

HABITAT MANAGEMENT NEEDS ASSESSMENT

for the Fortymile Caribou Herd



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Produced by the
Fortymile Caribou Herd Planning Team
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Introduction

Development of the 1996-2001 Fortymile Caribou Management Plan (Plan) began in 1994 when residents of Alaska and Yukon met and discussed the problem of relatively low numbers in the Fortymile caribou herd. The planning process took over two years and represents over 50 public meetings and thousands of public comments.

The goal of the Plan is to restore the Fortymile caribou herd to its traditional range, 77 % of which was abandoned in Alaska and Yukon as herd size declined in the early 1970s.

The Plan has strong public and political support throughout Alaska and Yukon. The Alaska Board of Game endorsed the Plan and adopted all the recommendations within their jurisdictions. The Federal Subsistence Board produced a resolution of support during their May 1996 meeting. Under these decisions, the Alaska and Yukon governments authorized implementation of the Plan and endorsed and supported the cooperative efforts used in its design.

The Plan outlined three management directions to promote the herd's recovery to its traditional range. Two of these recommendations, reduced caribou harvest and nonlethal wolf control, will largely be completed in 2001. Both of those steps required a great deal of public sacrifice and compromise. The final step in the Plan is to ensure the availability of critical habitat for the herd to use throughout its traditional range. This will ultimately be the most important aspect of the Plan.

A thriving caribou herd can contribute economic potential to the Fortymile region. A cooperative land use and habitat protection management plan that protects wildlife and habitat and identifies appropriate mitigation measures will benefit all Fortymile stakeholders, including miners, hunters, wildlife viewers, and land and resource management agencies.

The Fortymile Planning Team's (Team) goal is for land owners and managers associated with the range of the Fortymile herd (see Figure 1) to incorporate this report in their land development and management decisions. The best scenario would be for this document to be adopted into an existing land use plan such as the Upper Tanana Land Use Management Plan or into a new plan that guides land use practices in the Upper Salcha, Goodpaster, Charley and Fortymile Rivers and Birch Creek drainages.

If land owners and managers recognize the current and future needs of the Fortymile caribou herd in their decision-making processes, the herd will have a much greater chance to recover to its historic range and remain healthy and productive for generations.

