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Distribution, Movements and Seasonal Use Areas of Caribou in the White Mountains National Recreation Area, Alaska, 1982-1988

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INTRODUCTION

Caribou use in the White Mountains National Recreation Area (WMNRA) (Figure 1) has been documented historically. The Fortymile herd wintered in the area from 1905 through the early 1940s (Skoog 1956) (Figure 2). The White Mountains area was also the principal calving area for the Fortymile herd until 1963 (Davis et. al. 1978), with the upper ridges of Bear Creek, Quartz Creek and Champion Creek most heavily used (Olson 1956) (Figure 3). Caribou observations in the White Mountains and adjacent areas were reported by hunters and others during the late 1970s (Jennings, pers. comm.). Additional observations of caribou accompanied by newborn calves were made by the Alaska Department of Fish and Game (ADF&G) in late May of 1982 (Haggstrom, pers. comm.), leading to speculation that a separate, non-migratory group of caribou was inhabiting the White Mountains. These observations and the need for data provided the impetus to obtain detailed information concerning caribou use and movements. The Bureau of Land Management will use the information during resource management planning and decision-making processes concerning the White Mountains National Recreation Area. Investigations to determine distribution, movements and important seasonal use areas of caribou in the White Mountains were cooperatively conducted by BLM and ADF&G.

METHODS

Caribou were captured using a Bell 206B or Hughes 500-D helicopter and a Cap-Chur dart gun with standard capture techniques previously used by ADF&G. A PA-18 airplane was used to locate and guide the helicopter to groups of caribou to be tagged. The airplane occupants also observed darted and recovering animals and communicated the status of

