

# **Western Arctic Caribou Herd Cooperative Management Plan**



**By the Western Arctic Caribou Herd Working Group**

**Revised December 2019**

**The planning process of the Western Arctic Caribou Herd Working Group is supported by four resource management agencies working in northwest Alaska.**

---



Front Cover: "Prince of the Arctic," original artwork © Nasuḡraq Rainey Hopson of Anaktuvuk Pass, AK. Used with the artist's permission, all rights retained.

# Western Arctic Caribou Herd

## Cooperative Management Plan

### Revised December 2019

Prepared and published by:  
Western Arctic Caribou Herd Working Group  
[www.westernarcticcaribou.net](https://westernarcticcaribou.net)

This plan can be cited as: Western Arctic Caribou Herd Working Group. 2019. Western Arctic Caribou Herd Cooperative Management Plan - December 2019. 54 pp. Copies are available online (<https://westernarcticcaribou.net/>) or at Alaska Department of Fish and Game (ADF&G), Bureau of Land Management, US Fish and Wildlife Service, or National Park Service offices in Utqiagvik, Fairbanks, Kotzebue, and Nome, or by calling Nome ADF&G at (907) 443-2271.

## **ACKNOWLEDGMENTS**

The Western Arctic Caribou Herd Working Group extends its deepest appreciation to the Planning Committee members who worked diligently during a busy time of year to provide ideas for and review this revised plan: Al Barrette, Vern Cleveland, Neil DeWitt, Jake Jacobsen, Charlie Lean, and Morris Nassuk. Working Group member Tim Fullman also offered extensive and insightful comments that improved the quality of the revision. To all, we are grateful for your time and your commitment to the Western Arctic Herd.

# TABLE OF CONTENTS

Purpose of the Plan .....	1
Background .....	1
Human Use .....	4
The Western Arctic Caribou Herd Working Group .....	4
Why We Need a Caribou Plan .....	6
How We Wrote the Plan .....	6
Guiding Principles for Planning and Management .....	7
Plan Elements .....	17
1. Cooperation .....	18
2. Population Management .....	20
3. Habitat .....	28
4. Regulations .....	30
5. Reindeer .....	32
6. Knowledge .....	33
7. Education .....	35
8. Human Activities .....	37
9. Changing Climate .....	40
Implementation: Putting the Plan to Work .....	41
Signatories for the Western Arctic Caribou Herd Working Group .....	42
Signatories for the Resource Management Agencies .....	45
Glossary .....	46
References .....	49

## LIST OF FIGURES

FIGURE 1	Western Arctic Caribou Herd seasonal range map, 2002-2017.....	3
FIGURE 2	General land status within the range of the Western Arctic Caribou Herd.....	5
FIGURE 3	Migratory routes (spring) of the Western Arctic Caribou Herd, 2002-2017.....	8
FIGURE 4	Seasonal ranges of the Western Arctic Caribou Herd: calving grounds, 2010-2017.....	9
FIGURE 5	Seasonal ranges of the Western Arctic Caribou Herd: post-calving, 2002-2017.....	10
FIGURE 6	Seasonal ranges of the Western Arctic Caribou Herd: summer, 2002-2017.....	11
FIGURE 7	Seasonal ranges of the Western Arctic Caribou Herd: late summer, 2002-2017.....	12
FIGURE 8	Migratory routes (fall) of the Western Arctic Caribou Herd, 2002-2017.....	13
FIGURE 9	Seasonal ranges of the Western Arctic Caribou Herd: winter, 2002-2017.....	14
FIGURE 10	Seasonal ranges of the Western Arctic Caribou Herd for recent 5-year period, 2012-2017.....	15
FIGURE 11	Western Arctic Caribou Herd population estimates, 1970-2019.....	16
FIGURE 12	Management level decision-making process diagram.....	22

## LIST OF TABLES

TABLE 1	Western Arctic Caribou Herd management levels using herd size, population trend, and harvest range.....	21
TABLE 2	Population management actions and potential harvest recommendations.....	24

## LIST OF APPENDICES

APPENDIX 1:	Mandates of participating resource management agencies.....	51
-------------	---	----

## **PURPOSE OF THE PLAN**

**The purpose of the plan is to work together to ensure the long-term conservation of the Western Arctic Caribou Herd and the ecosystem on which it depends, and to maintain traditional and other uses for the benefit of all people now and in the future.**

## **BACKGROUND**

Caribou have played a fundamental role in the ecology of northwest Alaska for millennia and have been an integral part of the social and spiritual fabric of Alaska Native life for more than 10,000 years (Anderson 1968, Burch 2012). The largest caribou herd in this region is the Western Arctic Herd, which occupies 157,000 square miles of northwest Alaska (Figures 1-2). While herd movements and distributions vary every year, they follow general patterns for each season of the year (Figures 3–10). Long-distance, terrestrial migrations are becoming imperiled across the globe, but Arctic caribou still have some of the longest in the world.

The Western Arctic Herd has used the Utukok Uplands, situated between the Brooks Range and the Arctic Coastal Plain, for calving for more than 100 years (Lent 1966). Bulls and non-maternal cows tend to lag behind the pregnant cows during the spring migration and often do not reach the calving grounds. After calving, the entire herd meets up and forms spectacular aggregations, with a single group of caribou potentially numbering in the hundreds of thousands of individuals. These aggregations tend to occur in early July in the Lisburne Hills and the Wulik Mountains and are thought to be caused by severe insect harassment. After harassment subsides, herd distribution is characterized by rapid movement eastward through the Brooks Range and its foothills, with some animals traveling as far east as the trans-Alaska pipeline in some years. By fall, the herd is more dispersed than at any other time of year. The rut typically occurs while the herd moves south towards its wintering grounds.

During the mid-1980s through 1995, much of the herd often wintered in the Nulato Hills and occasionally extended south to the Unalakleet River drainage and beyond. After 1996, there was a westward expansion of the winter range on the Seward Peninsula. A small percentage of the herd often wintered in areas of the North Slope between Atkasuk, Wainwright, Point Lay, Umiat, and portions of Gates of the Arctic National Park and Preserve.

Caribou are known for large population swings (oscillations), and the Western Arctic Caribou Herd is certainly not an exception. Since at least 1850, the Western Arctic Caribou Herd has displayed large and quite rapid changes in population size (Figure 11; Joly et al. 2011). In the late 1800s and early 1900s, caribou were scarce in most of the southern portions of northwest Alaska, primarily staying in the upper Noatak River drainage and North Slope. In the 1930s, caribou numbers began to increase and their range slowly expanded southward again. By the 1940s, elders from the upper Kobuk region reported seeing the first returning caribou and by the late 1950s Selawik hunters began seeing caribou again in their area. In 1970—the first year Alaska Department of Fish and Game (ADF&G) estimated the population size—the Western Arctic Caribou Herd numbered about 242,000 caribou and was thought to be declining. By 1976, it had declined to about 75,000 animals. From 1976 to 1990 the herd grew rapidly and then continued to grow slowly from 1990 to 2003 to reach a peak of 490,000 caribou. After this most recent population peak, the herd steadily declined to 201,000 caribou in 2016 causing residents and managers to consider significant regulatory changes in response to concerns about the sustainability of current harvest levels. Reductions in harvest opportunity of this magnitude had not been discussed in over 30 years. The 2017 census revealed 259,000 caribou, a number that may have been bolstered by new and improved digital photographic equipment. The herd has shown mixed signs in recent years. The 2019 census counted 244,000 caribou. Although the population has been reduced by 50% since its 2003 peak, it remains the largest herd in Alaska and provides a substantial portion of Alaskan caribou harvested each year.



Caribou in late fall.  
Photo: courtesy J. Dau

The new millennium has brought with it substantial challenges to the continued well-being of Alaska's caribou and the people who depend upon and value them. In recent years the Western Arctic Herd's movements, particularly in the fall, have changed from the previously familiar patterns. For example, the southward fall migration has been delayed, with some caribou reaching the Kobuk River in late September, October, or even November compared to late August and early September in previous decades. The number of caribou not migrating south of the Kobuk River for wintering has also increased. In 2017 and 2018, so few caribou crossed the Kobuk River in September that biologists had a difficult time deploying collars at Onion

Portage—which could hinder management and monitoring efforts. More importantly, changes in where caribou go dramatically impact subsistence hunters who rely upon the herd.

These changes, along with growing concern about industrial development, changing climate, and herd size, have taken place since the last plan revision in 2011. Differing views exist among users and the public as to how the Western Arctic Caribou Herd should be managed, used, and protected. Despite these challenges, the Working Group remains committed to working together to ensure the long-term sustainability and use of the herd.



## **HUMAN USE**

Until roughly the 1960s, subsistence use of the Western Arctic Caribou Herd was virtually the only human use of the herd. Caribou, along with fish and marine mammals, have historically been a staple in the subsistence economy of local residents for food, clothing, tools, and other items. About 40 subsistence-based communities in northwest Alaska, whose heritage and traditions have been shaped by the availability and abundance of these caribou, utilize the herd. Since 2000, an estimated 10,000–15,000 caribou are harvested from the herd each year by subsistence users in communities within the range of the herd.

The Western Arctic Caribou Herd is also important to hunters from other areas of Alaska and from outside the state. Until recently, nonresident and nonlocal hunters harvested about 500–800 additional animals from the herd; this number has declined to about 250 animals per year since 2016 due to various factors, including closures of some federal public lands to caribou hunting by non-federally qualified users. In some areas, such as the Kobuk, Noatak and Squirrel River drainages, there has been continuing conflict between local and nonlocal hunters that has spanned several decades. The herd's range falls under the jurisdiction of many land owners and management entities (Figure 2), which complicates the harvest regulations.

Increasing numbers of wilderness travelers seek opportunities for viewing and photographing the Western Arctic Caribou Herd. Existing development within the range of the herd is primarily village infrastructure, telecommunications, and the Red Dog Mine (with associated port and connecting road). Additional development has been proposed, which, along with a changing climate and environmental pollution, could impact the herd. In an increasingly-crowded world, many have come to think of caribou as symbols of undeveloped wild lands in northern Alaska. All of these people have a stake in the management and future of this herd.

## **THE WESTERN ARCTIC CARIBOU HERD WORKING GROUP**

The Working Group consists of a broad spectrum of stakeholders with direct interest, knowledge and concern in the care and management of the Western Arctic Caribou Herd. Subsistence hunters from rural villages, sport hunters, conservationists, hunting guides, reindeer herders, and hunter transporters are represented.

The Working Group meets annually to exchange local, traditional and Western scientific information; to make recommendations for management, research, monitoring, regulation, allocation and enforcement; to support education about the herd; and to foster communication among all who use or value these caribou.



## **WHY WE NEED A CARIBOU PLAN**

In the words of Joseph Ballot, first Chairman of the Western Arctic Caribou Herd Working Group, “We can no longer take for granted that these caribou will always come through our communities.” As another hunter said, “We want to keep those caribou coming back.” This management plan will help keep caribou coming back by relying on the knowledge and active participation of all people who use or otherwise value this caribou herd.

The range of the Western Arctic Caribou Herd is a patchwork of land ownership (Figure 2). Federal land management agencies (Bureau of Land Management, U.S. Fish and Wildlife Service, and National Park Service), the State of Alaska, and Alaska Native Corporations are all major land holders. Private individuals own land as well. The Alaska Board of Game and the Federal Subsistence Board, as well as state and federal agencies, have different mandates for managing wildlife (see Appendix 1), including the Western Arctic Caribou Herd. The variety of land status and management authorities creates a complex situation for managing this herd, as caribou do not recognize political boundaries. Having a diverse group of stakeholders providing recommendations can be a powerful tool to help guide the management and conservation of this herd.

There are many issues facing the herd. Many stakeholders are concerned about potential impacts of oil and mining industries, road development, and a changing climate on the Western Arctic Caribou Herd. Hunters, guides and transporters worry about being able to continue harvesting caribou from this great herd.

## **HOW WE WROTE THE PLAN**

The first management plan for the Western Arctic Caribou Herd was written in 1984 by biologists in ADF&G. In 1999, the Working Group began work on the first version of a cooperative management plan for the Western Arctic Caribou Herd. The Working Group adopted the first completed plan in 2003, at a time when the herd had been increasing for two decades. By 2009, the herd was on the decline and the Working Group realized the plan needed revisions and updating. The revised plan, which added more detail about population management, important issues, and concerns identified by the Working Group, was presented to the full Working Group for approval in December 2011. This current 2019 revision of the management plan builds on these previous planning efforts. The planning process requires active collaboration between resource management agencies and all those who depend on and value the herd. It is also a cross-cultural process. Knowledge gained by local and traditional hunting experience is as valuable as that collected by biologists using modern technology. A planning committee drafted revisions and asked for input from the entire Working Group to develop this latest plan, which was accepted by the Working Group in December 2019.

## GUIDING PRINCIPLES FOR PLANNING AND MANAGEMENT

**The Working Group and its sponsoring agencies propose to follow these principles both in developing this plan and in managing the Western Arctic Caribou Herd:**

1. Recognize the significant ecological role this caribou herd has in northwest Alaska. The herd is profoundly important to people, animals and plants.
2. Recognize the centuries-old customs, traditions, and spiritual needs that have developed in communities within the range of the herd; also recognize that other people in Alaska and the rest of the world have interests in this herd.
3. Emphasize common interests among all users of the herd.
4. Coordinate with advisory committees and regional advisory councils on recommendations to state and federal regulation-making boards.
5. Promote simple and consistent regulations and policies that are easily understood by people who use and value the herd.
6. Base management decisions for the herd on scientific information, traditional ecological knowledge of Alaska Native users, and knowledge of all users.
7. Recognize that predators of the Western Arctic Caribou Herd are a natural part of the ecosystem and are necessary to the health of the herd and the entire ecosystem.
8. Educate people and share information about the biology, traditions, uses, and care of the herd to ensure a successful management program.
9. Implement the Western Arctic Caribou Herd Cooperative Management Plan by focusing on management actions consistent with the respective mandates and authorities of each agency, while at the same time coordinating among agencies and the Working Group.