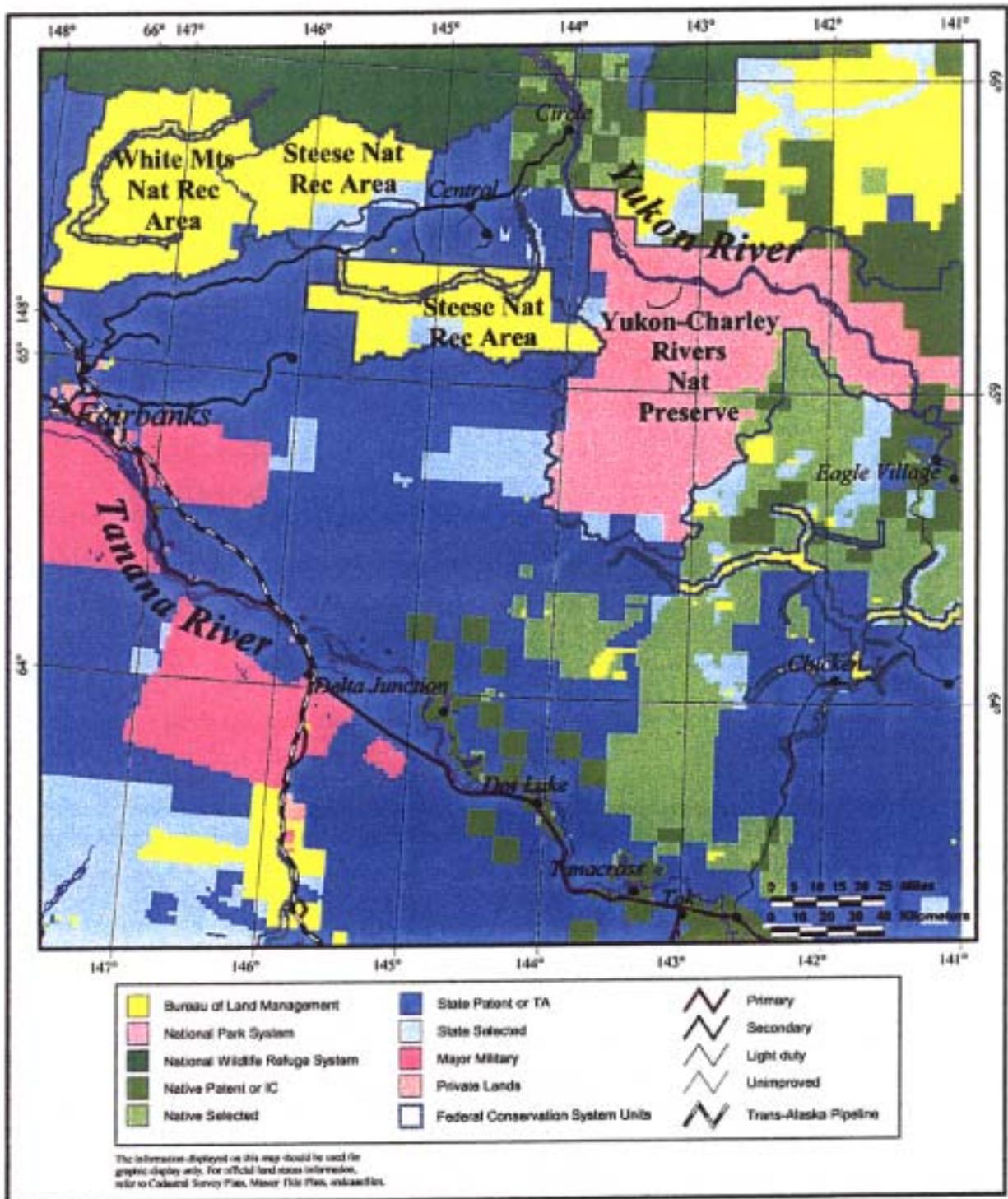


Figure 1. Managing agencies and principal landowners within Fortymile caribou habitat.

Fortymile Caribou Herd Habitat Needs

During each season of the year caribou require special habitats according to their needs for food, safety, escape from flies or shallower snow depths. The Fortymile caribou herd uses many different habitats during the year, which vary in their importance. In order to determine the importance of each habitat, these questions must be answered:

- Do caribou use this area when they are most in need of energy?
- Is this area important for raising calves in safety or for rutting?
- Is this area a place where caribou can be easily bothered by disturbance?
- Is this area a good place to go when the snow gets too deep or when there are too many bugs or when there is a threat from predators?
- How often and how regularly is this area used?
- Does this area offer unique benefits to the herd?

In the following habitat needs section, the Team identified the herd's critical habitats, discussed its tolerance to disturbances during the times of use, and recommended potential mitigation measures. The following six criteria, similar to those developed for the sensitive habitats of the Porcupine caribou herd (International Porcupine Caribou Board), were used to assess the importance of certain habitats to the Fortymile caribou herd:

1. **Energy balance:** Throughout the year, reproductive females require different amounts of energy for maintenance. During certain times, caribou are in a negative energy balance so the habitats they select are very important for sustaining the herd. Any disruption or displacement from these ranges can be devastating, because the caribou may not be able to compensate.
2. **Reproductive contribution:** All periods of the year and all habitats used contribute to the potential growth rate of the herd, but some periods and habitats contribute more, both in terms of birth and mortality rates.
3. **Tolerance to disturbance:** Caribou are less tolerant to disturbance during some periods; they can easily be displaced from the range and their normal activity patterns can be substantially disrupted during those periods. These periods are described below.
4. **Escape requirements:** Caribou use some areas repeatedly to avoid or escape external factors. Predators and insects are the two most important elements actively avoided by Fortymile caribou. Escape habitats offer protection for the herd during critical times in its life cycle and directly influence survival (predators) and growth (calves during insect season).
5. **Intensity of use:** Many factors influence the distribution and abundance of animals in a certain region. Areas that consistently contain high densities of caribou for any reason are important.
6. **Alternatives available:** Survey data collected over the past 25 years have identified areas the Fortymile herd consistently uses during certain times of the year with few, if any,

alternatives utilized. Displacement from or disruption of access to the various ranges could significantly impact herd productivity.

Table 1 identifies the life cycle periods of the Fortymile caribou herd and assesses the importance of the seasonal habitats during these periods using the 6 criteria.

Different disturbances can occur in each habitat and rank type, depending on time of year, caribou use, and the overall impact the activity would have on the range and the herd. During each time period, habitats are given a 1 ranking if only activities with minimal impact should be authorized (i.e., mineral or land surveys conducted by a small ground based crew). In habitats ranked 3 or 4, the greatest concerns are conservation of habitat and its functions, and migration route protection.

