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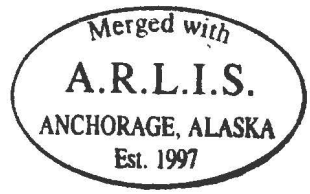

WOLF REPORT

by

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Volume XIII
Project Progress Report
Federal Aid in Wildlife Restoration
Project W-17-6, Jobs 14.3R, 14.4R, 14.5R and 14.6R (2nd half) and
Project W-17-7, Jobs 14.3R, 14.4R and 14.5R (1st half)

(Printed April, 1975)

JOB PROGRESS REPORT (RESEARCH)

State: Alaska

Cooperators: Robert O. Stephenson (Arctic) and Loyal J. Johnson (Southcentral)

Project Nos.: W-17-6 and W-17-7 Project Title: Big Game Investigations

Job No.:	XIVA-14.3R	Job Title:	Characteristics of Exploited Wolf Populations
Job No.:	XIVB-14.4R	Job Title:	The Spring and Summer Food Habits of Alaska Wolves
Job No.:	XIVB-14.5R	Job Title:	The Condition and Characteristics of Ungulate Prey Taken by Wolves
Job No.:	XIVB-14.6R	Job Title:	Characteristics of Wolf Den Sites

Period Covered: January 1, 1974 through December 31, 1974

SUMMARY

Food habits data obtained from wolf scats collected at two dens and a rendezvous site in Southcentral Alaska and at three dens in Arctic Alaska are presented. Data from both areas indicate that there is a good deal of variation in the frequency of occurrence of ungulates and small mammals in the summer diet of wolves. Data from Southcentral Alaska show that small mammals comprised a significant portion of the diet with moose and caribou (both calves and adults) occurring at various rates but in aggregate constituting the major portion of the diet. Notable is the occurrence of snowshoe hare remains in 35 percent of 157 scats collected at a wolf den on Mt. Drum. At two dens on the North Slope, caribou (both calves and adults) were the predominant food item while at a third den the remains of microtines and ground squirrels occurred in 84.7 and 25.3 percent, respectively, of 190 scats, indicating that small mammals comprised the bulk of the diet of wolves using that den. A review of the changing status of the wolf population on the North Slope from 1971 to 1974 and data on numbers and sex and age composition of wolves harvested by residents of Anaktuvuk Pass during this period are also presented. These data indicate that the wolf population in the vicinity of Anaktuvuk Pass increased from a density of approximately 1 wolf per 124 square miles in spring 1971 to 1 wolf per 75 square miles in spring 1973. In spring 1974 residents of Anaktuvuk detected no major change in population status in the immediate vicinity of Anaktuvuk Pass. However, in the eastern Arctic and on the Colville and Chandler Rivers northwest of Anaktuvuk there were indications of a reduced wolf population level. There was evidence of illegal aerial hunting in both areas.

CONTENTS

BACKGROUND

Indications of a very low population of wolves (*Canis lupus*) on the North Slope in 1970 prompted the initiation of population monitoring and other studies of wolves in the area. During the period of study the population has increased from a level of about 1 wolf per 125 square miles (1971) to a level of roughly 1 wolf per 70 square miles (1973). Concurrent with population level studies of wolves, which were based on ground and aerial observation of wolves and their tracks, a good deal of effort was devoted to recording the knowledge of the wolf possessed by the Nunamiut Eskimos of Anaktuvuk Pass. While both of these efforts in northern Alaska will continue to some degree, the emphasis in wolf studies will be shifted to Game Management Unit 20A adjacent to Fairbanks because of the critical situation with regard to the big game populations in this area and their use by hunters and wolves. Most of the North Slope population level data gathered between 1970 and the present have been presented in previous reports (Stephenson and Johnson 1972, Stephenson and Johnson 1973, Stephenson and Sexton 1974), and a final report on the characteristics of wolf den sites based on data gathered in the Arctic study has been completed (Stephenson 1974). Because work in the vicinity of Anaktuvuk was conducted with limited aircraft support the carcasses of only a few wolf-killed ungulates were located and little progress has been made in that aspect of the study. Some information relating to this subject has been gathered from Nunamiut hunters and is included in a report on the knowledge of wolves possessed by the Nunamiut Eskimos which is in preparation. This report includes more recent data on the 1973 and 1974 harvest of wolves in Anaktuvuk Pass and summer food habits data derived from scats collected at six dens on the North Slope and in Interior and Southcentral Alaska.

OBJECTIVES

To assess wolf population levels and determine the characteristics of exploited wolf populations in Arctic and Southcentral Alaska.

To determine the food habits of wolves during the spring and summer in Arctic and Southcentral Alaska.

To determine the physical condition and characteristics of ungulate prey taken by wolves in Arctic and Southcentral Alaska.

To characterize the ecology of wolf den sites in Arctic and Southcentral Alaska.

