WOLF PREDATION CONTROL, SUBUNIT 20B

A Status Report to the Board of Game

Alaska Department of Fish and Game

Game Division

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EXECUTIVE SUMMARY

This report summarizes the background of moose, wolf, human use, and habitat relationships in Game Management Unit 20B, discusses the current status of moose:wolf relationships, and outlines general management alternatives.

Moose numbers declined from a relatively high population in the mid-60's to a low of about 3,000 in 1978. The decline was precipitated by severe winters and aggravated in some areas by hunting. Wolf numbers increased in the late 1960's to the early 1970's and remained relatively high. Wolf predation control was authorized by the Commissioner in 1980. Department wolf removal was limited until 1982-83, when significant numbers of wolves were taken from central Unit 20B, resulting in a moose:wolf ratio of about 50:1. The program was suspended in 1983-84, and reactivated in western 20B in 1984. Moose:wolf ratios have improved in central and western 20B. Moose numbers have increased in central 20B and stabilized or increased slightly in western 20B, but are chronically low in eastern 20B.

Habitat and browse use assessments in 1978 and 1982 indicated that habitat, or food, is not limiting the population, but long-term habitat conditions must be considered.

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INTRODUCTION

Purpose

The Board of Game requested that the department provide at its fall 1985 meeting a status report on the wolf predation control program authorized for Game Management Subunit 20B (20B). This report briefly reviews the recent history of prey:predator relationships, habitat considerations, human use of prominent wildlife species, and actions by the board and the department relating to 20B.

General characteristics of 20B

Subunit 20B includes about 8,700 mi^2 surrounding Fairbanks on three sides. Immediately south of 20B lies Subunit 20A. The habitat in 20B ranges from alpine tundra in higher parts of the Tanana Hills to extensive river bottoms and flats such as the lower Chena and Salcha Rivers, the Tanana River valley, and Minto Flats. Most of 20B provides habitat for moose, wolves, black bears, and other wildlife species common to interior Alaska. Caribou formerly ranged through much of 20B, but presently use only the eastern portion. Grizzly bears are common in uplands and occasionally occur in lowland areas. Forest habitat has been strongly influenced by wildfire in the past. During the last 30 to 40 years, fire suppression has reduced the influence of wildfire and new stands of shrubs and young deciduous forests are scarce. However, some minor wildfires, man-caused fires, and development activities have continued to produce some shrub and young forest habitats.

Prey and predator populations

The recent history of moose, caribou, and wolf populations in 20B has been reviewed by the department on several occasions in wolf predation control proposals as well as in various department reports and publications (Appendix I). It has been noted that moose numbers declined dramatically between 1965 and 1980. Severe winter conditions precipitated the decline which was then intensified by increased predation and continued high harvests by people in the more accessible areas. The Fortymile Caribou Herd, which ranges into 20B, declined during the same period for similar reasons. Wolf numbers were increasing generally as a result of years of abundant prey, relief from previous extensive control programs, and in 1972, the prohibition of general aerial shooting. Although few data were available, it appears that grizzly bear numbers were also increasing in the Tanana Hills, probably in response to the end of federal wolf control efforts

before statehood, which included the use of poison. Moose numbers in 20B dropped from about 15,000-20,000 in the early 1960's to about 3,000 in 1978. The Fortymile Caribou Herd dropped from an estimated 50,000 in 1960 to about 4,000 in 1975. Wolf numbers in 20B were estimated at 225 in 1972-73; this was the first estimate made of the wolf population in this area. In response to these changes, the department recommended and the board passed regulations significantly reducing hunting opportunities for moose and caribou in 20B (and throughout the Interior) beginning in the mid 1970's. Moose and caribou harvests dropped dramatically.