Period	Energy Balance	Reproductive Contribution	Tolerance To Disturbance	Escape Requirements	Intensity of Use	Alternatives available	Rank
Calving May 11-27	1	1	1	1	1	1	1
Post-calving May 28-June 30	2	1	1	1	1	2	1.5
Summer July 1-Aug. 15	1	2	2	1	1	2	2
Autumn and Autumn Migration Aug. 16-Sept. 30	3	2	3	3	3	2	4
Rut and Early Winter Oct. 1-Nov. 30	3	3	3	3	3	3	4
Winter Dec. 1-Mar. 31	2	3	3	3	3	3	4
Spring, Spring Migration and Pre-calving April 1-May 10	1	2	3	3	3	2	3

Table 1. Assessment of criteria of seasonal habitats. Scores based on a 1-3 rating (1 = critical; 3 = little concern). The rank was determined based on cumulative scores of the 6 criteria

The following section identifies traditional and current ranges of Fortymile caribou cows and calves, time and purpose of use, importance of these ranges to the herd, and recommended mitigation designed to protect them. The seasonal use maps were based on relocations of radiocollared cows and calves. In general males travel further from the core herd concentration areas so these maps do not portray the complete seasonal distribution. Distributions are most incomplete during spring, calving, autumn, and winter seasons when males are often segregated. The Pogo mine was included to help the reader visualize the proximity of the herd to a planned, large development project.

CALVING

Time period: May 11-27

Importance rank = 1

Distribution

The general calving distribution (Figure 2) encompasses the highlands of the North Fork and Middle Fork of the Fortymile River, the Goodpaster, Charley, Salcha, and Seventymile Rivers and Copper, Crescent, and Birch Creeks. Areas of concentrated use are upper Salcha River/Birch Creek, Charley River, and Middle Fork and North Fork of the Fortymile River. The overall calving range is expected to expand as the herd increases. Between the early 1900s and early 1960s the herd numbered from several hundred thousand to more than 50,000 caribou and commonly calved west of the Steese Highway in the White Mountains. The highlands surrounding Preacher Creek should also be considered an area where the herd will show concentrated use as herd size increases. Between 1968 and 2000 the Fortymile herd has numbered between 5,000 and 35,000 caribou and has not calved in this area.

Importance

The calving period received the highest ranking of all time periods, since adult females are at the lowest ebb of their physical condition and have the largest energy deficit at this time. Cow/calf pairs are least tolerant to disturbance and can be separated due to disturbance. The calving period is the most critical to calf survival and development (48% of the first year mortality occurs during this period). The Fortymile calving range appears to offer abundant predator avoidance sites and forage.

Needs

We cannot predict where most of the herd will calve within its range. It is critical that the all upland areas and travel corridors be available to the herd at the onset of calving. Once the herd begins calving, disturbance must be minimized in the core areas being used. Calving cows will not tolerate intense land or air based activity and they will attempt to move their calves for escape. These movements increase the calf mortality rate. Short-term activities may occur in those calving habitats not being used; however, large numbers of cows may move into an area within a day to calve. Ongoing activities must be able to stop or move quickly.

Mitigation

The calving period is the most difficult to work around because newborn calves are relatively immobile and are most vulnerable to predation/mortality. Unused portions of the calving grounds can be utilized by humans but the habitat or caribou access to the area must be protected.