Trails created by migrating caribou crisscross the herd's range.  
Photo: NPS/K. Joly

The scope of the Western Arctic Caribou Herd Cooperative Management Plan is comprehensive but general. The Working Group will use the plan as a guide to make specific recommendations or engage in projects based upon plan guidelines. It is also the task of the Working Group to develop detailed documents, newsletters and web sites to address habitat protection concerns and caribou education programs.

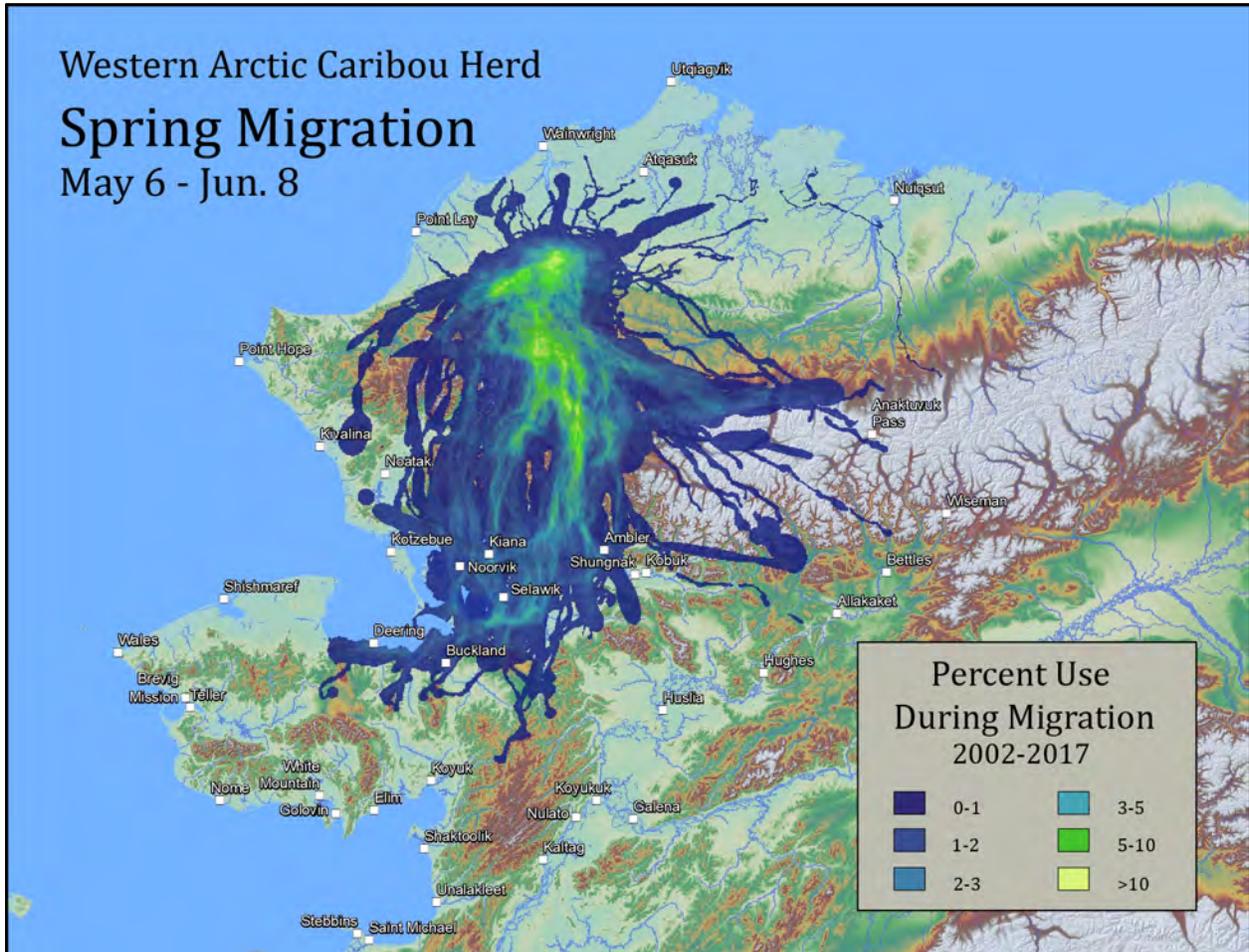


FIGURE 3. Migratory routes (spring) of the Western Arctic Caribou Herd, 2002-2017. High (yellow), medium (green), and low (blue) use corridors as determined using Brownian Bridge movement models. Data are from radio-collared female caribou in telemetry database of ADF&G and National Park Service. The northward spring migration covers the period May 6-June 8.

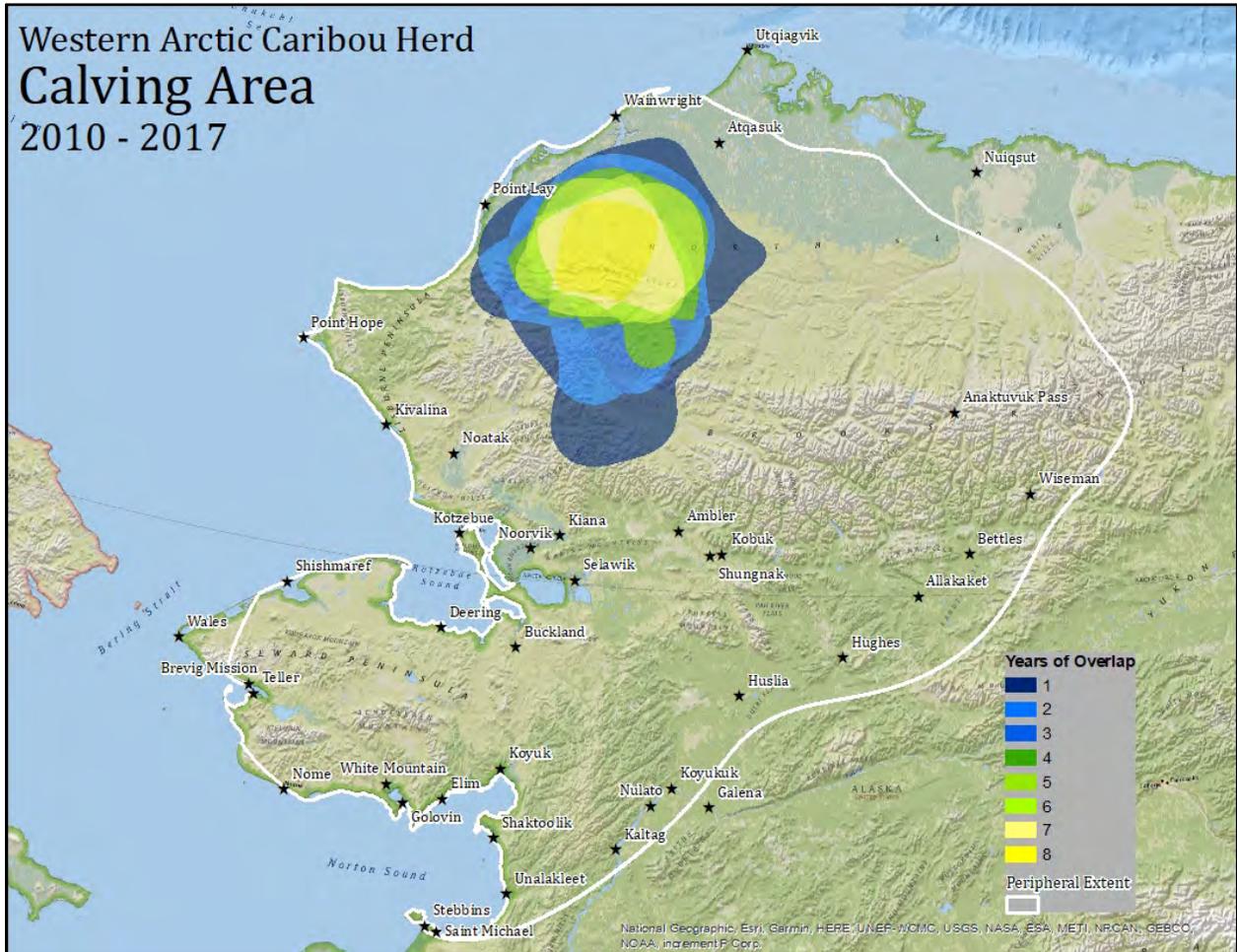


FIGURE 4. Seasonal ranges of the Western Arctic Caribou Herd: calving grounds, 2010-2017. Areas of repeated use are highlighted, with yellow denoting use in all 8 years down to dark blue denoting areas used only in 1 year. Utilization distributions (kernels) were determined only from females that calved. Data are from GPS collared female caribou collected by the ADF&G and National Park Service. Calving occurred from May 22 to June 16.

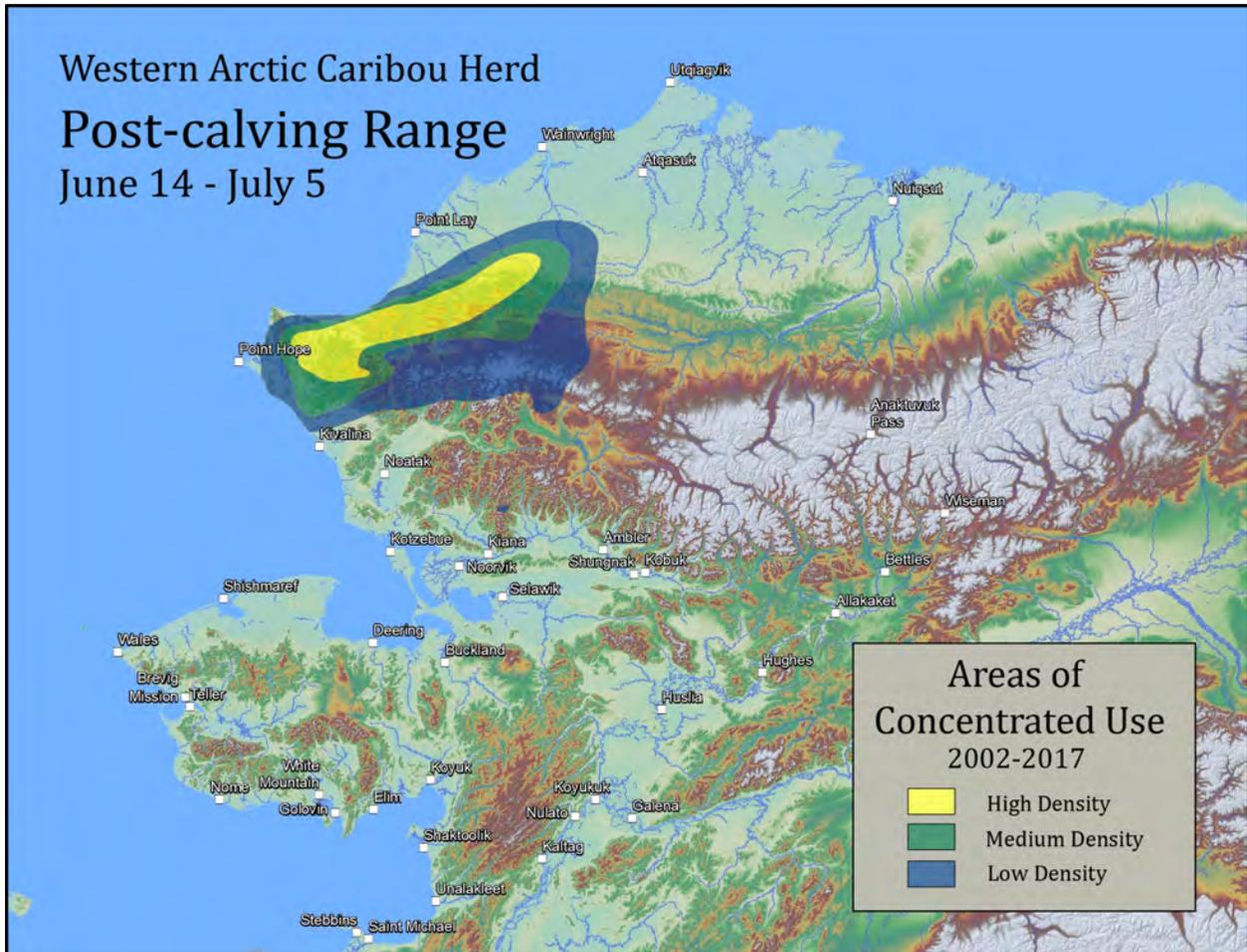


FIGURE 5. Seasonal ranges of the Western Arctic Caribou Herd: post-calving, 2002-2017. High (yellow), medium (green), and low (blue) use areas are delineated by the 50%, 75%, and 95% utilization distribution (kernel) contours. Data are from radio-collared female caribou in telemetry database of ADF&G and National Park Service. Post-calving range (June 14-July 5) are the areas used after the calving period to access insect relief habitat.