The department reviewed these circumstances in Issue Paper 79-07, and discussed recommendations for wolf predation control with the board at its December 1979 meeting. Commissioner Skoog approved the 20B wolf predation control program in February 1980. Since then the program has been discussed and reviewed by the board on several occasions. A series of reports to the board outlined in some detail the circumstances reviewed above, the relationship between habitat carrying capacity and moose numbers, the extent and results of predation control work done, the status of moose and wolf populations, and options describing the probable results of several levels of wolf predation control. In December 1983, the department summarized all programs for the period 1975-1983. Predator:prey considerations were extensively reviewed in July and September 1984 along with implementation plan recommendations, and the board took action approving a 20B predator reduction program in December 1984. The program was reviewed and remained authorized in spring 1985.

STATUS OF 20B PROGRAM

Prior to initiating wolf predation control in 20B, the department accumulated information on moose and wolf populations and on habitat conditions. The overall status of populations is mentioned above. In addition to information on the general level of moose populations, survey data indicated that calf production observed in fall 1975 had dropped to 23 calves per 100 cows, and yearling survival was chronically poor, as indicated by a ratio of 2 to 5 yearling bulls per 100 cows.

The question of habitat availability and use arose early in the department's review of the 20B data. From aerial survey work, it was known that numerous lowland and upland areas were used seasonally by moose, but browse conditions were not well understood. In spring 1978, browse use transects were established at 9 sites in the Chena and Salcha River drainages. These sites were shrub-dominated stands in former burns used extensively by moose. In all areas browse was lightly to moderately used, indicating that available food was not in short supply under normal winter conditions. These early assessments were followed by examining browse use at 13 riparian sites in the Chena River

and Goldstream Creek drainages in 1982. Although moose numbers had increased since 1978, light browse use was found in the Chena drainage, and moderate browsing was found in Goldstream.

Browse use in the 1983 Rosie Creek burn near Fairbanks has been monitored on 12 sites since fall 1983. Moose heavily browsed stands of vigorous aspen and birch resprouting in 1983-84, but used these areas lightly in 1984-85. The difference in use may have been the result of greater snow depth in 1984-85, which may have inhibited access to the area by moose.

Based on present information about distribution, availability, and use of habitat, it appears that habitat in 20B can easily support twice the present moose population, or about 10,000 animals. The moose population level of 10,000 animals was proposed as the goal for the wolf predation control program which was reviewed and approved by the board in 1984-85.

Although wolf predation control was authorized in February 1980, department efforts to remove wolves were limited prior to 1982-83. Public aerial shooting was authorized from winter 1980 through winter, 1982-83. In 1982-83, the department shifted control efforts from 20A to the Chatanika and Chena drainages of central 20B; numbers of wolves were reduced significantly in these drainages. It was estimated that following this effort in central 20B, moose numbered 3,400 to 3,500 with about 70 to 80 wolves for a ratio of about 50:1, a ratio providing for moose population growth.

The program was suspended in 1983-84 due to legal action. In winter 1984, predation control was undertaken in western 20B, the Minto Flats-Manley Hot Springs area. Prior to suspension of the program in early 1985, 26 wolves were removed. Although the 20B program was reviewed and continued by the board in spring 1985, no further predation control has been undertaken.

The fall 1984 moose population estimate for 20B is 5,000, with about 1,900 in western 20B, that portion west of Fairbanks. Moose numbers in central and western 20B are probably increasing, although the rate of increase is slow in the western portion. A moose population stratification of 20B is planned for November 1985, and will result in an up-dated moose population estimate.

As moose numbers increased in 20B, additional hunting opportunity was allowed. From a low of 35 moose harvested in 1976, the annual harvest has risen to about 325 bulls or about 6% of the population. However, a conservative permit hunt still limits the harvest in the Minto Management Area. Most of the increased moose harvest has taken place in central 20B, where moose numbers have increased most. About 100 bulls are taken in all of western 20B. There is no open season for cow moose in 20B. At least 52 moose were killed by vehicles in 20B during winter 1984-85, a year of unusual snow depth. Less than 15 were killed by trains.

Twenty-six were known to have been taken illegally. Total known moose mortality attributable to man is about 8% of the estimated moose population.