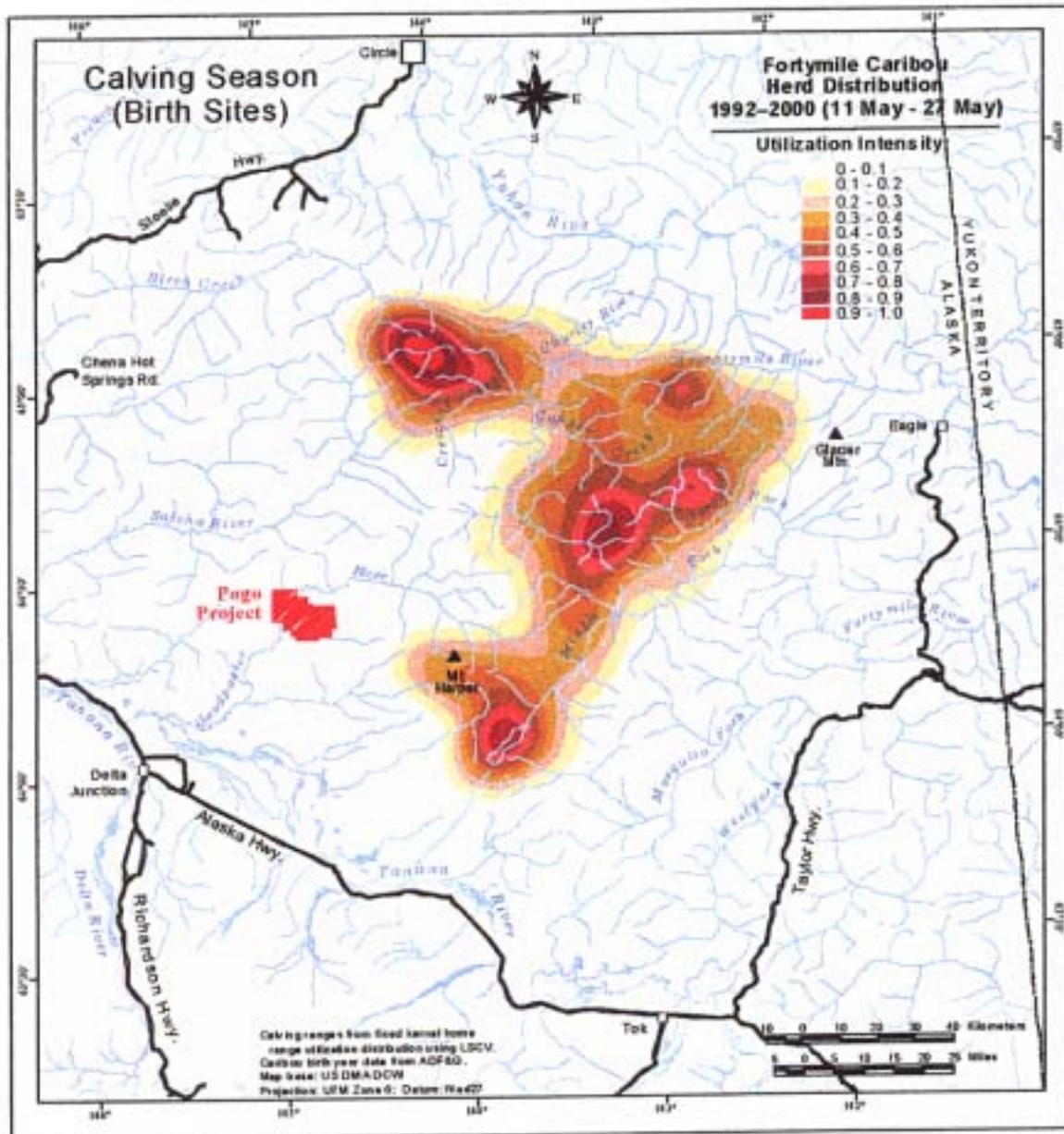


Figure 2. Distribution of Fortymile caribou cows and calves during calving, May 11-27. Areas in red depict the most intense use by cows giving birth.

POSTCALVING

Time period: May 28-June 30

Importance rank = 1.5

Distribution

During the postcalving period, the Fortymile herd continues to occupy the calving area and also uses the Glacier Mountain area southwest of Eagle, Alaska (Figure. 3). The areas most used include the Charley River to Mount Harper. Historically, large numbers of bulls spent this period in Yukon, Canada and other portions of the winter range. As the herd increases, the bull segment of the herd is expected to once again use this range in summer.

Importance

During the postcalving period the Fortymile herd forms large mobile groups commonly numbering in the thousands. At this time, the herd moves to find nutrient-rich vegetation, to obtain relief from insects and to avoid predators and other disturbances. Harassment by insects can be severe and can limit the herd's feeding time and dictate herd movements. Lactating females have the highest energy demands and cow/calf pairs remain relatively intolerant to disturbance during this period. Disturbances may cause the pairs to separate, causing abandonment or requiring a higher energy demand on cows as they search for their calves. Relatively little insect relief habitat exists in the Fortymile herd's range. Virtually all of the insect relief area is found in the depicted area. This area also provides abundant forage. No nearby alternative habitats are available based on the herd's fidelity to the area since the 1980s, but expansion across the Steese Highway will provide access to more insect relief terrain as the herd increases.

Needs

Free movement of these large postcalving groups is critical. Disturbance levels where the large groups are congregating must be minimized. Intense land or air-based activities must be avoided in the vicinity of the large groups.

Mitigation

During this period the herd is clumped and utilizes relatively small areas within this range. Because the herd's movement rate during this period is very high, other human activities can take place within this range and period. Activities should be designed to be mobile or to be shut down temporarily if large groups of cows and calves move into the area. The mining industry has responded by timing their explorations to herd distribution and movements, the locations of which are frequently posted on the Internet.

SUMMER

Time period: July 1-August 15

Importance rank = 2

Distribution

During the summer the herd (bulls and cows) continues to use the highlands within the calving and postcalving ranges but commonly extends its range to the highlands within the Birch and Preacher Creek drainages near the Steese Highway or to Glacier Mountain near the Taylor Highway (Figure 4).