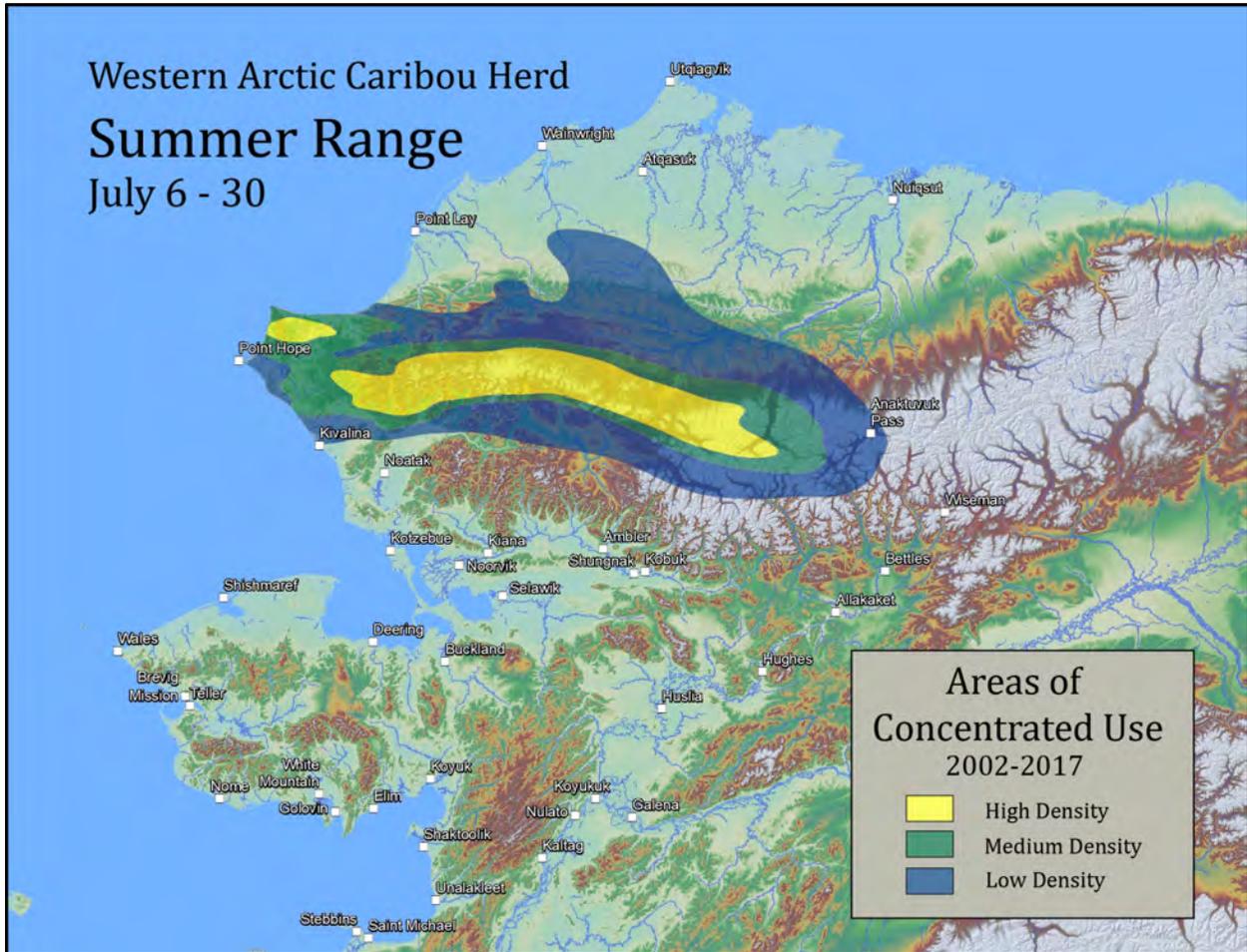


FIGURE 6. Seasonal ranges of the Western Arctic Caribou Herd: summer, 2002-2017. High (yellow), medium (green), and low (blue) use areas are delineated by the 50%, 75%, and 95% utilization distribution (kernel) contours. Data are from radio-collared female caribou in telemetry database of ADF&G and National Park Service. Summer range (July 6-30) are areas used in summer and associated with insect relief habitat.

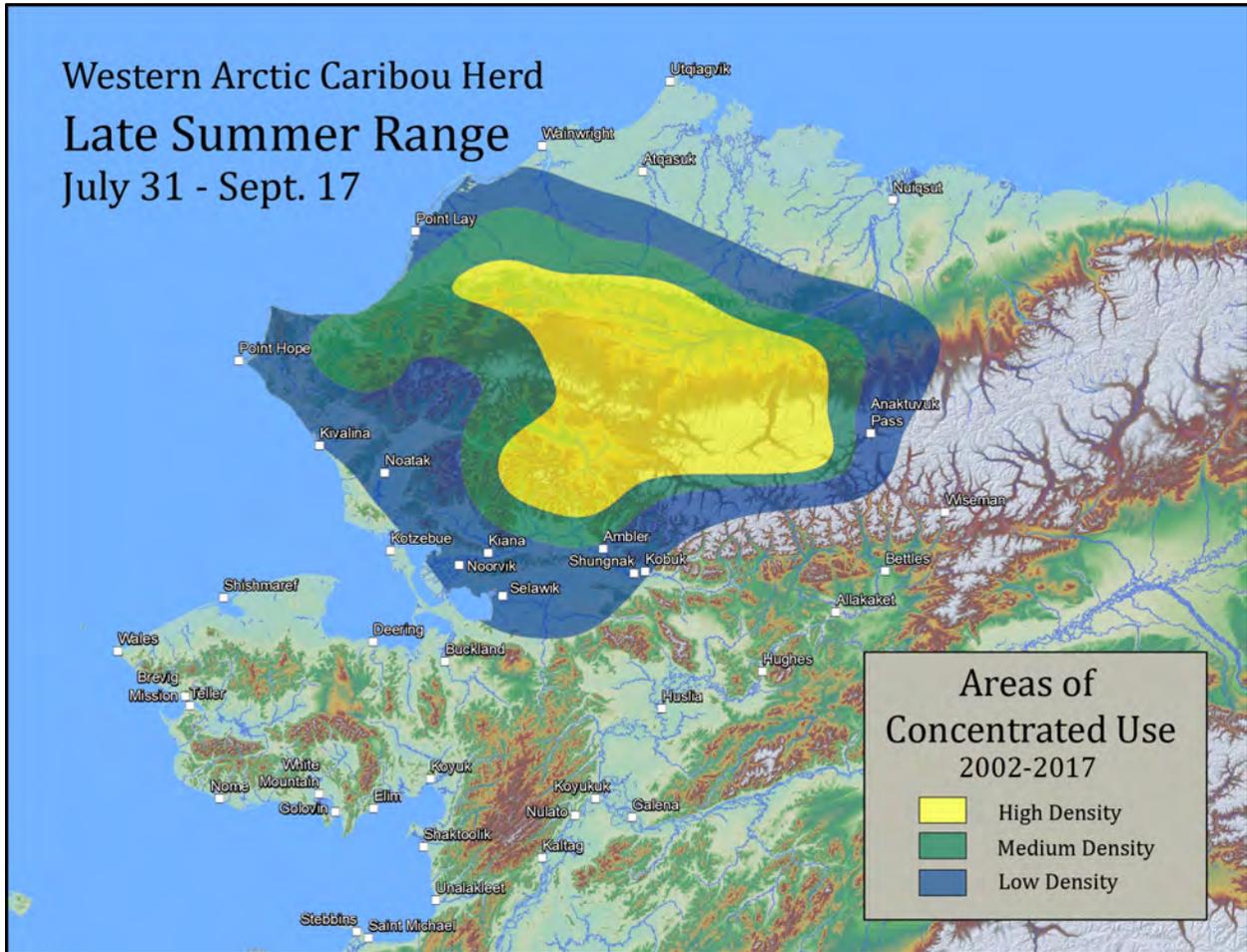


FIGURE 7. Seasonal ranges of the Western Arctic Caribou Herd: late summer, 2002-2017. High (yellow), medium (green), and low (blue) use areas are delineated by the 50%, 75%, and 95% utilization distribution (kernel) contours. Data are from radio-collared female caribou in telemetry database of ADF&G and National Park Service. Late summer range (July 31-September 17) are areas used after insects subside but before fall arrives.

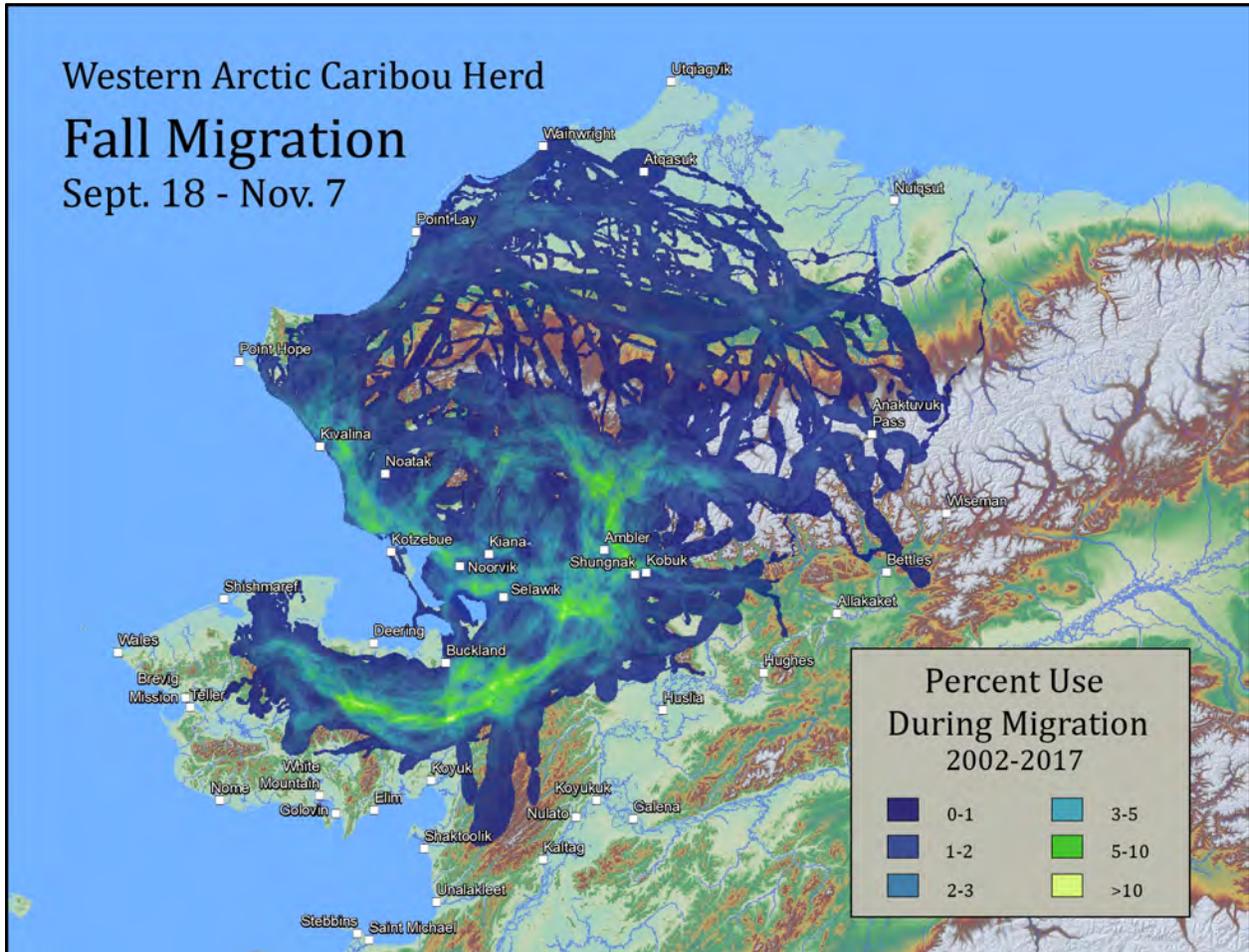


FIGURE 8. Migratory routes (fall) of the Western Arctic Caribou Herd, 2002-2017. High (yellow), medium (green), and low (blue) use corridors as determined using Brownian Bridge movement models. Data are from radio-collared female caribou in telemetry database of ADF&G and National Park Service. The southward fall migration covers the period September 18-November 7.