An estimated 180-220 wolves occupied 20B in fall 1984, distributed in 27 to 33 packs averaging about 6 per pack, plus about 20 wolves not in packs. Wolf density was estimated at 1:40-50 mi^2. In western 20B, the fall 1984 population prior to control was estimated at 87 to 101 in 13 to 16 packs with a density of 1:38-44 mi^2. Systematic surveys have not been done in eastern 20B (Salcha drainage). General observations from pilots and hunters indicate that wolves are abundant. Wolves killed by various means in all of Unit 20B are reported in Table 1.

The reported number of wolves killed in 20B is probably an underestimate. There is a growing perception that people using aircraft legally or otherwise may be increasingly reluctant to report wolves killed. If true, the cause is unknown but could be related to a concern that controversy may force prohibition of presently legal methods. Based on past experience, it is estimated that the total 20B wolf kill is at least 49, and possibly as high as 59.

Wolves were removed by the department and the public from 8 of the 13-16 packs occurring in the western portion of Subunit 20B during winter 1984-85. In addition, one wolf was taken that could not be identified to a specific pack. About 68 percent of the wolves taken were pups. Fifty-six percent were female. Most were taken from the eastern side of Minto Flats, lower Goldstream Creek, and the lower portion of the Chatanika River. A summary of wolves taken in western 20B is shown in Table 2.

Wolf mortality generally must exceed 30 to 40 percent, depending on the ecosystem involved, to result in a population decline. The take by public hunting, trapping and "landing (aircraft) and shooting" methods has averaged 8-10 percent (18 wolves) over the 1980-1985 period. The harvest by these methods has not been sufficient to limit the size of the wolf population. The combined kill from all methods, including public aerial shooting and department efforts, has averaged about 40 wolves per year for the same period. Inclusion of an estimate of the unreported kill would raise the average to about 45-50 per year. A harvest of 40-50 wolves per year comprises an annual average reduction in the wolf population of 18-22 percent if the population were 225 wolves, and 23-29 percent if the population were only 175 wolves. This mortality level may have kept the population from growing, but probably did not result in an overall reduction in the population.

Table 1. Summary of reported wolf kill, Subunit 20B, 1980-85.

Method of take	Subunit portion	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985
Department Trapping and Aerial Shooting	West	1	2	5	4	26
	Remainder	10	0	26	0	0
	Subtotal	11	2	31	4	26
Public Hunting and Trapping	West	2	9	9	5	8
	Remainder	14	18	13	8	5
	Subtotal	16	27	22	13	13
Public Aerial Shooting	West	11	2	9	-	-
	Remainder	7	2	1	-	-
	Subtotal	18	4	10	-	-
Grand Total		45	33	63	17	39

Table 2. Pack identity and number of wolves killed*, western 20B, 1984-85.

Pack name	Fall 1984 pack size	Pups killed	Adults killed	Total kill	Number remaining
Baker Creek	7	-	-	3	4
Big Minto Lake	4	-	1	3	1
Bonanza Creek	3	1	0	1	2
Lower Chatanika	10	8	1	9	1
Lower Tolovana	10-12	1	1	4	6-8
Standard Creek	6	4	1	5	1
Tatalina River	14	7	3	11	3
West Fork Tolovana	7	0	2	2	5
Single wolf	-	-	1	1	0

* This table includes 5 wolves assumed killed, but not reported.

Because wolf control efforts, whether by department staff or public aerial shooting permits, have occurred only in some of the years between 1979 and 1985 and have been directed at different portions of the subunit during that time, it is more meaningful to evaluate the mortality by area and year. In winter 1982-83, the combined kill of wolves (from all sources) from the central portion of Subunit 20B was about 51 percent of the estimated number of wolves in that 5,500 square mile area. During winter 1984-85, the combined kill from western 20B (3,800 square miles) was about 36-41 percent of the estimated wolf population. Reductions of this magnitude probably resulted in temporary declines in those wolf populations.

Moose:wolf ratios provide a means of assessing the impact of wolf removal on the primary prey population. Overall, the fall 1984 ratio was 23-28 moose per wolf in 20B. Adjusted for mortality and recruitment, similar range of ratios is estimated for fall 1985. Within this range of values, wolf predation can be the primary factor controlling moose numbers. Whether moose numbers remain stable or decline depends on the combined effect of wolf predation and other factors such as hunting, alternate prey for wolves, winter severity, and harvest strategies.