Importance

Lactating cows require a nutritious diet to produce milk for the rapidly growing calves at a time when mosquito and oestrid fly harassment limits their feeding time. During the first two weeks in July group size can still be very large. Under certain weather conditions, movement rate is rapid, primarily due to insect harassment. As summer progresses the herd must have access to highly nutritious range to ensure excellent nutritional condition going into the rut and winter seasons. These highland habitats offer the best insect relief compared to the rest of the herd's range and abundant forage as well. No nearby alternative habitats are available until the herd increases and expands west across the Steese Highway.

Needs

It is critical that the herd has free movement to areas that offer insect relief, and lactating cows especially must be able to move to areas that provide nutritional food. Once the herd becomes more dispersed, it becomes less vulnerable to disturbance.

Mitigation

During a portion of the summer (to approximately mid-July) the herd is clumped and utilizes relatively small areas within the summer range. The herd is still vulnerable to disturbance but during this period its movement rate is high, allowing human activities to occur around the herd. Later in the summer, the herd is more widely dispersed and less vulnerable to disturbance. Other land uses that occur in this area must protect the range and travel corridors, because there is a lack of nearby alternative range and because this area overlaps the calving and postcalving ranges. Herd use of the range will be monitored and affected areas posted on the Internet.

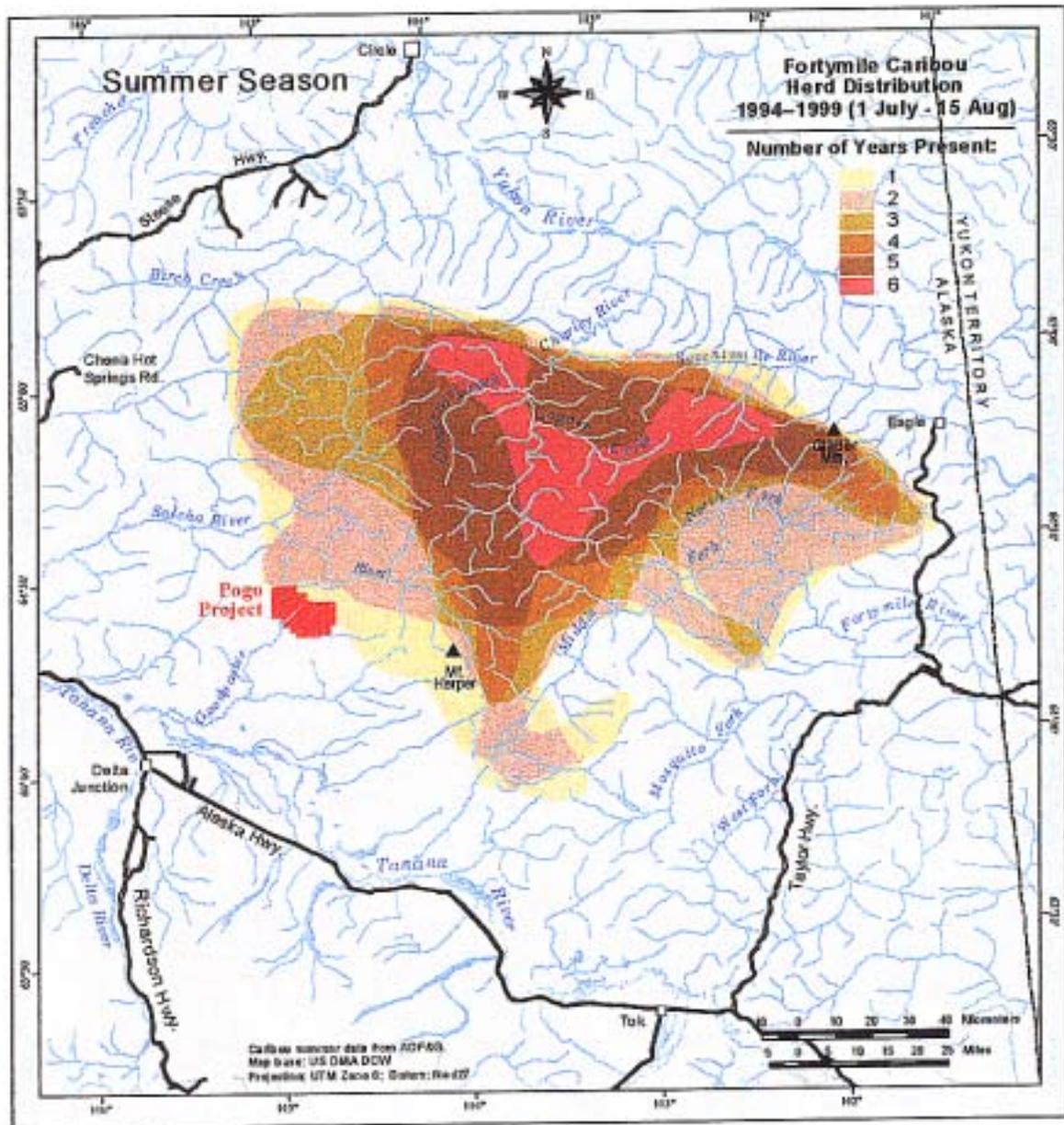


Figure 4. Distribution of Fortymile caribou cows and calves during the summer season, July 1-August 15. Area in pink depicts the area shared among years by cows and calves.

AUTUMN AND AUTUMN MIGRATION

Time period: August 16-September 30

Importance rank = 4

Distribution

The herd expands its range use during this period and can be found throughout much of its annual range. An exception since 1992 is that large numbers of cows and calves have not used their range along the Steese Highway (Figure 5). Group sizes are much smaller and are highly dispersed during this period.

Importance

Insect harassment declines and the Fortymile herd disperses throughout its range exhibiting high feeding rates. This period is important for females to obtain high nutritional condition for ovulation. Female body condition entering ovulation dictates the following pregnancy rate. The Fortymile herd's range is high quality compared to other ranges across Alaska.

Needs

Free movement of the herd throughout its range.

Mitigation

Human uses of the range can occur. Caribou are tolerant to disturbance and will easily avoid any intense land or air based disturbances. The primary concerns are that appreciable caribou habitat outside of the herd's calving and summer ranges be protected and that free access to herd range not be impaired.