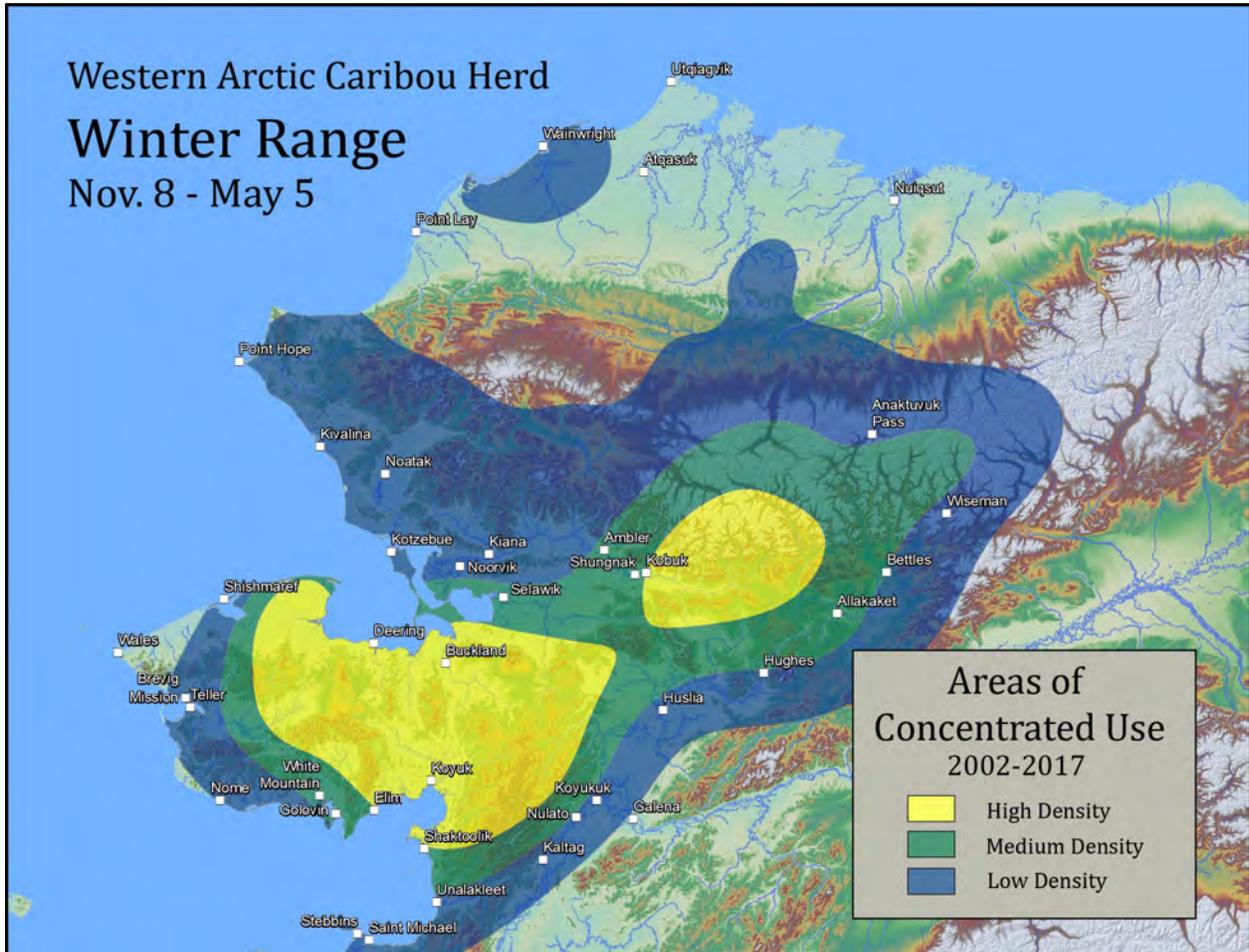
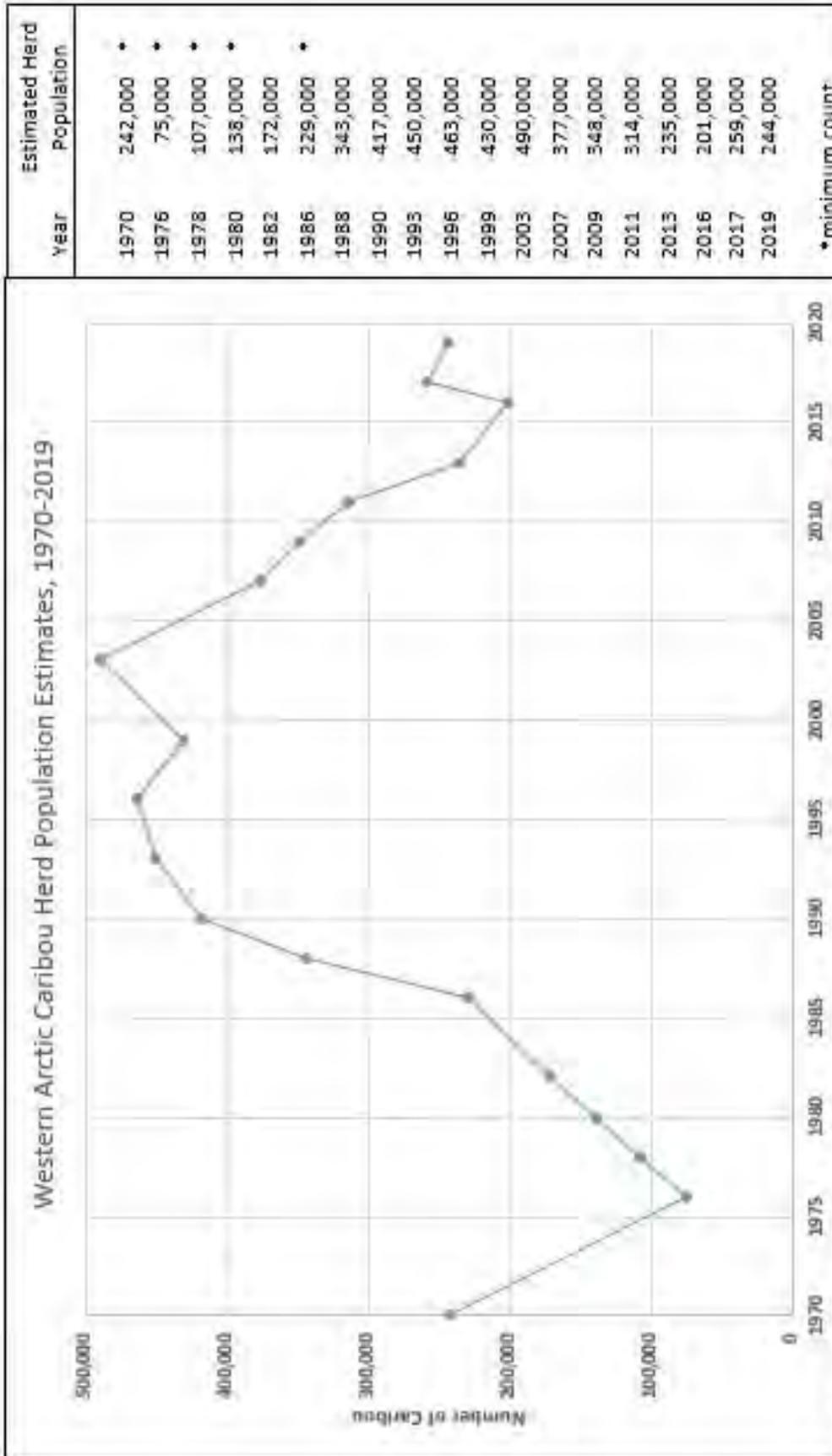


FIGURE 9. Seasonal ranges of the Western Arctic Caribou Herd: winter, 2002-2017. High (yellow), medium (green), and low (blue) use areas are delineated by the 50%, 75%, and 95% utilization distribution (kernel) contours. Data are from radio-collared female caribou in telemetry database of ADF&G and National Park Service. Winter range (November 8-May 5) are the areas used for overwintering.





NOTE: Years when population estimates were based on minimum counts only (\*), all others used [Rivest](#) modeling. For more details on estimates, including confidence intervals, see [Day 2015](#).

FIGURE 11. Western Arctic Caribou Herd population estimates, 1970-2019.

## PLAN ELEMENTS

<p><b>Cooperation, Population Management, Habitat, Regulations, Reindeer, Knowledge, Education, Human Activities, and Changing Climate</b></p>
--

At the heart of the Western Arctic Caribou Herd Cooperative Management Plan are nine Plan Elements: Cooperation, Population Management, Habitat, Regulations, Reindeer, Knowledge, Education, Human Activities, and Changing Climate. Each of these elements includes one or more goal statements, strategies for attaining the goals, and a list of management actions or similar activities. The management actions are not exhaustive or all-inclusive. Rather, they are intended to be the first steps needed to achieve the strategies and goals in question. Management actions will be refined or replaced as needed.

Caribou herds naturally fluctuate in numbers through time. The plan is meant to be flexible enough to be responsive to population conditions and maintain a healthy ecosystem upon which the herd depends. The plan does not attempt to maintain a fixed caribou population size. Instead, the plan adjusts management strategies, according to the current status or condition of the herd, to prevent human activities from making natural population declines worse or jeopardizing the herd's long-term health.

The plan emphasizes the coordinating role of the Working Group among state and federal regulatory systems, subsistence hunters, sport hunters, guides, outfitters, reindeer herders, conservationists, and the resource management agencies themselves. Successful conservation of the Western Arctic Caribou Herd ecosystem depends upon coordinated and constructive efforts of these diverse stakeholders.

The State of Alaska, Bureau of Land Management, U.S. Fish and Wildlife Service, and National Park Service (the latter three in the U.S. Department of Interior) have expressed their commitment to sharing with stakeholders the representation, responsibility and power in the management of wildlife resources to the greatest extent possible by law because they recognize that local stakeholders who spend time in the field have special knowledge of the resource that is so important to effective problem-solving. Other stakeholders similarly have important perspectives to contribute. The agencies endorse the Western Arctic Caribou Herd Working Group and this Cooperative Management Plan for its proactive, collaborative approach to managing the herd more effectively, improving cooperation among stakeholders, and reducing conflict before it reaches the Alaska Board of Game and Federal Subsistence Board. These agencies work closely with the Working Group and fully consider their recommendations to ensure the conservation of the Western Arctic Caribou Herd. Resource agency representatives do not vote at Working Group meetings but otherwise participate.

## 1. COOPERATION

The Western Arctic Caribou Herd Working Group sees cooperation as a vital attribute for successful management and conservation of the herd.

**Goal 1a:** Encourage cooperative management of the herd and its habitats among state, federal and local entities and all users of the herd.

**Goal 1b:** Encourage cooperation and exchange of information with international organizations involved with caribou research and co-management with indigenous peoples.

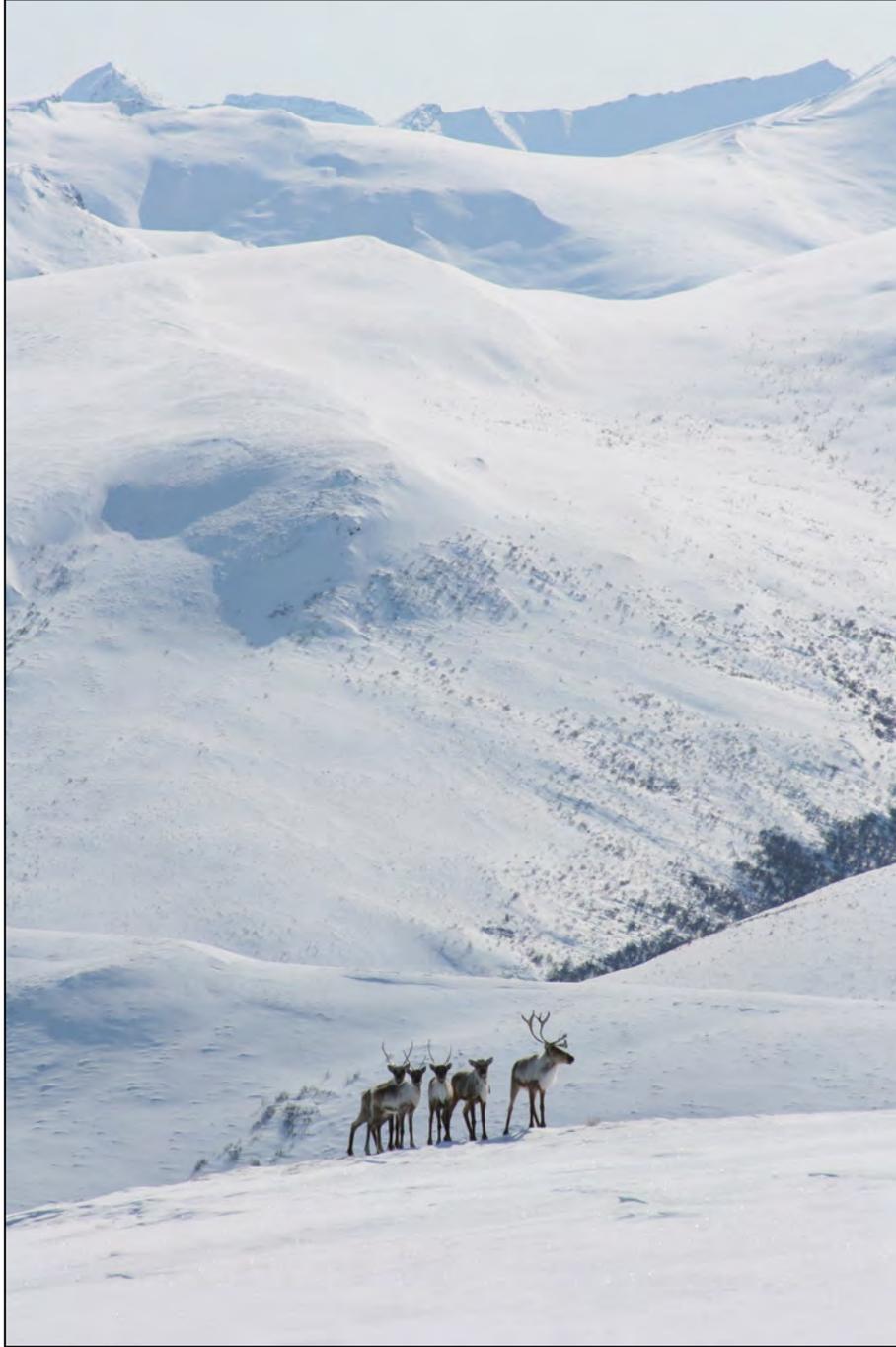
### **Strategies:**

- A. The Working Group will serve as a forum to facilitate communication, cooperation and coordination among advisory committees, regional advisory councils, and others concerned with management of the herd and will promote broad public participation in management decisions.
- B. The Working Group will facilitate communication between its members and communities with a special emphasis on involving and engaging elders and youth.

### **Management Actions:**

1. Conduct one Working Group meeting a year with additional meetings to be scheduled in villages when the need and funding allow.
2. Publish and distribute at least one “*Caribou Trails*” newsletter per year.
3. Both resource agencies and members of the Working Group will collect and share information and recommendations with federally-recognized tribal councils, city councils, advisory committees, regional advisory councils, other organizations, and state and federal regulatory boards.
4. Review of this management plan will be done by the Working Group every five years or as needed. The Working Group will appoint a Plan Review Committee for this task.
5. Encourage interagency cooperation through an annual review by a Technical Committee of resource agencies and interested Working Group members to review studies and surveys being conducted on the herd and evaluate progress toward meeting information gaps identified by the Working Group.
6. Supplement the Working Group’s annual meeting with new media formats and methods of remote site communication, including its official webpage (<https://westernarcticcaribou.net>), as approved by the Working Group.