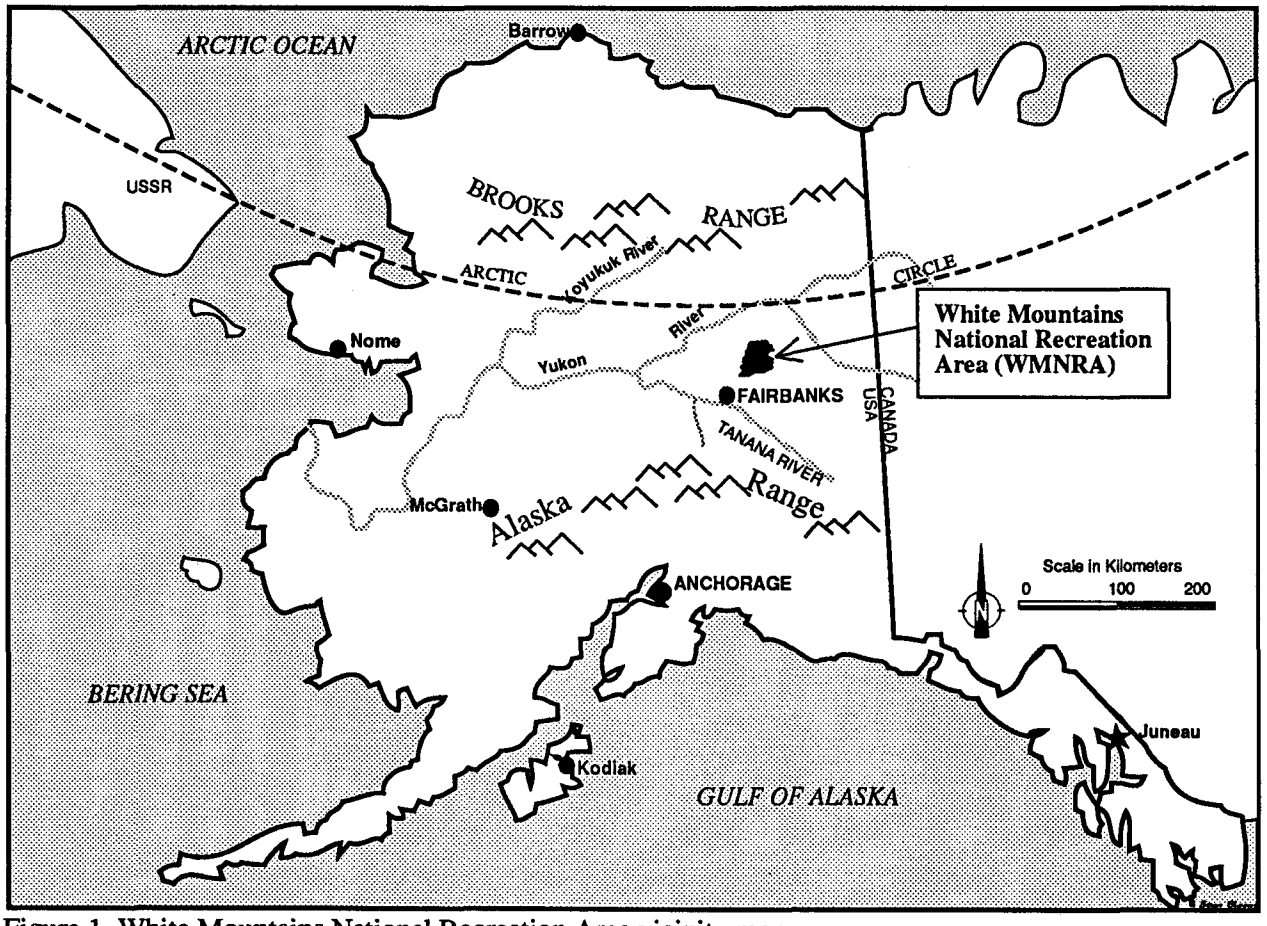

Figure 1. White Mountains National Recreation Area vicinity map

each to the helicopter by radio. M99 (Etorphine: 5 mg. dosage) injected intramuscularly was used for immobilization and M50-50 (Diprenorphine: 10 mg. dosage) was administered intravenously for recovery. Telonics, Inc., radio collars and receivers were used. Blue or orange vinyl identification collars were riveted to radio collars to facilitate visual recognition of individual caribou.

Monitoring surveys for general reconnaissance and for relocating collared animals were flown in fixed-wing aircraft (PA-18, C-180 and C-185). Surveys were flown 1 or more times every 2 weeks between April 1 and October 31 and 1 or more times monthly between November 1 and March 31 each year.

Relocation survey information included location, presence of calves with radio-collared cows and others, group size, vegetation at the relocation site, caribou trails and other signs of use. Information was recorded on pre-printed data forms and 1:250,000-scale USGS quad maps. Location data were transferred to 1:63,000-scale USGS quad maps as soon as possible after survey flights for later analysis.

RESULTS AND DISCUSSION

General

Twenty-one caribou were radio collared in the White Mountains during 1982-1988. Only fifteen caribou (n=15), 14 cows and 1 bull, provided sufficient data to be incorporated into the results (Table 1). Three caribou in the Willow Creek headwaters and 4 in the Victoria Creek headwaters were captured on September 29, 1982, and another 8 were captured in the Victoria Creek and Tolovana River headwaters on April 20, 1984 (Table 1).

Table 1. Identification, status, number of relocations and presence of calves with collared caribou in the White Mountains National Recreation Area, 1982-1988.

ID #	Date Collared	Trans. Freq.	Number of Relocations	1983	1984	1985	1986	1987	1988	Status	
										Lost Contact	Mortality
8	6/29/82	150.135	72	N	N	N	Y5/28	Y5/27	NL		10/22/87
5	6/29/82	150.116	85	Y6/7	Y5/24	N	N	NL	Y5/23		
1	6/29/82	150.085	64	N	N	Y5/10	N	Y5/23	NL		9/2/87
10	6/29/82	150.155	62	N	Y5/24	Y6/3	Y5/28	N	NL		12/7/87
9	9/29/82	150.146	25	N	Y5/24	NL	NL	NL	NL	3/17/85	
7	6/29/82	150.125	76	Y5/12	Y5/24	Y6/18	Y5/15	N	Y5/23		
4	9/29/82	150.105	58	N	N	Y6/18	Y5/21	N	NL	10/22/87	
18	4/20/84	150.336	8	NL	N	NL	NL	NL	NL	4/24/85	
19	4/20/84	150.376	43	NL	N	Y6/3	Y5/28	Y5/27	NL		7/1/87
14	4/20/84	150.327	57	NL	Y5/24	Y6/3	Y5/21	Y6/8	Y5/23		
13	4/20/84	150.316	56	NL	Y5/24	Y5/10	Y6/3	Y5/27	N		
15	4/20/84	150.335	39	NL	N	N	Y5/15	Y6/8	NL		7/1/87
17	4/20/84	150.356	16	NL	Y5/24	Y6/3	NL	NL	NL	7/15/85	
16	4/20/84	150.345	13	NL	N	N	NL	NL	NL	7/15/85	
20	4/20/84	150.385	58	NL	NL	NL	NL	NL	NL		

15 Total Collared 732 Total Relocations

N = cow located but no calf was seen
Y = cow located with calf (month/day of first calf sighting)
NL= cow not located

Between June 29, 1982, and July 5, 1988, 109 survey flights were flown to relocate radio-collared caribou. These relocation surveys resulted in 732 relocations.

The fact that the caribou have used an established calving area(s) repeatedly from 1982 through 1988 verifies the White Mountains caribou herd as its own entity, distinct from any other caribou herd. The White Mountains herd should be considered a remnant of the Fortymile herd. Mixing between the White Mountains herd and the Fortymile herd presently occurs during summer and fall in the southeast portion of the range of the White Mountains herd, primarily in the Mount Prindle, Quartz Creek and Preacher Creek areas.