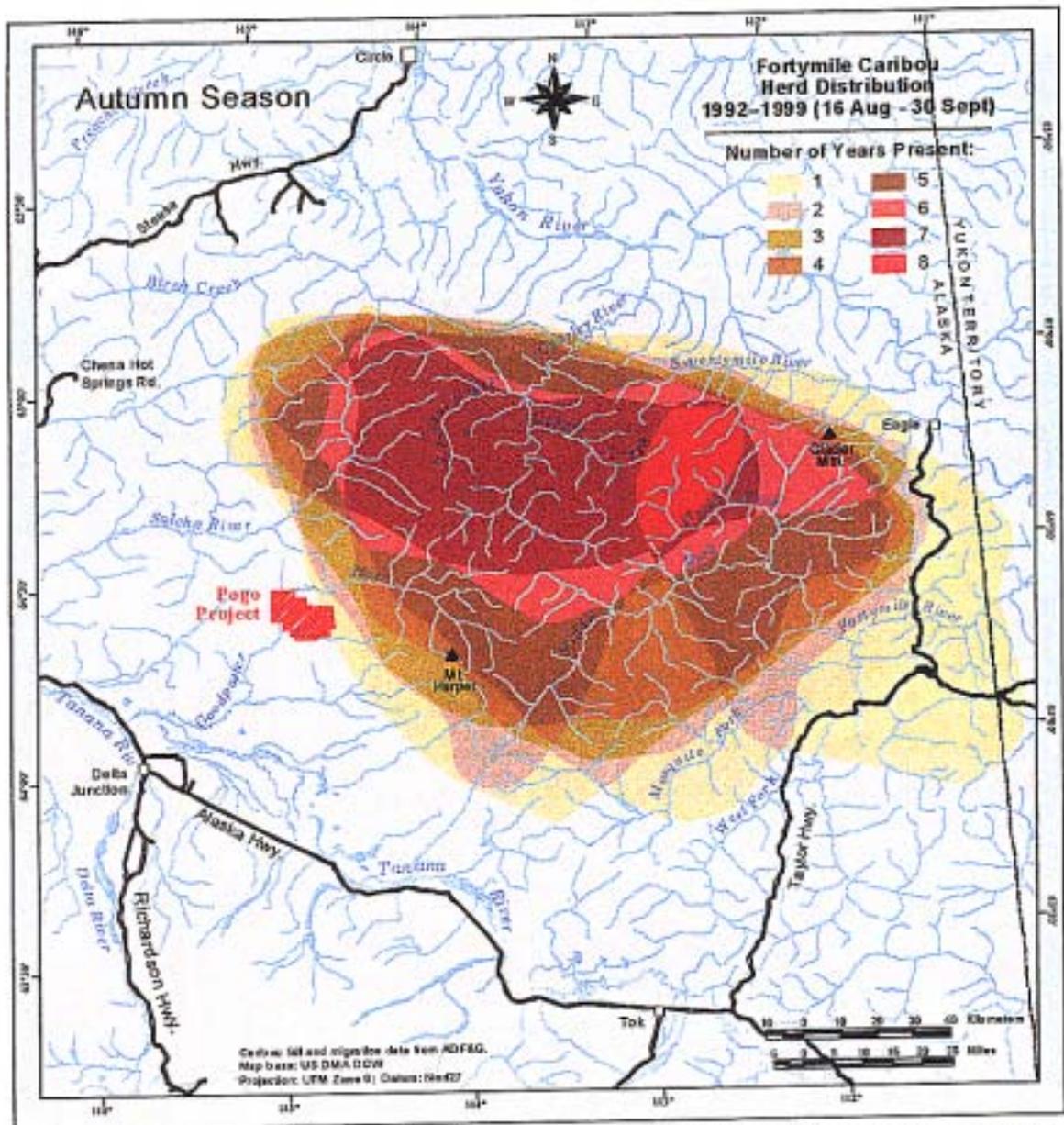


Figure 5. Distribution of Fortymile caribou cows and calves during autumn and during the autumn migration, August 16-September 30. Areas in red depict the area shared among years by cows and calves.

RUT AND EARLY WINTER

Time period: October 1 - November 30

Importance rank = 4

Distribution

Data collected over the past 10 years show that during the rut the herd can be found throughout its annual range (Figure 6). We have not identified the factors the Fortymile herd uses to select areas for the rut.

Importance

This period has the lowest level of importance in terms of the effects of disturbance. The herd does not show an affinity for any one area. The rut appears to occur wherever the herd happens to be during its fall migration. Late fall distributions largely indicate the early winter distributions for that year, although severe weather conditions can result in more extensive movements.

Needs

Free movement of the herd.

Mitigation

Human uses of the range can occur. The herd can easily avoid intense land or air-based disturbances. The primary concerns are that appreciable range is not destroyed as caribou habitat and that the herd's travel corridors not be impaired.