7. Utilize other regional tribal and government newsletters to share information. Encourage Working Group members to participate in regional meetings as representatives of the Working Group.



Caribou in the Brooks Range. Photo: NPS/K. Joly

## 2. POPULATION MANAGEMENT

The Working Group recognizes population management as a critical element for continued conservation of the Western Arctic Caribou Herd. Herd size and trend will change over time. At low population levels, management must conserve the herd and protect subsistence priority and uses, according to applicable federal and state regulations. At high population levels, management must consider density-based impacts to the herd and its range. Thus, management strategies must be responsive to changing conditions.

In general, population size, population trend (stable, increasing or decreasing), adult cow survival, and calf recruitment are the major factors considered when determining management actions and harvest scenarios for the herd's long-term conservation. As herd condition declines, the frequency or levels of management actions will be increased to better monitor the herd. Available harvest (harvestable surplus) will be based on estimated population size, trend, and herd condition. When estimates of available harvest drop below average range-wide harvests or the amount necessary for subsistence (about 8,000 to 12,000 caribou), restrictive harvest strategies become important to optimize available harvest among users and conserve the herd.



Western Arctic caribou on a frosty October day.  
Photo: NPS/K. Joly

where harvest may be limited to subsistence use only and biological monitoring of the herd will be maximized. Under "Critical" management (red), harvest will be highly restricted, habitat and/or population restoration efforts may be enacted, and maximum biological monitoring of the herd will be maintained.

Table 1 provides a guide to herd management level determined by population size, trend, cow survival, and calf recruitment. Population sizes guiding management level determinations are based on recent (since 1970) historical data for the Western Arctic Caribou Herd.

This plan prescribes ranked, color-coded management levels for differing population sizes and trends of the Western Arctic Caribou Herd (Table 1). Harvest levels applicable to declining, stable and increasing populations are used to estimate the available harvest associated with each herd condition. Under "Liberal" management (green), few harvest restrictions will exist. With "Conservative" management (orange), harvest will be more limited and biological monitoring will intensify. "Preservative" management (yellow) will prompt increased restrictions

TABLE 1. Western Arctic Caribou Herd management levels using herd size, population trend, and harvest range.\*

Management Level	Population Trend		
	Declining Adult Cow Survival <80% Calf Recruitment <15:100	Stable Adult Cow Survival 80%-88% Calf Recruitment 15-22:100	Increasing Adult Cow Survival >88% Calf Recruitment >22:100
Liberal	Pop: 265,000+ Harvest: 14,000+	Pop: 230,000+ Harvest: 14,000+	Pop: 200,000+ Harvest: 14,000+
Conservative	Pop: 200,000-265,000 Harvest: 10,000-14,000	Pop: 170,000-230,000 Harvest: 10,000-14,000	Pop: 150,000-200,000 Harvest: 10,000-14,000
Preservative	Pop: 130,000-200,000 Harvest: 6,000-10,000	Pop: 115,000-170,000 Harvest: 6,000-10,000	Pop: 100,000-150,000 Harvest: 6,000-10,000
Critical	Pop: <130,000 Harvest: <6,000	Pop: <115,000 Harvest: <6,000	Pop: <100,000 Harvest: <6,000

\*Annual harvest has been estimated at around 12,000 caribou per year since 1996.

Each year, or as needed, agency biologists will evaluate the status of the herd in the Technical Committee meeting and develop recommendations on the herd management level for the Working Group. Table 1, which accounts for population size and trend, provides a guide for helping the Working Group determine which management level is appropriate for that year. Adult cow survival (typically < 80% for declining populations and > 88% for increasing populations), calf recruitment (typically < 15 calves: 100 cows for a declining population and > 22 for an increasing population), and other factors such as trends in adult mortality and calf survival, sex and age composition, range condition, caribou health and body condition, and more will provide the basis for the Technical Committee’s evaluation of herd condition and their management level recommendation to bring to the full Working Group for approval.

The Working Group, with assistance from biologists and cooperating agencies, will review the Technical Committee’s recommendations, consider traditional ecological knowledge and knowledge of all users, and seek consensus on the appropriate management strategy to recommend (Figure 12). When management levels change, or there is a need to revise management actions or harvest regulations, the Working Group will develop recommendations for specific actions including regulatory changes. Regulatory proposals will follow the normal state and federal board processes where advisory committees, regional advisory councils, and the public can review and comment on the proposals before board action is taken.

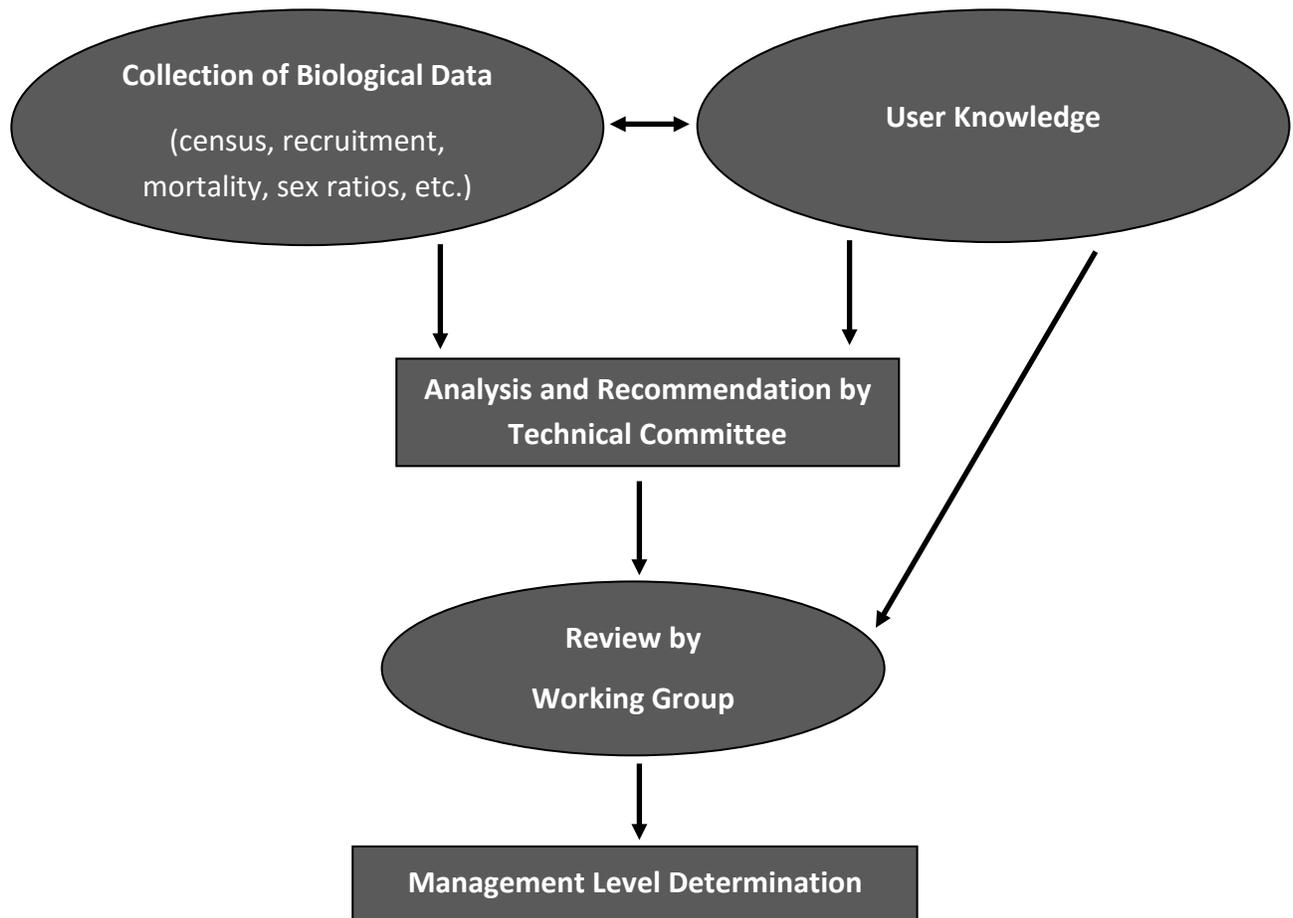


FIGURE 12. Management level decision-making process diagram.

**Goal 2:** Recognizing that caribou herds naturally fluctuate in numbers, manage for a healthy population using strategies adapted to population levels and trends.

**Strategy:**

- A. Identify population management level to help guide decisions about management actions and caribou harvest. Four management levels are prescribed, relating to population size and trend (Table 1). The management levels presented in Table 1 should not be viewed as thresholds to trigger specific management actions, but as decision-making guidelines. When specific population conditions do not clearly fall into these categories, a combination of management actions and harvest recommendations outlined in Table 2 may be appropriate.



Summer months typically see the largest caribou groupings, or “aggregations.” Photo: NPS/K. Joly

TABLE 2. Population management actions and potential harvest recommendations.

**Liberal Management (Green)****Management actions:**

1. Census the herd every 3 years or more often if major concerns arise.
2. Monitor calf production and survival, adult mortality, and exposure to disease annually.
3. Conduct comprehensive caribou health assessments at least once every 3 years to monitor causes of disease, types and levels of parasites, body condition, and levels of contaminants of concern in caribou tissues.
4. Estimate numbers of male and female caribou harvested annually throughout the range of the herd. Collect harvest information including date taken, residency of hunter, and approximate location of kill.
5. Investigate environmental contaminants as necessary.
6. Conduct thorough and timely investigations of local caribou die-offs.
7. Monitor changes in vegetation and habitat conditions, including winter and summer range, and consider both long term (decades) and short term (seasons) changes.
8. Monitor weather conditions year-round throughout the Western Arctic Caribou Herd range and snow conditions annually at least in Western Arctic Caribou Herd wintering areas.
9. Monitor numbers of wolves and brown bears in selected areas throughout the herd's range.
10. Estimate impacts of proposed development projects on caribou.
11. During increasing population trends, liberalize access, seasons and bag limits.

**Caribou harvest recommendations may include:**

1. Reduce harvest of bulls by nonresidents to maintain at least 30 bulls:100 cows.
2. No restriction of bull harvest by resident hunters unless bull:cow ratios fall below 30 bulls:100 cows.

TABLE 2. (continued)

### **Conservative Management (Orange)**

**Management actions:** In addition to those listed under “Liberal Management,” the following management actions will be conducted:

1. Census the herd at least once every 2 years.
2. Monitor sex and age composition every 2-3 years.
3. Conduct comprehensive caribou health assessments at least once every 2 years to monitor causes of disease, types and levels of parasites, body condition, and levels of contaminants of concern in caribou tissues.
4. Intensify efforts to monitor harvests.
5. Increase monitoring of possible environmental contamination as warranted.
6. Intensify monitoring of vegetation, snow and weather conditions and other habitat conditions that may impact caribou throughout their range.
7. Reduce impacts of human activities on caribou where possible.
8. Educate hunters about caribou conservation and the effects of harvesting cows on population size and trend. Additionally, encourage voluntary reduction in cow harvests by residents.
9. Monitor predator populations and, if appropriate, liberalize hunting and trapping regulations.

**Caribou harvest recommendations may include:**

1. Encourage voluntary reduction in calf harvest, especially when the population is declining.
2. No cow harvest by nonresidents.
3. Restriction of bull harvest by nonresidents.
4. Encourage voluntary reduction in cow harvests by residents.
5. Limit the subsistence harvest of bulls only when necessary to maintain a minimum 30:100 bull:cow ratio.

TABLE 2. (continued)

### **Preservative Management (Yellow)**

**Management actions:** In addition to those listed under “Conservative Management,” the following management actions will be conducted:

1. Census the herd annually.
2. Monitor calf production and survival, adult mortality, sex and age composition, caribou health, and age structure of the herd to the maximum degree possible.
3. Monitor harvests using permit and quota systems.
4. Maximize monitoring of environmental contamination if concerns exist.
5. Monitor vegetation, snow and weather conditions and other habitat conditions that may impact caribou to the maximum extent possible throughout their range.
6. Mitigate human impacts to caribou.
7. Prevent loss or degradation of seasonal habitat and maximize access to these areas by caribou.

**Caribou harvest recommendations may include:**

1. No harvest of calves.
2. Limit harvest of cows by resident hunters through permit hunts and/or village quotas.
3. Limit the subsistence harvest of bulls to maintain at least 30 bulls:100 cows.
4. Harvest restricted to residents only, according to state and federal law. Closure of some federal public lands to non-qualified users may be necessary.

TABLE 2. (continued)

**D. Critical Management (Red)**

**Management actions:**

1. Intensify all of the management actions listed under “Preservative Management” to the maximum extent possible.

**Caribou harvest recommendations may include:**

1. No harvest of calves.
2. Highly restrict the harvest of cows through permit hunts and/or village quotas.
3. Limit the subsistence harvest of bulls to maintain at least 30 bulls:100 cows.
4. Harvest restricted to residents only, according to state and federal law. Closure of some federal public lands to non-qualified users may be necessary.

### 3. HABITAT

Maintaining adequate high-quality habitat is essential for the long-term conservation of the Western Arctic Caribou Herd. Caribou habitat identification and conservation will require a high level of coordination between land owners, land management agencies, resource specialists, and everyone who uses or values the herd. Habitat needs of the herd are not completely understood but we know that use of the landscape by caribou, especially migration routes and wintering areas, can be influenced by external factors, including weather events and wildfire. Mapping and publication of this information is also essential and will involve interagency cooperation.

**Goal 3:** Assess and protect important habitats of the Western Arctic Caribou Herd.

**Strategies:** The Working Group will encourage resource management agencies to:

- A. Identify, describe and monitor habitat used by the herd in the past and present.
- B. Consider the habitat needs of the herd and inform managers of concerns about potential habitat impacts.
- C. Investigate the potential effects of wildfire on habitat within the range of the Western Arctic Caribou Herd.