Summer

In 1983, a survey on 5/6 detected no newborn calves, but calves were sighted on a 5/12 flight. In 1984, no calves were detected on 5/11, but they were sighted on 5/24. Initial observations of newborn caribou calves were made during surveys on 5/10/85 and on 5/15/86. In 1987, no newborn calves were detected during a 5/8 flight, but were seen on 5/23. In 1988, calves appear to have been born between survey flights on 5/16 and 5/23 (Table 1). Survey data indicate that calving activity occurred between 6 May and 27 May from 1983 through 1988.

Calving took place in three principal areas (Figure 3):

(1) the upper ridges of Bear Creek and Quartz Creek south of Rocky Mountain (formerly known as Lime Peak), upper ridges of Bear Creek and Preacher Creek north and northeast of Mount Prindle.

(2) the upper ridges of Fossil Creek, Brigham Creek and O'Brien Creek in the Cache Mountain area, and east along the upper ridges separating Willow Creek and O'Brien Creek.

(3) the headwaters of Victoria Creek and the ridge complex associated with VABM Beaver.

Calving area determination was based on several considerations:

(1) radio-collared cows produced calves in the listed areas;

(2) general reconnaissance during peak calving periods indicated non-collared caribou accompanied by newborn calves were present in these areas; and

(3) radio-collared cows without calves were not located within these areas during the peak calving period.

Caribou aggregations with calves were observed from early June through mid-July, 1983 through 1988. Aggregations occurred in the Quartz Creek/Preacher Creek headwaters, the Bear Creek headwaters, the O'Brien Creek/Willow Creek headwaters, and the upper ridges of Cache Mountain (Figure 3).

Movements away from Bear Creek, Rocky Mountain and Cache Mountain by some radio-collared caribou occurred during mid-July through late July of 1984, 1985 and 1986. Their main route traversed the upper ridges to Cache Mountain, down the divide separating

Fossil Creek and Willow Creek, led to and over the VABM Fossil area and ultimately headed westward across Beaver Creek to the Victoria Creek headwaters. Some radio-collared caribou remained in the White Mountains east of Beaver Creek through July and August until late September to early October of each year (1983-1987).

Fall

By late September most caribou had traveled west-northwest from VABM Fossil, down the rounded ridges north of Lost Horizon Creek, and across Beaver Creek to the Victoria Creek headwaters and VABM Beaver (Figure 3). Large aggregations containing bulls exhibiting rut activity were observed in the vicinity of VABM Beaver and the Victoria Creek headwaters in most years. During some years (1983, 1986), large aggregations of caribou were also present in the vicinity of Lost Horizon Creek and the west-facing slopes of VABM Fossil in late September and early October. Caribou that remained in the VABM Fossil area during early October generally moved north from the White Mountains and crossed Beaver Creek to the Victoria Creek headwaters in the vicinity of the Sheep Creek and Willow Creek confluences with Beaver Creek. By mid-October of each year all caribou had left the White Mountains, crossing to the area west and north of Beaver Creek.

Winter

During the winters (October through April) of 1982-83 through 1987-88, small groups of caribou were scattered in the White Mountains National Recreation area in the headwaters of Victoria Creek, Hess Creek and the Tolovana River (Figure 3). The overall area of winter use is characterized as generally hilly and covered by black spruce, with white spruce along stream bottoms. Movements on the winter range were generally in a counterclockwise direction through the course of each winter. Early winter use by caribou occurred in the Victoria Creek headwaters, then west to the Noodor Dome/Hess Creek area and, finally, larger groups of caribou were present during April and early May in the VABM Beaver area. Heaviest winter use occurred in the Grouse Creek, Butte Creek, Crater Creek and Belt Creek areas of the winter range. The specific areas of heavy midwinter to late winter use appear to have an extensive cover of lichen in an understory of open black spruce stands.

Spring

Movements within the winter range during April were to the east and northeast toward VABM Beaver. The principal spring migration routes (Figure 3) followed the higher ridges west and south of VABM Beaver, east down the valleys to Beaver Creek and up the slopes south of Lost Horizon Creek and north of Windy Creek.

Two routes were used by caribou to move east into the White Mountains from this area of gentle, west-facing slopes. The first and most heavily used route continued east, ultimately going through Windy Gap to Cache Mountain and east-northeast along the divide separating the headwaters of O'Brien Creek, Fossil Creek and Willow Creek.

The second route was also consistently used by caribou, but not as heavily. This route headed east along the north- and west-facing higher slopes of the White Mountains, ultimately crossing Willow Creek, Sheep Creek and other streams. The movement then went southeast along the higher ridges dividing Sheep Creek and Mascot Creek, on to the Rocky Mountain area, and continued east along the high ridges separating Bear Creek and Quartz Creek from the upper tributaries of Preacher Creek. Movements in the VABM Beaver area generally began in early April, crossed the Beaver Creek valley during mid- to late April, and ended by mid- to late May at the calving area(s).