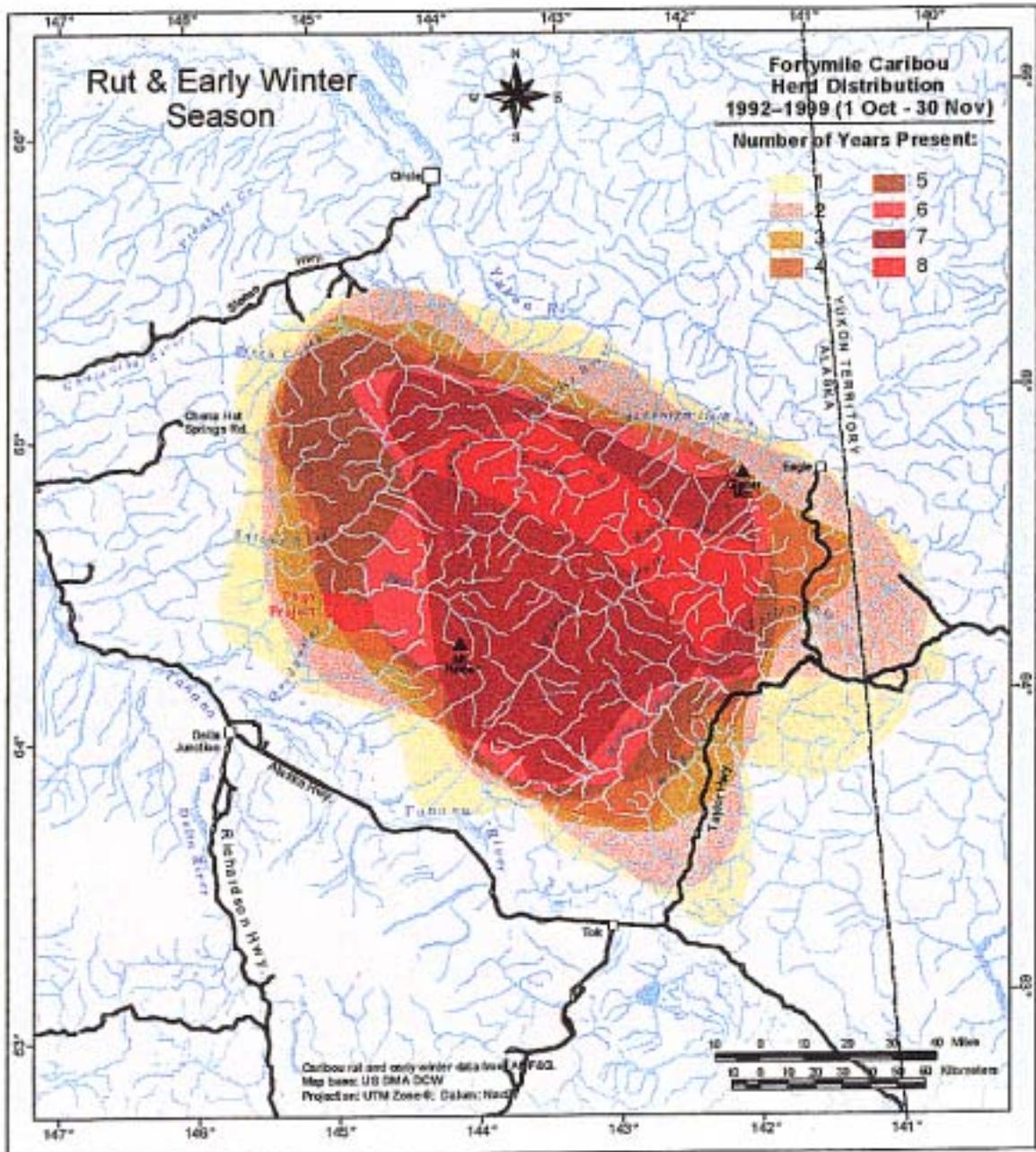


Figure 6. Distribution of Fortymile caribou cows and calves during the rut and early winter season, October 1-November 30. Areas in red depict the area shared among years by cows and calves. Bulls share these areas during the rut.

WINTER

Time period: December 1 - March 31

Importance rank = 4

Distribution

The Fortymile herd selects primarily lowland-forested areas during the winter. Since 1990, the most common drainages used are the West Fork, Mosquito Fork, North Fork, Charley, Salcha, and Goodpaster Rivers and Birch Creek (Figure 7). As the herd increases in size, it is expected to move across the border and use the Yukon extensively during the winter.

Importance

Suitable habitat and snow depth are the primary factors dictating where the herd winters. In shallow to normal snow years, animals can gain weight. In severe weather years, including deep snow winters and possibly dry summers, caribou can lose weight, mortality rates may increase substantially, and pregnancy rates can decline. The primary vegetation in the herd's diet is lichen. Based on herd pregnancy rates and vegetative composition of the winter diet, the Fortymile herd's winter range is in excellent condition and contains abundant lichen stands.

Needs

Free movement throughout their winter range. Caribou are relatively tolerant to activity during the winter.

Mitigation

Human uses of the range can occur. The primary concern is that appreciable caribou range and travel corridors be protected.

SPRING, SPRING MIGRATION AND PRE-CALVING

Time period: April 1-May 10

Importance rank = 3

Distribution

Depending on snowmelt, cows can either remain on the wintering grounds during spring or begin migration. Routes chosen for the migration to the calving grounds vary each year depending on the location of the wintering areas and local snow depths (Fig. 8).

Importance