**Management Actions:**

#### Habitat Description

1. Improve understanding of habitat use, needs and availability of the Western Arctic Caribou Herd, including:
  - a. Describe the entire range that the herd uses over many years.
  - b. Identify and describe the important habitat used by the herd in relation to the total range, including concentrated calving areas, main migration routes, insect relief areas, and summer and winter use areas.
  - c. Collect and preserve traditional and local knowledge about migration corridors and other habitat uses by the Western Arctic Caribou Herd.
  - d. Identify and investigate factors that influence the distribution of the herd and its use of the range over time.
  - e. Place a high priority on describing and monitoring caribou winter range and associated habitats.

2. Encourage management agencies and other organizations to develop a shared Geographical Information System (GIS) database of lands, resources and uses within the range of the herd. Desired information includes seasonal ranges of the herd, vegetative cover maps, land ownership, community use areas, transportation corridors, and extractable resources.
3. Obtain land cover data for the entire range of the herd that can be used by all agencies and other interested users and update it every 15–20 years.

#### Habitat Protection

1. Identify, monitor, and report about important habitat areas and potential impacts to them to the Working Group and land management agencies.
2. Identify and recommend permanent or seasonal protection measures needed for important habitats.

#### Fire Management

1. Recognizing that fire is a normal part of the ecology of the arctic ecosystem and is important for maintaining a diverse landscape, evaluate the effects of fire on caribou habitat. As knowledge is gained, recommend fire management strategies to landowners and agencies.
2. Manage for various-aged lichen stands in caribou winter range, recognizing the importance of old growth lichen ranges as caribou winter forage.
3. Regularly review and evaluate agency fire management plans and fire management options to ensure they reflect the best interest of the Western Arctic Caribou Herd.
4. Manage at a landscape level to allow caribou the ability to shift their seasonal ranges in response to environmental variability.



Shed caribou antler in a bed of lichen.  
Photo: NPS/K. Joly

## 4. REGULATIONS

The Working Group is neither a regulation-making nor an enforcement body. However, it recognizes the necessity for having regulations in order to protect the Western Arctic Caribou Herd and treat all people fairly. The Working Group also recognizes that as conditions change for both the caribou herd and hunters, regulations need to be reviewed and changed by the appropriate bodies.

For current regulations affecting hunters of the Western Arctic Caribou Herd, consult the Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska and the State of Alaska Hunting Regulations.

**Goal 4:** Promote consistent, understandable and effective state and federal regulations for the conservation of the Western Arctic Caribou Herd.

### Strategies:

- A. Work within the existing regulatory process of advisory committees and regional advisory councils, the Alaska Board of Game, and the Federal Subsistence Board before management decisions are made. Also, work through existing state and federal processes to assure proposals and regulations are consistent with this plan.
- B. Acknowledge and provide for local caribou hunting and use patterns as well as opportunities for other users.
- C. Develop hunting proposals guided by the herd management strategies outlined in this plan which consider both herd size and population trend.
- D. Ensure that communities within the range of the herd are consulted during the development and review of hunting regulations.
- E. When appropriate, support simplified caribou hunting regulations to make them more understandable for users.

### Management Actions:

1. Promote consistency between state and federal regulations by designating a representative from the Working Group to attend both state and federal advisory meetings, as opportunity allows, to help inform participants of regulation discrepancies as they arise.
2. Encourage more efficient, effective and consistent enforcement of regulations affecting caribou and caribou hunting. Recognize and encourage the support of all authorities that can enforce regulations affecting caribou. These include state and

- federal authorities as well as Alaska Native corporation trespass programs, tribal courts, boroughs and the users themselves.
3. Support efforts to develop consistent and effective state and federal regulations for guiding and transporting visiting hunters.
  4. Recommend that the regulatory bodies reevaluate the amount of caribou reasonably necessary for subsistence uses as needed, and provide Working Group recommendations to the regulatory bodies when changes to the amount necessary for subsistence uses are being considered.
  5. Submit Working Group recommendations affecting caribou and caribou hunting directly to the appropriate agencies, organizations, and regulatory bodies, with copies to the advisory committees and regional advisory councils.



Western Arctic caribou crossing the Kobuk River at Onion Portage with Jade Mountains in the background, 2007. Photo: USFWS/T. Moran.

## 5. REINDEER

Reindeer are a privately owned, domesticated European stock of caribou. Caribou had been absent from the Seward Peninsula for at least 50 years when reindeer were introduced to Alaska near Teller in 1892. Reoccupation of portions of the Seward Peninsula by caribou at the end of the 20<sup>th</sup> century has proven disastrous for the reindeer industry. As of 2018, nearly all of the reindeer on the Seward Peninsula have been lost by joining the migrating Western Arctic Caribou Herd and not returning to their home ranges.

**Goal 5:** Seek to minimize conflict between the reindeer industry and the Western Arctic Caribou Herd.

**Strategy:**

- A. Use the Working Group and resource management agencies (Alaska Department of Fish and Game, Alaska Department of Natural Resources, Bureau of Land Management, and National Park Service) to share information and find solutions to issues concerning caribou and reindeer.

**Management Actions:**

1. Provide herders with available information about movements and distribution of caribou on reindeer ranges in a timely manner.
2. Request management agencies to work cooperatively and meet annually with the Kawerak Reindeer Herders Association to discuss and agree on methods to reduce intermingling between reindeer and caribou, and to reduce conflicts between hunters and herders.
3. Educate the public that reindeer are privately owned and caribou are wildlife managed by state and federal agencies and assist in sharing information on how to distinguish between reindeer and caribou.
4. Work with the Alaska Board of Game and Federal Subsistence Board to adjust hunting seasons to minimize the taking of reindeer by hunters.

## 6. KNOWLEDGE

Extensive knowledge of caribou, their habitat, and how they interact with the environment and humans is vitally important to making sound management decisions that affect the future of the Western Arctic Caribou Herd.

**Goal 6:** Integrate scientific information, traditional ecological knowledge of Alaska Native users, and knowledge of all users into management of the Western Arctic Caribou Herd.

### **Strategies:**

- A. Identify information gaps and prioritize research and monitoring needs.
- B. Seek out and preserve traditional ecological and local knowledge about caribou within the range of the herd. Apply this information in management plans and actions.
- C. Promote and facilitate interchange between Working Group members and researchers who are collecting or plan to collect information on the Western Arctic Caribou Herd.

### **Management Actions:**

#### General Actions

1. Contact community and elder councils and individual elders for traditional knowledge about the Western Arctic Caribou Herd and distribute these findings through the Working Group's newsletter, annual meeting, and website.
2. Seek knowledge from consumptive and non-consumptive users about the Western Arctic Caribou Herd.
3. Develop an information database on local knowledge of caribou in northwest Alaska.
4. Obtain funding for Working Group members to participate in the Working Group as well as caribou conferences such as the North American Caribou Workshop.
5. Encourage agencies and outside investigators to annually discuss proposed and funded research at Working Group meetings and post this information on the Working Group website.
6. Work cooperatively to seek funding to document traditional knowledge of caribou.

7. To the maximum extent possible, incorporate user knowledge on caribou abundance, distribution, condition, disease, weather, and habitat when making management recommendations concerning population status.
8. Engage in caribou roundtable discussions among Working Group members or have at least one presentation incorporating traditional and local knowledge at each Working Group meeting.

Scientific Information Needs

1. Develop and maintain a limited annotated electronic bibliography of scientific and cultural studies relevant to the Western Arctic Caribou Herd, post the bibliography on the website, and update it as needed.
2. The Working Group's Technical Committee will maintain a priority list of information needs concerning conservation of the Western Arctic Caribou Herd and update the list as needed.



Bull caribou swimming across the Kobuk River. Photo: USFWS.

## 7. EDUCATION

Educating all users, stakeholders and managers of the Western Arctic Caribou Herd is critically important for the continuation of the herd and to reduce user conflicts.

**Goal 7:** Increase understanding and appreciation of the Western Arctic Caribou Herd and its management through the sharing of scientific information, traditional ecological knowledge of Alaska Native users, and knowledge of all other users.

**Strategy:**

- A. Recognizing that education is a relationship between the Working Group, state and federal agency staff, and users, develop programs to share traditional ecological and scientific knowledge about the herd.

**Management Actions:**

1. Work with local school districts across the range of the herd to develop and implement curriculum-based caribou lessons, activities, and kits that include traditional and scientific information with a multicultural approach.
2. Continue to involve students and community members who live within the historical range of this herd with caribou radio-collaring, census photography, and other activities.
3. Establish an educational website with links to other websites with information about caribou.
4. Continue publication of the Working Group's "Caribou Trails" newsletter.
5. Develop or expand information and outreach to different user groups such as subsistence hunters, sport hunters, wilderness travelers, and wildlife viewers.
6. Support distribution of information about access policies concerning private land, including Native allotments and corporation land, and state and federal access policies.
7. Develop and make available informational materials intended to prevent waste of caribou meat.
8. Develop and maintain a general reading list about the Western Arctic Caribou Herd.
9. Implement education outreach efforts based on the management strategies appropriate for the four caribou population management levels shown on Table 1 and encourage public discussion.

10. Encourage family and community level programs (or activities) that help integrate messages presented at school.
11. Encourage agencies and organizations to sponsor caribou science and culture camps that bring elders and youth together and provide an opportunity for “hands on” learning.



Winter caribou on the run. Photo: NPS/K. Joly

## 8. HUMAN ACTIVITIES

The Western Arctic Caribou Herd Working Group recognizes that a number of human activities have the potential to affect the Western Arctic Caribou Herd.

### **Industrial and Road Development**

Outside of established communities, there has been little lasting human development within the range of the Western Arctic Caribou Herd. The Red Dog lead and zinc mine with its associated port site and 52-mile long road is currently the largest development complex within its range. Recent research demonstrated that Red Dog road has caused some caribou to delay migration (Wilson et al. 2016). Spur roads to additional deposits in the Red Dog area are currently under consideration. Two hundred miles to the east in the upper Kobuk River, plans for construction of a 211-mile road from the Dalton Highway to the Ambler Mining District with high quality deposits of copper, zinc, lead, silver and gold have reached the permitting stage. The westward expansion of petroleum development from Prudhoe Bay into the National Petroleum Reserve-Alaska (NPR-A) is now penetrating well into the eastern range of the Western Arctic Caribou Herd and could eventually impact the herd's calving grounds. Several transportation corridors that would bisect the range of this herd are being considered for future development, as are production of coal and natural gas. Telecommunications infrastructure continues to expand within the herd's range. These activities could affect movements and distribution of the Western Arctic Caribou Herd. They are also likely to both increase levels and change patterns of human use in northwest Alaska.

### **Recreation**

People who come to see and photograph caribou may also affect this herd. Maternal female caribou gather on the calving grounds to give birth and are very sensitive to disturbance by aircraft, industrial structures and activities, and people. Caribou, driven by insect harassment in summer, gather into huge masses of animals called aggregations. Aircraft overflights carrying visitors and photographers could stress caribou at a time of year when they should be feeding and gaining fat reserves for the winter months. Regulation of non-consumptive activities like these may be required in the future.

### **Environmental Contamination**

Local residents are concerned about the effects of environmental contamination on caribou and human health. Concerns about contaminants include heavy metals from the Red Dog Mine, radionuclides from Project Chariot near Cape Thompson, and radioactive fallout from atmospheric testing of nuclear warheads and other sources. Examinations of dead animals and further laboratory tests have shown that, so far, neither heavy metals nor radionuclides have affected the health of caribou in this herd.

**Goal 8:** Minimize the impact of development, recreation and contamination on the Western Arctic Caribou Herd and its users.

**Strategies:**

- A. The Western Arctic Caribou Herd Working Group and supporting agencies will monitor prospective development projects that have the potential to affect the herd.
- B. Use available data to model possible responses by the herd to future changes in habitat related to development.
- C. Consider the cumulative effects of resource exploration and development (for example, hard rock and coal mining, road building, and oil and gas development) and how it may impact Western Arctic Caribou Herd habitat.
- D. Informally monitor recreational use of sensitive caribou habitat and develop suggested guidelines for appropriate behavior for recreationists as needed.
- E. Track contaminants findings for caribou herds across the north.

**Management Actions:**

- 1. Have the Resource Development Committee report annually on potential impacts to habitat and the herd from resource extraction, transportation activities and other potential sources of disturbance.
- 2. Have the Resource Development Committee draft comment letters for relevant pending development projects.
- 3. Request presentations from agencies, organizations, and businesses that have new information on resource development projects, recreational activities, or contaminants which may inform Working Group discussion and recommendations.
- 4. Inform users of the herd about proposed development activities, contaminant findings, and other human-caused impacts to the herd.
- 5. Identify areas that may be important to the Western Arctic Caribou Herd in the future as environmental conditions change in response to development.
- 6. Recommend a cumulative impact analysis be done on existing human-caused modifications to the herd and its habitat to establish a baseline of impacts on the herd to date, and recommend similar analyses be done on all new actions.
- 7. Monitor impacts if projects are implemented and track resulting changes to the herd and habitat.

8. Identify and recommend permanent or seasonal protection measures needed for important habitats.
9. Ask management agencies to measure contaminants and attempt to assess/monitor impacts from pollutants, such as toxic substances and nuclear radiation, on the herd, its habitat, and its users, and share these findings with the Working Group.
10. Recommend project-specific mitigation to land managers as projects are proposed within the range of the herd.
11. Ensure that communities are consulted during the review and permitting process for all developmental activities within the range of the herd.



Caribou tracks near Kotzebue, November 2011. Photo: USFWS/S. Georgette.

