calls, writing articles, mailing out regulatory materials, and supporting local license vendors.

Numerous meetings and impromptu discussions were held with reindeer herders and members of the National Park Service to discuss possible ways of reducing wolf/reindeer interactions.

Progress Toward Meeting Project Objectives: The magnitude of unreported harvests of wolves each year in Unit 22 is thought to be 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 as 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 have resulted in some of them 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 appear to be lower.

Actual development of a wolf management plan has not taken place, 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 western Brooks Range

Project Objectives: Maintain existing population levels of wolves in Unit 23. Conduct aerial surveys in selected drainages during late winter to assess population trend. Maintain the wolf sealing program to monitor the harvest. Send out an annual trapper questionnaire to obtain harvest and population assessment information.

Minimize adverse interactions between wolves and the public. Develop updated population management goals in cooperation with the public and other agencies.

Work Accomplished During the Project Segment Period: Eleven wolves were radio-collared in the Kobuk and Selawik River drainages in April 1991 as part of a cooperative study with the National Park Service (NPS) and the USFWS. The study is to provide improved population information concerning pack size and home range, mortality rates, productivity, and to assess their impacts on prey populations. A census was also planned as part of the cooperative study, but was not completed because of poor snow conditions.

Sealing certificate data indicated that 39 wolves (17 males, 15 females, and 7 unknown) were reported taken by hunters/trappers in Unit 23. Thirty-two wolves were ground shot, 3 were trapped, 3 were snared, and the method of take for 1 is not known. Four wolves

were taken using an aircraft as transportation, 1 using a horse, and 32 using a snowmachine, and the means of transportation for 2 wolves is unknown. Nearly half of the harvest (46%) was taken during February.

A considerable amount of time was devoted to maintaining the wolf sealing program we have in place. As in past years, we attempted to maintain at least 1 sealing agent in every community.

Progress Toward Meeting Project Objectives: Available data indicated that wolf population densities remained moderately high during the report period. Moose and caribou populations have also remained at high densities, and undoubtedly have contributed to the healthy status of the wolf population. The cooperative study with the NPS and the USFWS should yield improved population data and eventually a usable technique for conducting a wolf census.

As reported in past years, the quality of our harvest data needs to be improved. Many wolves taken by local residents, particularly those used domestically, are not sealed. Many local residents view many of the hunting and trapping regulations, and sealing requirements as excessively complicated and culturally inappropriate. Regulatory changes that would simplify the regulations and harvest reporting requirements should result in improved harvest reporting.

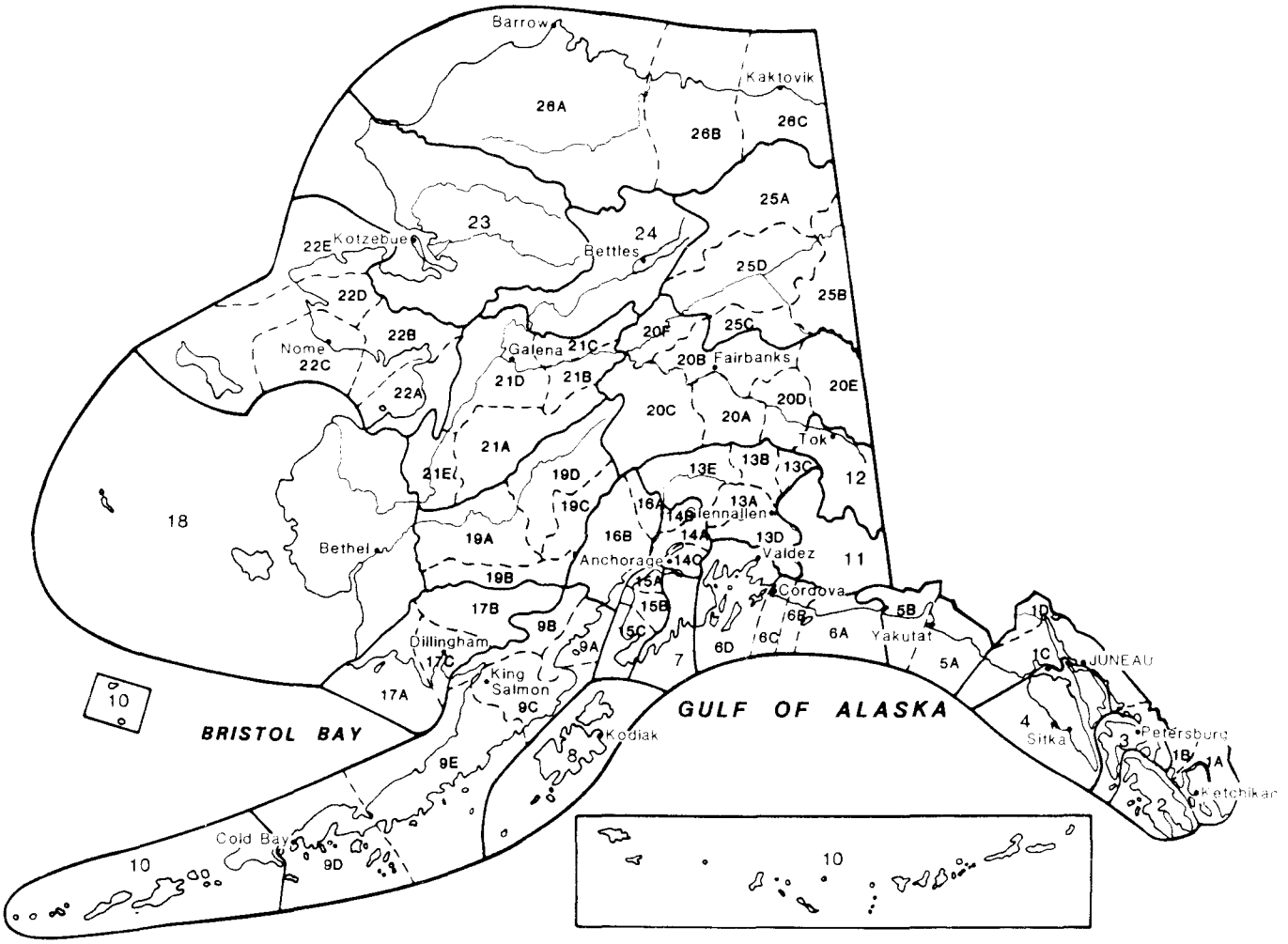
Project Location: Unit 26A (53,000 mi^2)
Western North Slope

Project Objectives: Establish and maintain viable wolf populations in Unit 26A. Monitor the harvest through the statewide sealing program. Interview hunters, guides, and pilots to collect harvest and population status information. Record wolf observations during moose counts and compare these to observations made during past counts. Review past information to obtain population trend information.

Work Accomplished During the Project Segment Period: During the 1990-91 report period, 7 wolves were sealed. Six (86%) were males and 1 was a female (14%). Six (86%) of the animals were ground shot and 1 (14%) was trapped. Six (86%) of the animals were taken using snowmachines for transportation and 1 (14%) was taken using an aircraft. The chronology of the harvest was: September - 1, November - 1, December - 1, and April - 4.

Knowledgeable individuals in each village were interviewed to determine how many wolves were harvested by local residents. A minimum of 8 wolves were taken by Atqasuk hunters, 9 by Wainwright hunters, 11 by Nuiqsut hunters, 3 by Point Lay hunters, 8 by Barrow hunters, and 79 by Anaktuvuk Pass hunters during 1990-91.

Alaska Game Management Units



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