PROCEDURES

In the Arctic study, wolf population estimates were based primarily on ground observations of wolves and their tracks made by about 10 Nunamiut hunters and Stephenson, and on a limited amount of aerial survey work carried out in early and late winter in the 3,600 $mi.^2$ area around Anaktuvuk Pass. Details of the methods used to avoid duplication are included in a previous report (Stephenson and Johnson 1972).

The summer food habits data contained in this report are derived from scats collected at dens and rendezvous sites. These areas were thoroughly searched, all scats being collected and stored in individual plastic bags for later analysis in the laboratory. The method of analysis has been described in a previous paper (Stephenson and Johnson 1972). The results of the analysis are expressed as frequency of occurrence which is the percentage of the total number of adult or pup scats in which a particular food item occurred.

FINDINGS

Summer Food Habits of Wolves

Scats collected at a rendezvous site near a den on the Delta River in Game Management Unit 13 and at three dens in Game Management Unit 26 were analyzed in 1974. Data obtained from these scats and from two scat collections obtained in southcentral Alaska in 1971 and 1972 by Loyal Johnson are discussed below.

Data from the Delta River rendezvous site (Table 1) suggest that the diet of wolves in this area consisted primarily of moose (*Alces alces*) and small mammals with a wide variety of other items included.

The scats from Mt. Drum (Table 2) showed a relatively high occurrence of snowshoe hare (*Lepus americanus*) in these wolves' diet. Prey remains at the den site consisted primarily of hare feet. It appears that at this den hares were an important part of the diet. Adult and calf caribou (*Rangifer tarandus*) and calf moose appeared to comprise the bulk of the diet.

The scats from the Sinona Lake den (Table 3) indicate that calf moose were the major food item in the diet of wolves using this den. Small mammal remains were notably absent in the scats.

Table 1. Incidence of prey in 60 wolf scats collected September 27, 1974 at a rendezvous site near a den on the Delta River, GMU 13B.

	35 Adult Scats		25 Pup Scats		Total - 60 Scats	
Item	No.	Percent	No.	Percent	No.	Percent
Moose adult	13	37.1	5	20.0	18	30.0
Moose calf	4	11.4	4	16.0	8	13.3
Caribou adult	4	11.4	3	12.0	7	11.6
Caribou calf	6	17.1	4	16.0	10	16.7
Dall sheep	0	0.0	1	4.0	1	1.6
Snowshoe hare	2	6.0	8	32.0	10	16.7
Microtine	15	42.8	5	20.0	20	33.3
Ground squirrel	1	3.0	6	24.0	7	11.6
Fish	1	3.0	0	0.0	1	1.6
Bird	1	3.0	0	0.0	1	1.6
Vegetation	1	3.0	0	0.0	1	1.6
Wolf	1	3.0	0	0.0	1	1.6

Table 2. Incidence of prey in 157 wolf scats collected at a wolf den on Mt. Drum, Alaska, July 26, 1972.

Item	Pup Scats n=100		Adult Scats n=57		Total 157 scats	
	No. Scats	% Occurrence	No. Scats	% Occurrence	No. Scats	% Occurrence
Moose adult	3	3.0	6	10.6	9	5.7
Moose calf	17	17.0	9	15.8	26	16.6
Caribou adult	25	25.0	14	24.6	39	24.8
Caribou calf	26	26.0	17	29.8	43	27.4
Dall sheep	1	1.0	2	3.5	3	1.9
Snowshoe hare	42	42.0	14	24.6	56	35.7
Marmot (*Marmota caligata*)	3	3.0	1	1.7	4	2.5
Bird	0	0.0	1	1.7	1	0.6
Wolf fur (other than trace)	1	1.0	0	0.0	1	0.6

Table 3. Incidence of prey in 79 wolf scats collected at a wolf den at Sinona Lake, Alaska, August 24, 1971.

Item	Pup Scats n=56		Adult Scats n=23		Total n=79	
	No. Scats	% Occurrence	No. Scats	% Occurrence	No. Scats	% Occurrence
Moose adult	8	14.0	10	43.0	18	23.0
Moose calf	42	75.0	11	48.0	53	67.0
Caribou calf	1	2.0	0	0.0	1	1.0
Snowshoe hare	3	5.0	7	30.0	10	13.0