Figure 2. Historic Distribution of the Fortymile Caribou Herd

Legend

1920s Distribution

1950s Distribution

Scale in Miles

0 20 40

Figure 3 Range and Movement Routes of the White Mountains Caribou

Legend

- Calving/Summer Areas
- Early Winter Use Areas
- Mid/Late Winter Use Areas
- Movement Routes

SCALE IN MILES 0 5 10 15 20

White Mountains National Recreation Area

Steese National Conservation Area

Steese National Conservation Area

Mount Schwatka

Victoria Mountain

Noodor Dome

Victoria Creek

BEAVER Creek

North Fork Preacher

Hess Cr

VABM Beaver

Lost Horizon Cr

Willow Cr

Sheep Cr

Mascot Cr

Rocky Mountain

Quartz Cr

VABM Fossil

Windy Gap

Cache Mountain

Tolovana

Colorado Cr

Bear Cr

Champion Cr

Mount Prindle

Fossil Cr

Beaver Creek

Brigham Cr

O'Brien Cr

Nome Cr

Trail Cr

Globe Cr

Steese RIVER Highway

Elliott Highway

Chatanika

CHATANIKA

Fox

Little Chena River

Creek

FAIRBANKS

CHENA

Chena Hot Springs

RIVER

Birch Creek

Steese National Conservation Area

SUMMARY

Distribution, movements and seasonal use areas of caribou in the White Mountains National Recreation Area were similar from 1982 through 1988. Summer caribou use areas were the high ridge complexes of the White Mountains and the Bear Creek/Preacher Creek headwaters. Calving took place in upper Bear Creek/Quartz Creek, Cache Mountain and Victoria Creek/VABM Beaver areas between May 6 and 27. Movements between use areas followed a generally counter-clockwise pattern.

Fall movements were to the west and north, away from the White Mountains and across Beaver Creek to the VABM Beaver and Victoria Creek headwaters during late September to early October.

Winter use was in Victoria Creek, the headwaters of Hess Creek and the headwaters of the Tolovana River. Heaviest winter use occurred in the areas of Grouse, Butte, Crater and Belt creeks. Spring movements occurred from early April through mid- to late May, with the herd traveling eastward to the VABM Beaver area, across Beaver Creek through Windy Gap to Cache Mountain and beyond. Spring movements also occurred across the west- and north-facing slopes of VABM Fossil, east across Willow Creek and south up Mascot Creek to Rocky Mountain and the Bear Creek/Preacher Creek ridge complexes.

IMPLICATIONS

The importance of the resident White Mountains caribou herd will continue to increase commensurate with escalating sport hunting and viewing demands. Areas important to the herd—the Rocky Mountain area, Windy Gap, the ridges along Willow Creek and the headwaters of Victoria Creek/Tolovana River—have been identified as crucial use habitat.

If development of potential tin deposits in the Rocky Mountain area were to occur in the future, core calving and summer range could be impacted. Explicitly, habitat could be lost, movements could be altered, and perhaps most importantly, easy access directly into this important habitat could be established. Similarly, these impacts would also affect, even more severely, the resident Dall sheep population in the area. There appears to be no means by which these effects might be abrogated.

Important movement routes—Windy Gap and the ridges along Willow Creek—should remain free of obstructions and disturbances, at the very least during spring and fall movements.

Fire management is the primary habitat management tool in Alaska. Generally, fire is regarded as beneficial to most wildlife species. However, very little factual information is available on fire effects on caribou range. Some studies indicate that 90 to 150 years may be required for lichen range to fully regenerate following a fire. Since a large portion of the White Mountains caribou herd's range burned in 1988, future fires should be carefully considered in terms of effect on caribou range.

In the past, greater numbers of caribou have been present in the WMNRA. Currently, the Fortymile herd and the White Mountains herd are growing at a rate of 10% to 13% per year. As numbers increase, at some point the Fortymile herd will again migrate into the White Mountains and Steese areas. Movement routes, use areas and timing of use will

probably change to some unknown extent. Exchange of animals between the White Mountains herd and the Fortymile herd is anticipated. Large migration movements chronicled in the past have not occurred in recent years, but it is safe to assume they will recur in the future as herd numbers increase. Therefore, additional monitoring is warranted to document timing, movements and use areas under a regime of varying population densities to obtain the complete picture.

When the Fortymile herd reestablishes its movements and use areas in the WMNRA and the Steese National Conservation Area, conflicts will arise among caribou hunters, viewers, ORV and trail users. We should start now to identify potential and existing conflicts and begin planning for their resolution and amelioration.

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