## 9. CHANGING CLIMATE

The Western Arctic Caribou Herd Working Group recognizes that northern Alaska's climate is changing and those changes are taking place more rapidly here than in other places around the world. Warmer conditions can lead to less and thinner ice on rivers, lakes and the ocean, earlier green up, changes in plant communities, more wildfires and icing events, heavier snowfall, and shifts in migration, all of which can impact caribou and the ability of users to access them. Many of these changes are already evident in the herd's range.

**Goal 9:** Monitor and assess impacts of the changing climate on herd size, habitat, distribution, and ecology, as well as user access.

### Strategies:

- A. Support the monitoring and studying of the changing climate, especially as it relates to potential impacts on the herd and its users, using indigenous, local, and western scientific knowledge.
- B. Use available data to model possible responses by the herd to future changes in habitat related to the changing climate.
- C. Use adaptive strategies to manage changing climate-related impacts on the herd and its habitat.

### Management Actions:

1. Make formal requests to supporting agencies to monitor and research the potential impacts of the changing climate on the herd and its users.
2. Request agency updates every 2-3 years on changes in climate topics that relate to the herd and its habitat.
3. Ask agencies to consider the effects of changes in climate related to caribou when evaluating resource development projects.
4. Identify areas that may be important to the Western Arctic Caribou Herd in the future as environmental conditions change in response to the changing climate.
5. Encourage expansion of weather data collection efforts throughout the range of the herd.
6. Identify the effects of the changing climate on important habitat areas.
7. Consider the effects of the changing climate on the other eight plan elements.

## IMPLEMENTATION: PUTTING THE PLAN TO WORK

This section summarizes how the Western Arctic Caribou Herd Cooperative Management Plan will be translated into activities.



Caribou entering the Kobuk River. Photo: NPS/K. Joly

### **Working Group Activities**

The Working Group, through its annual meeting, works in collaboration with state and federal resource agencies to implement this plan. Improving communication and sharing information among stakeholders and resource agencies is an important function of the Working Group. The Working Group will identify policy concerns and recommend actions to agencies and others who may influence the welfare of the herd.

### **Resource Agency Activities**

Resource agency staff working with the herd or its habitat will meet annually in a Technical Committee meeting. The purpose of this meeting will be to review information reflecting herd and habitat status, plan and coordinate management activities, and prepare a brief annual status report, including recommendations, to the Working Group. Representatives from the Working Group may attend this meeting. Additionally, with participation by qualified biologists not directly working with the herd, a review of the status of the herd and its habitat, inventory and monitoring protocols, and management information needs and priorities may be undertaken when appropriate (coinciding with future revisions of the plan). This review will recognize the importance of both scientific information as well as the knowledge and concerns of Working Group members and other users of the herd. State and federal agencies will develop and maintain written cooperative agreements to share information, resources, and technical support concerning the plan.

### **Plan Review**

The Working Group will review and revise this plan about every five years, or more frequently as needed.

**SIGNATORIES FOR THE WESTERN ARCTIC CARIBOU HERD WORKING GROUP**

1. Anchorage Fish and Game Advisory Committee



Matt Moore (Alternate)

12/11/19

Date

2. Buckland, Deering, Selawik



Ron Moto, Sr.

12-11-2019

Date

3. Anaktuvuk Pass, Nuiqsut



Eli Nukapigak

12-11-19

Date

4. Elim, Golovin, White Mountain



Charles Saccheus

12/11/19

Date

5. Fairbanks Hunters



John Siegfried (Alternate)

12/11/19

Date

6. Hunting Guides

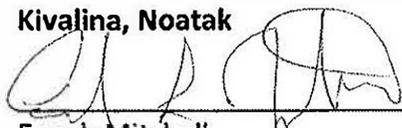


Jake Jacobson

12-11-19

Date

7. Kivalina, Noatak

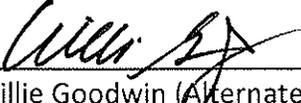


Enoch Mitchell

12/11/19

Date

8. Kotzebue

  
Willie Goodwin (Alternate)

12-12-19  
Date

9. Koyukuk River

  
Pollock Simon, Sr.

12-12-19  
Date

10. Lower Kobuk River

  
Vern Cleveland, Sr., Chair

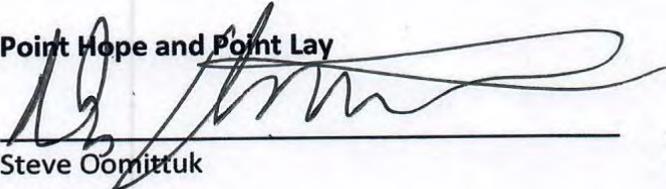
12-11-19  
Date

11. Middle Yukon River

  
Michael Stickman (Alternate)

12/12/19  
Date

12. Point Hope and Point Lay

  
Steve Oomittuk

2-18-2020  
Date

13. Nome

  
Charlie Lean

12/11/2019  
Date

14. Conservationists

  
Tim Fullman

12/11/19  
Date

15. Northern Seward Peninsula

Elmer Seetot, Jr.  
Elmer Seetot, Jr.

12-11-2019  
Date

16. Reindeer Herders Association

Tom Gray  
Tom Gray

12-11-19  
Date

17. Southern Seward Peninsula

Morris Nassuk  
Morris Nassuk

11 Dec. 19  
Date

18. Transporters

Brad Saalsaa (Alternate)  
Brad Saalsaa (Alternate)

12-11-19  
Date

19. Upper Kobuk River

William Bernhardt  
William Bernhardt

12/12/2019  
Date

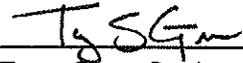
20. Atqasuk, Utqiagvik, Wainwright

Wanda Kippi  
Wanda Kippi

12/11/19  
Date

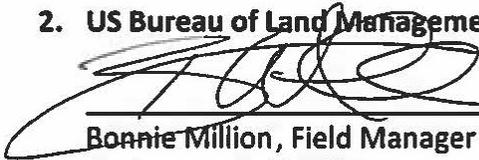
**SIGNATORIES FOR THE RESOURCE MANAGEMENT AGENCIES**

**1. Alaska Department of Fish and Game**

  
\_\_\_\_\_  
Tony Gorn, Regional Supervisor  
Regional 5, Division of Wildlife Conservation

12/12/2019  
Date

**2. US Bureau of Land Management**

  
\_\_\_\_\_  
Bonnie Million, Field Manager  
Anchorage Field Office

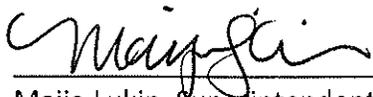
1/27/2020  
Date

**3. US Fish and Wildlife Service**

  
\_\_\_\_\_  
Susan Georgette, Refuge Manager  
Selawik National Wildlife Refuge

12/12/2019  
Date

**4. US National Park Service**

  
\_\_\_\_\_  
Maija Lukin, Superintendent  
Western Arctic National Parklands

12 DEC 19  
Date

## GLOSSARY

These are not legal definitions: they are to assist a reader's understanding of the plan.

**Advisory Committee (AC)** — Elected citizen committees that advise the Alaska Boards of Fish and Game in the State of Alaska's regulatory process. There are nine advisory committees located within the range of the Western Arctic Caribou Herd: Southern Norton Sound, Northern Norton Sound, Kotzebue Sound, Noatak-Kivalina, Lower Kobuk, Upper Kobuk, Koyukuk, North Slope, and Middle Yukon.

**Alaska Board of Game** — The regulatory body that makes the State of Alaska hunting and trapping regulations.

**Amounts Reasonably Necessary for Subsistence (ANS)** — Once the Board of Fisheries or Board of Game has determined that there are customary and traditional uses of a fish stock or game population, they must set the "amount reasonably necessary for subsistence uses," keeping in mind the sustained yield principle. This is often referred to as the "ANS." The boards rely on harvest data provided by the divisions of Subsistence, Wildlife Conservation, Commercial Fisheries, and Sport Fish, as well as other data, to help guide them. The ANS pertaining to the WAH is currently set at 8,000-12,000; it should be noted here that the ANS includes both the Teshekpuk (TCH) and Western Arctic caribou herds.

**Bull: cow and calf: cow ratios** — These ratios express the numbers of bulls and calves (both sexes) in the population, respectively, in relation to the number of female (cow) caribou. For example in the fall of 1998, 54 bulls were counted per 100 cows (bull: cow ratio 54:100) and 45 calves were counted per 100 cows (calf: cow ratio 45:100).

**Changing climate** — A significant change in either the mean state of the climate (such as average temperature) or in its variability, persisting for an extended period (typically decades or longer). These changes may be due to natural processes or human-caused factors.

**Conservation** — Managed use of a resource to ensure long-term sustainability.

**Database** — A collection of measurements or descriptions used for analyses and decision-making.

**Ecosystem** — An ecological community together with its physical environment, considered as a unit. The Western Arctic Caribou Herd is an important part of the Northwest Arctic ecosystem.

**Environment** — The complete surroundings or circumstances in which an organism lives. The Western Arctic Caribou Herd lives in arctic and subarctic terrestrial (land) environments in northwestern Alaska.

**Fire management** — Refers to a variety of responses to wildfire from total suppression to controlled burns by management agencies.

**Fall and spring composition** — Composition counts are flown in the fall to determine calf survival during the summer and the proportion of bulls in the Western Arctic Caribou Herd. Spring composition counts measure recruitment—the proportion of last year’s calves joining the herd as young adults. Both are important measures of population condition.

**Federal Subsistence Board** — The regulatory body that makes subsistence hunting, fishing, and trapping regulations on federal public lands in Alaska.

**Geographic Information System (GIS) data** — Data about the location and types of lands, resources, and uses within a specific area that is used to make computer-generated maps.

**Guides** — Licensed Alaska big game guides, unless stated otherwise.

**Habitat** — The physical and biological resources required by caribou in the Western Arctic Caribou Herd for survival and reproduction. Calving grounds and migration corridors are examples of certain habitats used by the Western Arctic Caribou Herd.

**Harvestable surplus** — The number of caribou that can be killed by hunters and still keep a healthy population.

**Healthy** — In management of the Western Arctic Caribou Herd, the term refers to the population’s capability to reproduce and survive.

**Herd** — Used as another term for “population” in this plan, in which members are defined by their calving location.

**Important habitats** — The geographic and political descriptions of types of habitat thought to be essential for the survival of a population like the Western Arctic Caribou Herd. Important habitats can describe calving grounds, insect relief areas, winter and summer feeding areas and migration corridors.

**Landscape management** — Policies, tools and regulations used to enhance a geographic area bounded by ecological rather than political boundaries.

**Mitigation measures** — Legally mandated activities required to compensate for loss of habitat, or to prevent degradation of habitat or habitat damage, usually caused by development or other permitted activities.

**Non-consumptive uses/user** — Usually refers to outdoor recreationists who do not hunt or fish. Wildlife viewing and photography, river rafting, and canoeing are non-consumptive uses.

**Outfitters** — Commercial operators who provide services and or equipment for hunters and others.

**Photocensus** — The method used to estimate the number of caribou in the Western Arctic Caribou Herd with the aid of a camera mounted in an aircraft.

**Population** — With regard to caribou, a “population” is a group of individuals of which the females consistently use a specific calving ground. The Western Arctic Caribou Herd is a population.

**Population level** — The number of caribou in a herd as it relates to population management. Four population levels (liberal, conservative, preservative, and critical) are applied to recommended management actions to ensure perpetuation of the herd.

**Population trend** — The increase or decrease in population size between at least two points in time. For example, from 1976 to 1990 the Western Arctic Caribou Herd grew larger, showing an increasing population size over time.

**Range condition** — The physical condition of the vegetation, including the amounts, types and proportions of plants present within some area. This term is often used to describe the ability of an area to provide food for caribou.

**Recruitment** — The number of calves that survive to become reproductive adults. For the Western Arctic Caribou Herd, the number of calves that survive to become yearlings is used to approximate recruitment, even though most female caribou from this herd do not become sexually mature until they are three years old.

**Regional Advisory Council (RAC)** — A federal advisory committee of local residents appointed by the Secretaries of the US Departments of Interior and Agriculture. Federal Subsistence Regional Advisory Councils develop proposals to change federal subsistence regulations and review regulatory proposals submitted by others. These proposals are then submitted to the Federal Subsistence Board. There are four RACs that have authority within the range of the Western Arctic Caribou Herd: North Slope, Western Interior, Seward Peninsula, and Northwest Arctic.

**Reproduction** — The amount or proportion of calves born into a caribou population.

**Resident/Nonresident hunter** — Refers to Alaska residency as defined by statute.

**Resource management agencies** — Government organizations charged with caring for publicly-owned natural resources, such as the Western Arctic Caribou Herd.

**Seasonal habitat** — Habitat used primarily during certain times of the year. Insect relief areas where the caribou go to get away from flies and mosquitoes are seasonal habitat.

**Stakeholder group** — A group of like-minded individuals who have a specific interest in an enterprise or process. Subsistence hunters, sport hunters, and outfitters are all different stakeholder groups with respect to the Western Arctic Caribou Herd.

**Subsistence** — Food gathering, clothing/handicraft making and related activities variously defined by State of Alaska and Federal statutes.

**Sustained yield** — Management that ensures that human uses and harvest can be maintained indefinitely without long-term harm to the caribou population or habitat.