Food remains at the den on the Sagavanirktok River (Table 4) consisted of a lynx skull (*Lynx canadensis*), a human skull (*Homo sapiens*) and the leg bones of an adult moose. This den was used during the summer of 1973 by 3 gray adult wolves and 15 pups. The large number of pups strongly suggests that two litters were reared together at this den. The predominance of small mammals in these scats is surprising in view of the fact that the den is located only a few miles from Atigun Canyon which supports a large number of Dall sheep (*Ovis dalli*) and is in an area in which caribou occur regularly in the spring. Microtine remains from 10 randomly selected scats were identified to species and 3 species including the tundra vole (*Microtus oeconomus*), brown lemming (*Lemmus trimucronatus*) and collared lemming (*Dicrostonyx groenlandecus*) were identified. This suggests that the prevalence of microtine remains was not due to a population "high" in a single species. It appears that small mammals were the most important prey for these wolves and that larger prey were relied upon to a lesser degree. The presence of a lynx skull is notable since this area lies about 50 miles north of the normal range of this species. The skull of the human was found on the surface of the ground about 50 feet from the den entrances. As evidenced by heavy tooth wear, the person was quite old at death and the skull was extremely weathered. It most probably originated from a shallow grave constructed by Eskimos many years ago.

The only food remains found at a den along the upper Canning River (Table 5) were the leg bones of an adult caribou and an adult moose. This den was used by two adult wolves and five pups (all gray) during the summer of 1973. These wolves were seen at the den in June and again in July by Department biologist Harry Reynolds. The relatively small number of scats found there is surprising, but may be due to the fact that the den is situated adjacent to unstabilized sand dunes and eolian soil movement could easily have covered a large number of the scats.

Food remains at a den on the Arctic coastal plain north of Sagwon (Table 6) consisted of the skeletal remains of two adult caribou and an adult male wolf judged to have been from 5 to 7 years of age at death, based on the degree of tooth wear. The cause of its death is not known but disease, intraspecific strife and human hunting are all possibilities. This den was observed for 10 days prior to the time the female wolf moved the pups to another den. Three adults and six pups used the site. The pup scats should represent their diet from the time they were weaned to the time they left the den (from the age of about four weeks to the age of six weeks assuming a May 25 birthdate). I observed these wolves for 10 days prior to their departure and saw no evidence that the pups had begun hunting small mammals in the vicinity of the den, probably accounting for the greater frequency of occurrence of small mammal remains in adult scats. Small bands of caribou (almost exclusively bulls and yearlings) were common in this vicinity during the denning period and constituted the major food of both pup and adult wolves at this den.

The results from the three dens on the North Slope are in general agreement with those cited in a previous report (Stephenson and Johnson

Table 4. Incidence of prey in 190 wolf scats collected June 15, 1974 at a wolf den on the Sagavanirktok River near Atigun Canyon.

	54 Adult Scats		136 Pup Scats		Total - 190 Scats	
Item	No.	Percent	No.	Percent	No.	Percent
Caribou adult	18	33.3	16	11.8	34	17.9
Caribou calf	3	5.5	9	6.6	12	6.3
Sheep	6	11.0	11	8.0	17	8.9
Microtine	41	76.0	120	88.0	161	84.7
Ground squirrel	13	24.0	35	25.7	48	25.3
Bird	3	5.5	0	0	3	1.5
Wolf fur	1	1.9	0	0	1	0.5

Table 5. Incidence of prey in 59 wolf scats collected June 18, 1974 at a wolf den on the upper Canning River.

	45 Adult Scats		14 Pup Scats		Total - 59 Scats	
Item	No.	Percent	No.	Percent	No.	Percent
Caribou adult	21	46.7	7	50.0	28	47.5
Caribou calf	8	17.8	1	7.1	9	15.3
Dall sheep	17	37.7	4	28.6	21	35.6
Microtine	18	40.0	6	42.8	24	40.7
Ground squirrel	4	8.9	3	21.4	7	11.9
Fish	3	6.6	0	0.0	3	5.1
Bird	2	4.4	2	14.3	4	6.8
Vegetation	1	2.2	0	0.0	1	1.7

Table 6. Incidence of prey in 82 wolf scats collected July 9, 1974 at a wolf den on the arctic coastal plain north of Sagwon.

	39 Adult Scats		43 Pup Scats		Total - 82 Scats	
Item	No.	Percent	No.	Percent	No.	Percent
Caribou adult	16	41.0	27	62.8	43	52.4
Caribou calf	7	17.9	7	16.3	14	17.1
Microtine	18	46.2	6	14.0	24	29.3
Ground squirrel	4	10.3	1	2.3	5	6.1
Arctic fox (*Alopex lagopus*)	1	2.6	0	0.0	1	1.2
Bird eggs	2	5.1	1	2.3	3	3.6

1972) which suggest that small mammals occur regularly in the summer diet of wolves in this area and in some cases may comprise as much as 50 percent of the diet. The scats from the Sagavanirktok River den show the greatest preponderance of small mammals in the summer diet of which I am aware. In this case microtine rodents and ground squirrels (*Spermophilus undulatus*) apparently comprised the bulk of the diet. The summer food habits data presented above and those collected previously do show, however, that big game is the major item in the summer diet of wolves in this region.