Pregnant cows are in almost constant energy deficit during this period as they leave the lichen-rich forest for the calving grounds.

Needs

Spring habitat and routes used to access calving grounds vary from year to year. The herd is relatively tolerant to activity. The herd requires free movement because of the need to find food while moving to the calving grounds.

Mitigation

Other human uses of the range can occur. The primary concerns are that appreciable caribou range and travel corridors be protected.

Present Land Use Designation

The following table outlines who owns or has management responsibilities over the different habitats of the Fortymile herd. The Team realizes land management policies and mandates vary considerably between these entities. The Team requests that Doyon, Limited, the Alaska Department of Natural Resources and Department of Fish and Game, the U.S. Air Force, the National Park Service, and the Bureau of Land Management utilize the data presented in this document to plan for land management decisions within the Fortymile herd's range. It is the Team's belief that a land use and habitat protection plan, prepared and endorsed by the above agencies and other Fortymile landowners would be in the best interest of the public, the Fortymile caribou herd and industry.

Level of Importance	Time Period	Region	Management Regime
1	Calving	Upper Middle Flk Yukon-Charley Upper Salcha Goodpaster	State and Doyon NPS State and BLM State and Doyon
1.5	Postcalving	Same as calving and Glacier Mtn.	See above State and Doyon
2	Summer	Same as postcalving	See above
3	Spring Migration and precalving	Entire herd range	State, BLM, NPS, Doyon
4	Fall	West of Taylor Highway	State, BLM, NPS, Doyon
4	Rut	West of Taylor Highway	Same as above
4	Winter	Entire herd range	State, BLM, NPS, Doyon

Table 2. Owners and land managing agencies within the annual range of the Fortymile caribou herd.