In western 20B, the fall 1984 moose:wolf ratio was 19-22:1. Wolves were again removed in November 1984. Taking into account wolf mortality from control work and other sources, and adjusting for recruitment, the estimated 1985 fall ratio is 33-44 moose per wolf, depending on which estimate of the unreported wolf harvest is used in calculating the total kill.

If a ratio of more than 30 moose per wolf exists, predation can be significant but may not necessarily limit growth of the moose population. Assuming this ratio is maintained, the moose population in western 20B is likely to either remain stable or slowly increase if other sources of mortality are not excessive and adequate food is available.

Discussion

Most factors affecting moose population size presently favor a moose population increase in central and western 20B. Although combined known moose mortality from hunting, poaching, and accidents has increased, it is near the mortality level described in the 20B implementation plan. However, the unknown kill of cow moose is of concern and efforts should continue to minimize these mortalities in 20B.

Habitat availability and condition do not appear to be limiting moose numbers at this time. The extent and distribution of habitat supplying food and cover appears adequate to support a much larger moose population for a number of years. Judging from estimates of historic moose numbers, 20B can easily support 10,000 moose, given the present and anticipated future habitat

conditions. Like most of the state, 20B is now under fire management plans which allow for increased wildfire in areas where human life and property are not threatened. Conversely, the plans ensure more attention to wildfire in settled areas. Prescribed burns and mechanical habitat manipulation may become essential in future management programs.

Trapping and ground shooting of wolves can contribute to an overall level of wolf mortality in some years that may slow or halt wolf population growth, particularly in areas with good access. Where moose numbers are not likely to increase without wolf reduction, it appears unlikely that trapping and ground shooting, by themselves, will remove enough wolves to allow recovery of moose. Present trapping seasons and bag limits are very liberal. Trapper education may facilitate some increased harvests of wolves but the long-term effectiveness of such a program is uncertain.

In central 20B, and to a lesser extent western 20B, moose numbers appear to have increased, or at least stopped declining, following wolf predation control. This has occurred along with increased harvest of moose by people and, in 1984-85, some increase in accidental deaths of moose. In eastern 20B it appears that moose numbers are chronically low. An updated assessment of moose numbers in 20B is underway as of November 1985. Moose numbers in most of 20B are likely to decline if mortality, especially of cows, increases.

There are several options for moose managment with respect to predation control of wolves in 20B, depending on management goals to be pursued. Two basic options are:

1) No wolf control. Normal hunting and trapping of wolves would be maintained, possibly augmented by trapper education. Long range moose habitat maintenance/improvement would be pursued principally through wildfire management. Hunter harvest would be maintained at or below present levels. Our best estimate of the impacts on moose populations would be stabilization at present levels or, more probably, a slow decline in moose populations.

2) Wolf control per present management plan, with a goal of 10,000 moose in 20B. Our best projection is that this goal could be realized only with a program that includes private trapping (augmented by an education program), maintenance of moose harvest limitations, reducing wolf numbers by board approved predation control programs, and habitat maintenance/improvement as opportunities arose. Under this management plan, hunter harvests would be maintained at a conservative level to enhance population growth, but could

eventually be raised to a level that is about twice that which occurred in 1984-85.

While this report has focused on moose and wolf populations, predator:prey relationships, and habitat conditions, it is noteworthy that (1) the Fortymile Caribou Herd has increased during the time human use was constrained and predation control was in effect; and (2) presently there are no practical means to quickly enhance caribou range quality. Also, in most of 20B, positive responses by moose populations to removal of wolves suggests that bears are not a primary limiting factor on moose populations in that area.

APPENDIX 1. List of Reports Relating to Wolf Predation Control in Game Management Subunit 20B.

Issue Paper 79-07.

Wolf Management Programs in Alaska 1975-1983.

Implementation Plan for the Control of Predation by Wolves in Game Management Unit 20B.

Wolf Predation Control Fact Sheet - 20B (revised 3/21/85).