Wolf Population Status - North Slope

An effort to evaluate changes in wolf population density in the vicinity of Anaktuvuk Pass was begun in late winter 1971. Population estimates were based primarily on ground observations of wolves and their tracks made by about 10 Nunamiut hunters and myself and on a limited amount of aerial survey work carried out in early and late winter in the 3,600 $mi.^2$ area around Anaktuvuk Pass. The last estimate of numbers was made in spring 1973. Population estimates made during this period are included in Table 7. During these years the annual harvest of wolves by residents of Anaktuvuk Pass was monitored as well and these data are presented in Table 8.

Density estimates suggest that this wolf population increased from a low density of 1 wolf per 124 square miles in spring 1971, to roughly 1 wolf per 65 to 75 square miles in spring 1973. Observations made by residents of the area during fall 1973 suggested no further increase, indicating that the increase in population may have slowed or stopped. In spring 1974 observations by residents of Anaktuvuk again indicated there had been no change in population. In April 1974 moose surveys were flown on the Chandler, Anaktuvuk and Colville Rivers. Wolf sign was relatively scarce, in marked contrast to conditions the previous winter, and no wolves were seen during these surveys. The carcass of an adult male wolf which had been aerially shot was found on the Colville River and indications of illegal aerial hunting were reported by Nunamiut trappers operating in the Killik River Valley and by a reliable guide who frequents the northcentral Brooks Range, suggesting that this may have caused a reduction in the number of wolves in certain areas. The area in the vicinity of Anaktuvuk was apparently not affected by aerial hunting. Further indications of illegal aerial hunting were noted in the eastern part of the North Slope between the Canning and Sagavanirktok Rivers. Biologists associated with Renewable Resources, Inc. noted that in comparison to the previous summer wolves were quite scarce in this area and that most wolves that were seen showed a great deal of fear of aircraft which was also in contrast to observations made during the previous year. Rumors of illegal aerial hunting in this area were also noted. Thus, it appears that the wolf population in some areas of the North Slope may have decreased due to illegal aerial hunting and possibly other factors.

The 1973-74 harvest of wolves by residents of Anaktuvuk Pass was slightly lower than that of previous years. As in the previous two years the data show a preponderance of pups suggesting that reproduction has remained at a level commensurate with the harvest in the area. It

Table 7. Summary of wolf densities estimated for the northcentral Brooks Range, 1971, 1972 and 1973.

Season and Year	No. Wolves Enumerated*	Area (sq. mi.)	Density in sq. mi. per Wolf	Average Pack Size	Gray:Black Ratios
Spring 1971	29	3,600	1 wolf/124 sq. mi.	4.0	100:30
Fall 1971	45	3,600	1 wolf/80 sq. mi.	6.5	100:40
Fall 1972	315	30,000	1 wolf/95 sq. mi.	estimated from occurrence of active dens	
Fall 1972	55	3,600	1 wolf/65 sq. mi.	6.5	100:30
Spring 1973	51	3,600	1 wolf/76 sq. mi.	5.6	100:11

* Based on direct observations supplemented by the occurrence of tracks except for Fall 1972 estimate for 30,000 sq. mi. area which was based on the spatial distribution of active dens.

Table 8. Sex and age composition of wolves harvested by residents of Anaktuvuk Pass, winters 1971-72, 1972-73, and 1973-74. Animals of unknown sex and age were not included in the calculation of percentages. The adult classification includes wolves over one year of age (juveniles and adults).

Trapping Period	Male Pups		Female Pups		Male Adults		Female Adults		Total Pups		Total Adults		Unk.	Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
1970-71	--	--	--	--	--	--	--	--	--	--	--	--		20*
1971-72	10	43	7	30	6	26	0	0	17	74	6	26	8	31
1972-73	24	41	11	19	15	25	9	15	35	59	24	41	5	64
1973-74	9	26	7	21	13	38	5	15	16	47	18	53	20	54
Total	29	25	25	22	34	29	14	12	68	59	48	41	33	149

* Approximate total of wolves taken, records of age and sex were not obtained in this year.

is interesting to note that only 12 percent of the 116 wolves of known sex and age taken by residents of Anatuvuk during the past 3 winters have been females older than 1 year of age. The preponderance of males has been discussed in a previous report (Stephenson and Sexton 1974). The gray:black ratio of wolves in the 1973-74 harvest was 100:11 as in the previous year.

RECOMMENDATIONS

Attempts should be made to gather scats and food remains from recently used dens in both the Arctic and Interior regions, with emphasis on the Interior.

Wolf populations should be monitored in Interior Alaska by means of aerial surveys carried out annually on selected areas representative of habitat-faunal associations in the region.

ACKNOWLEDGMENTS

Thanks are again extended to the residents of Anaktuvuk Pass for their cooperation in the study, and especially to Bob Ahgook and Justus Mekiana for sharing their extensive knowledge of wildlife and otherwise assisting in every aspect of this study.

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