## REFERENCES

- ALASKA DEPARTMENT OF FISH AND GAME. 1984. Western Arctic Caribou Herd strategic management plan. Nome, Alaska.
- ALASKA DEPARTMENT OF FISH AND GAME. 2002. Yukon Flats Cooperative Moose Management Plan. 33 pp. Fairbanks, Alaska.
- ALASKA DEPARTMENT OF FISH AND GAME, US BUREAU OF LAND MANAGEMENT, US FISH AND WILDLIFE SERVICE AND US NATIONAL PARK SERVICE. 1995. Fortymile Caribou Herd management plan. Fairbanks, Alaska. On-line Available [http://aurora.ak.blm.gov/40milecaribou/manage\\_plan/caribou.html](http://aurora.ak.blm.gov/40milecaribou/manage_plan/caribou.html).
- ANDERSON, D. D. 1968. A Stone Age campsite at the gateway to America. *Scientific American* 218:24-33.
- BURCH E.S. 1998. The Inupiaq Eskimo Nations of Northwest Alaska. University of Alaska Press, Fairbanks, Alaska.
- BURCH E.S. 2012. Caribou Herds of Northwest Alaska, 1850–2000. Krupnick, I. and J. Dau, eds. Univ. of Alaska Press, Fairbanks, AK. 203 pp.
- BURNS J.J. 2001. The arctic research laboratory and institutional regime shifts. Pages 215–228 in DW Norton, editor. *Fifty more years below zero*. University of Alaska Press, Fairbanks, Alaska.
- CAMPBELL, J.M. 1998. North Alaska Chronicle: Notes from the End of Time, the Simon Paneak Drawings. Museum of New Mexico Press, Santa Fe. 147 pp.
- DAU, J. 2000. Managing reindeer and wildlife on Alaska's Seward Peninsula. *Polar Research* 19:57– 62.
- DAU, J. 2011. Units 21D, 22A, 22B, 22C, 22D, 22E, 23, 24 and 26A caribou management report in P. Harper, editor. Caribou management report of survey and inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game. Juneau.
- DAU, J. 2015. Units 21D, 22A, 22B, 22C, 22D, 22E, 23, 24, and 26A. In Caribou management report of survey and inventory activities, 1 July 2012–30 June 2014. Edited by P. Harper and L.A. McCarthy. Alaska Department of Fish and Game, Juneau. Chapter 14, pp. 14-1 through 14-89. Available from [http://www.adfg.alaska.gov/static/research/wildlife/speciesmanagementreports/pdfs/caribou\\_2015\\_chapter\\_14\\_wah.pdf](http://www.adfg.alaska.gov/static/research/wildlife/speciesmanagementreports/pdfs/caribou_2015_chapter_14_wah.pdf).
- JOLY, K., R.R. JANDT, C.R. MEYERS AND J.M. COLE. 2007. Changes in vegetative cover on Western Arctic Herd winter range from 1981–2005: potential effects of grazing and climate change. *Rangifer Special Issue* 17: 199–207.

- JOLY, K., D. R. KLEIN, D. L. VERBYLA, T. S. RUPP AND F. S. CHAPIN III. 2011. Linkages between large-scale climate patterns and the dynamics of Alaska caribou populations. *Ecography* 34 (2): 345-352.
- LENT, P.C. 1966. Calving and related social behavior in the barren-ground caribou. *Zeitschrift fur Tierpsychologie* 23 (6): 701–756.
- PRICHARD, A., K. JOLY AND J. DAU. 2012. Quantifying telemetry collar bias when age is unknown: a simulation study with a long-lived ungulate. *J. Wildl. Manage.* 76 (7): 1441-1449.
- RIVEST, L.-P., S. COUTURIER AND H. CREPEAU. 1998. Statistical methods for estimating caribou abundance using post-calving aggregations detected by radio telemetry. *Biometrics* 54: 865–876.
- SKOOG R.O. 1968. Ecology of the caribou (*Rangifer tarandus granti*) in Alaska. Thesis, University of California, Berkeley.
- SPADER, J., D. CALLAWAY AND D. JOHNSON. 2003. The Western Arctic Caribou Herd: barriers and bridges to cooperative management. Technical Report NPS/cso/UW–2003–01. 100 pp. Kotzebue, Alaska.
- WILSON, R.R., M.B. HOOTEN, B.N. STROBEL, AND J.A. SHIVIK. 2010. Accounting for individuals, uncertainty, and multiscale clustering in core area estimation. *J. Wildl. Manage.* 74 (6): 1343–1352.
- WILSON, R. R., L. S. PARRETT, K. JOLY, AND J. R. DAU. 2016. Effects of roads on individual caribou movements during migration. *Biological Conservation* 195: 2-8.

## **APPENDIX 1**

### **Mandates of Participating Resource Management Agencies**

#### **Alaska Department of Fish and Game (ADF&G)**

The responsibilities of ADF&G are described in Title XVI of the Alaska Statutes. Alaska's renewable fish and wildlife resources and their habitats are to be conserved and managed for sustained yield. The use and development of these resources must be in the best interest of the economy and the well-being of the people of the state.

The ADF&G Division of Wildlife Conservation's mission is to conserve and enhance Alaska's wildlife and habitats and provide for a wide range of public uses and benefits. The Division of Subsistence is the branch of ADF&G responsible for providing comprehensive information on the customary and traditional use of wild resources in Alaska.

Biologists in the Division of Wildlife Conservation have primary responsibility for population management of the Western Arctic Caribou Herd, along with the Alaska Board of Game, which primarily regulates hunting. Subsistence Resource Specialists in the Division of Subsistence collect information on subsistence use of caribou through cooperative community harvest surveys. Both divisions cooperate with other organizations including federal resource management agencies and the Federal Subsistence Board.

#### **Alaska Department of Natural Resources (DNR)**

The DNR manages a significant amount of habitat in the range of the Western Arctic Caribou Herd. The following fish and wildlife habitat goals are identified in the Northwest Area Plan adopted in 2008 by the Commissioner of DNR and published by the DNR Division of Mining Land and Water.

- Ensure Access to Public Lands and Waters. Ensure access to public lands and waters to promote or enhance the responsible public use and enjoyment of fish and wildlife resources.
- Mitigate Habitat Loss. When resource development projects or land disposals occur, avoid or minimize reduction in the quality and quantity of fish and wildlife habitat.
- Contribute to Economic Diversity. Contribute to Alaska's economy by protecting the fish and wildlife resources which contribute directly or indirectly to local, regional, and state economies through commercial, subsistence, sport and non-consumptive uses.
- Maintain and Protect Publicly Owned Habitat Base. Protect and maintain in public ownership and protect habitat for fish and wildlife resource protection to supply sufficient populations or a diversity of species to support commercial, recreational, or traditional uses on an optimum sustained yield basis; and protect

unique or rare assemblages of a single or multiple species of regional, state, or national significance.

- Manage for Sustained Yield. DNR management of state land and resources is to be consistent with the requirements of sustained yield, as expressed in the State Constitution.
- Avoid the Introduction of and Reduce the Spread of Invasive Plant and Animal Species. State lands are to be managed to avoid or reduce the spread of non-native invasive animals and plants. This management shall be consistent with the applicable requirements of 11 AAC 34.
- Manage to Maintain and Enhance the Natural Environment. DNR, in its management of habitat on state lands, shall attempt to maintain and enhance the natural environment in areas known to be important as habitat for fish and wildlife.

### **Bureau of Land Management (BLM)**

The Federal Land Policy and Management Act of 1976 (FLPMA) is called the BLM Organic Act because it establishes BLM's management responsibilities. FLPMA requires that the BLM manage for multiple use, sustained yield, and environmental protection. The term "multiple use" management is defined as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people."

FLPMA also specifies that "...the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use..." The Alaska National Interest Lands Conservation Act (ANILCA) further defines BLM's management responsibilities, including responsibilities to "provide for the maintenance of sound populations of, and habitat for, wildlife species ..., including those species dependent on vast relatively undeveloped areas" and to "provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so." The BLM also manages the National Petroleum Reserve-Alaska (NPR-A), which was created in 1923 to ensure a future supply of oil for National needs. The BLM is mandated to conduct a program of competitive oil and gas leasing and at the same time, protect significant subsistence, environmental, fish and wildlife, and historic or scenic values in the NPR-A. The BLM carries out these responsibilities through regulations found in the Code of Federal Regulations, Title 43, Chapter II.

The BLM coordinates closely with the ADF&G Division of Wildlife Conservation and with the US Fish and Wildlife Service's Office of Subsistence Management. The BLM State Office coordinates management at the state level while District and Field Offices have on-the-ground responsibilities. The Arctic District Office, located in Fairbanks, is responsible for the management of the northern portion of the range of the Western Arctic Caribou

Herd. The Anchorage Field Office is responsible for the management of the southern and western portions of the herd's range. The Central Yukon Field Office, located in Fairbanks, is responsible for the management of a small southeastern part of the herd's range.

### **U.S. Fish and Wildlife Service (FWS)**

The mission of the U.S. Fish and Wildlife Service is to work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. More than 500 refuges and hundreds of waterfowl production areas are managed by experts in wildlife and habitat management and restoration. FWS personnel also cooperate with and provide expert biological advice to other federal agencies, states, industry, Native American tribes, and members of the public concerning the conservation of fish, wildlife, and plant habitat that may be affected by development activities requiring federal funding or permits.

Operation and management of national wildlife refuges is influenced by a wide array of laws, treaties, and executive orders pertaining to the conservation and protection of natural and cultural resources. The most important of these for Alaska refuges are the National Wildlife Refuge System Administration Act, the Refuge Recreation Act, the Endangered Species Act, Fish and Wildlife Act of 1956, Alaska National Interest Lands Conservation Act (ANILCA), and the Alaska Native Claim Settlement Act.

The National Wildlife Refuge System Administration Act, as amended, serves as the "organic act" for the National Wildlife Refuge System. The Act states first and foremost that the mission of the National Wildlife Refuge System is to conserve and manage America's fish, wildlife, and plant resources, and that the Secretary of the Interior is responsible for ensuring the biological integrity, diversity, and environmental health of the refuge system. The Act also established a process for determining compatible uses of refuges, required preparation of comprehensive conservation plans, and declared that compatible wildlife-dependent recreation is a legitimate and appropriate general public use. Most importantly, the Act honors the requirements of ANILCA that traditional access and uses be continued under reasonable regulation, and that the responsibilities and authorities of the State of Alaska for management of fish and wildlife on public lands are undiminished except as may be provided for in Title VIII for subsistence management and use.

The Selawik National Wildlife Refuge in northwest Alaska was established in 1980 under ANILCA to conserve fish and wildlife populations in their natural diversity, including but not limited to the Western Arctic Caribou Herd (including participation in coordinated ecological studies and management of these caribou); to fulfill international treaty obligations; to provide the opportunity for continued subsistence use by local residents; and to ensure water quality and necessary water quantity within the refuge.

### **National Park Service (NPS)**

The National Park Service (NPS), created in 1916 by the Organic Act, is the steward of 419 units in all 50 states covering more than 85 million acres of land and waters. These areas represent our nation's natural, cultural, and recreational heritage. The mission of the NPS is to preserve, unimpaired, the natural and cultural resources and values of the National Park system for the enjoyment, education, and inspiration of this and future generations. The overall natural resource management objective of the NPS is to maintain natural and wilderness conditions, environmental integrity, and the dynamics of natural processes within the parks, monuments and preserves. The National Park system requires implementation of management policies that strive to maintain the natural abundance, behavior, diversity, and ecological integrity of native species as part of their ecosystems. The NPS does not intervene in natural biological or physical processes except in very limited circumstances.

In 1980, the Alaska National Interests Land Conservation Act (ANILCA), established the five national parks units (Bering Land Bridge National Preserve, Cape Krusenstern National Monument, Gates of the Arctic National Park and Preserve, Kobuk Valley National Park, and Noatak National Preserve) that are used by the Western Arctic Caribou Herd. While each Park unit was established for unique reasons, all five are intended to protect habitat for, and populations of, wildlife, as well as to provide for the continuation of subsistence lifestyles. The conservation of healthy caribou populations is specifically mentioned as a goal for three of these five NPS units. The protection of Western Arctic Caribou Herd migration routes is another explicit goal for the NPS detailed in ANILCA.

These NPS areas are used by the Western Arctic Caribou Herd throughout the year and contain an invaluable record of floral, faunal, and human migration between Asia and North America dating back over 10,000 years. They also support ongoing traditional subsistence cultures. Due to the integral importance of caribou to this region and its people, the NPS has designated the Western Arctic Caribou Herd one of its "Vital Signs" for long-term monitoring. This effort is done in collaboration with other wildlife management agencies including the Alaska Department of Fish and Game, US Fish and Wildlife Service, and Bureau of Land Management. Moreover, the NPS cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

**Western Arctic caribou are an important cultural and natural resource for a variety of users throughout the range of the Western Arctic Caribou Herd.**



Photos (left to right starting at the top): Selawik high school girls stalk caribou with instructor Raymond Woods; Selawik elder Evelyn Ballot processing caribou meat; students gutting a caribou harvested during Selawik Science-Culture Camp (photos by USFWS), hunter with bull caribou (photo courtesy Trent Liebich).

# Western Arctic Caribou Herd Working Group

## Mission

“To work together to ensure the long-term conservation of the Western Arctic Caribou Herd and the ecosystem on which it depends, and to maintain traditional and other uses for the benefit of all people now and in the future.”



Pictured here are members of the Western Arctic Caribou Herd Working Group at the annual meeting in Anchorage, Alaska in December 2019. This working group was created in 1997. It consists of 20 voting chairs representing communities and user groups dependent on the Western Arctic Caribou Herd. Subsistence hunters from rural villages, sport hunters, conservationists, hunting guides, reindeer herders, and hunter transporters are represented. All have a stake in the conservation and management of this herd.

The Working Group is not a management or regulatory body. It is a permanent forum for sharing information and making regulatory or policy recommendations to the appropriate organizations. The purpose of the Working Group is to ensure conservation of the Western Arctic Caribou Herd, safeguard the spiritual and cultural well-being of Alaska Natives and the interests of all users of the herd, and integrate indigenous knowledge with Western science.