Western Arctic Caribou Herd
Cooperative Management Plan

Revised December 2011

By the Western Arctic Caribou Herd Working Group

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

Front Cover (clockwise from top left): winter caribou on the ice by James Mason, spring caribou on the tundra by Jim Dau, summer yearling cow by Jim Dau, fall bulls on the Kobuk River by Wayne Thompson, and center photo of Joanne and Devon Harris by Cyrus Harris.

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INTRODUCTION

This 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. Today there are concerns about industrial development, climate change and increased potential for overhunting, and there are differing visions of how the Western Arctic caribou herd should be used and protected.

The Western Arctic caribou herd is Alaska's largest caribou herd, occupying the northwestern part of the state. Since 2000, an estimated 10,000–15,000 Western Arctic caribou have been killed each year for subsistence within the range of the herd. Nonresident and nonlocal hunters have taken about 500–800 animals each year from this herd. There has been growing concern over conflict between local and nonlocal hunters. Increasing numbers of wilderness travelers seek opportunities for viewing and photographing Western Arctic caribou. Many people are also concerned about the long-term and cumulative effects of industrial development and environmental pollution on the Western Arctic herd. All of these people have a stake in management of the herd.

This 2011 cooperative management plan was written by the Western Arctic Caribou Herd Working Group, and is a revision of the plan adopted by the Working Group in 2003. The Working Group is 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 regularly to exchange traditional and Western scientific information; to reach consensus on recommendations for research, monitoring, regulation, allocation and enforcement; to support education about the herd; and to foster communication among all who use or value these caribou.

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 to maintain traditional and other uses for the benefit of all people, now and in the future.

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.

The heart of the plan is seven plan elements. Each element consists of a goal statement, proposed strategies, and proposed management actions for reaching the goal. They include Cooperation, Population Management, Habitat, Regulations, Reindeer, Knowledge, and Education.

The plan authors recognize that the caribou herd normally fluctuates in numbers through time. The plan strategy is to be responsive to population conditions and maintain a healthy ecosystem upon which the herd depends. The plan does not attempt to stabilize caribou population size. Instead, the plan adjusts management strategies according to the current status or condition of the herd to prevent human activities from further depressing natural population declines or jeopardizing its 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, 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.

Both the State of Alaska and the US 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. These government agencies recognize that local stakeholders who spend time in the field have the special knowledge of the resource that is so important to effective problem-solving. The agencies endorse the Western Arctic Caribou Herd Working Group and this Cooperative Management Plan for its proactive approach to managing the herd more effectively, to improving cooperation among stakeholders, and to reaching compromise and reducing conflict before it reaches the Alaska Board of Game and Federal Subsistence Board. These agencies work closely with the Working Group to 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.

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!” Guides and transporters worry about being able to continue taking clients to this great herd. Many stakeholders are concerned about potential impacts of oil and mining industries on the Western Arctic herd.

As one hunter said, “We want to keep those caribou coming back.” This management plan will help ensure that the caribou keep coming back by relying on the knowledge and active participation of all people who use or otherwise value this caribou herd. The planning process requires active collaboration between resource management agencies and all people who depend on and value the herd. It is also a cross-cultural process. Knowledge gained by local and traditional hunting experience, for example, is just as valuable as that which was collected more recently by biologists using satellites and laboratories.

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, to maintain traditional and other uses for the benefit of all people now and in the future.

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 Northwestern 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 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.

BACKGROUND

WESTERN ARCTIC CARIBOU HERD

The Western Arctic herd is the largest caribou population in Alaska. It occupies the northwestern part of the state, an area of about 157,000 square miles that includes many landowners and management entities (FIGURES 1–3). The heritage and traditions of Native Alaskans residing in about 40 subsistence-based communities have been shaped to a large extent by the availability and abundance of these caribou.

Movements of the herd follow general patterns for each season of the year (FIGURES 4–6). In spring, most mature cows travel north toward the calving grounds in the Utukok Hills, whereas bulls and nonmaternal cows lag behind and generally move northwest toward summer range in the Wulik Peaks and Lisburne Hills. Following the calving period, cows and young calves travel west toward the Lisburne Hills where they join and mix with the remainder of the herd. During summer, 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. By fall, the herd is more dispersed than at any other time of year, and rut occurs while migrating southwest towards their wintering grounds. In most years during the mid 1980s through 1995 much of the herd wintered in the Nulato Hills and occasionally extended south of the Unalakleet River drainage. Other winter ranges include westward expansion on the Seward Peninsula since 1996, into the upper Koyukuk River drainage since the late 1990s, and into areas of the North Slope between Atqasuk, Wainwright, Point Lay and Umiat.

The number of caribou in the herd can change rapidly (FIGURE 7). In 1970 the Western Arctic 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 13% per year and from 1990 to 2003 it grew 1–3% annually to reach a peak of 490,000 caribou. Since then the herd has declined 4–6% per year to a size of 325,000 caribou in 2011.

Not everyone agrees with these numbers. However, few would argue that caribou abundance varies over time in Northwestern Alaska.

HUMAN USE

Until roughly the 1960s, the only human use of caribou in this area was for subsistence. Legal definitions of subsistence currently differ between state and federal agencies. Caribou, along with fish and marine mammals, have historically been a staple in the diet of many local residents. Presently an estimated 10,000–15,000 Western Arctic caribou are killed each year for subsistence within the range of the herd. Nonresident and nonlocal hunters kill about 500–800 additional animals from this herd. Thus the total

annual harvest by humans of Western Arctic caribou is estimated to be 11,000–16,000 caribou.

In some areas, especially near Kotzebue and on the upper Kobuk River, there has been a growing history of conflict between local and nonlocal hunters. Increasing numbers of wilderness travelers seek opportunities for viewing and photographing Western Arctic caribou. Many people are also concerned about the long-term effects of industrial development and environmental pollution on the Western Arctic herd. In an increasingly crowded world, many have come to think of caribou as symbols of undeveloped wild lands in the Alaskan North. All of these people have a stake in management of this herd.

OTHER MANAGEMENT CONSIDERATIONS

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 the eastern half of the Seward Peninsula by caribou has proven disastrous for the reindeer industry. As of 2011 approximately 75% of all reindeer on the Seward Peninsula have been lost by joining migrating elements of the Western Arctic caribou herd and not returning to their home ranges.

Resource Development

Outside of residential communities, there has been little lasting human development within the range of the Western Arctic herd. The Red Dog lead and zinc mine with its associated port site and 70-mile long road is currently the largest development complex within its range. Two hundred miles to the east in the upper Kobuk River, plans for large scale development of the Ambler Mining District with high quality deposits of copper, zinc, lead, silver and gold are in the early stages. 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 herd. 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. These activities could affect movements and distribution of the Western Arctic herd. They are also likely to increase levels and change patterns of human use in Northwestern 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, development 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 nonconsumptive 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, global warming and radioactive fallout from atmospheric testing of nuclear warheads, as well as the Chernobyl power plant. 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 or contaminated their meat for human consumption.

LAND STATUS

The range of the Western Arctic herd is a patchwork of landownership (FIGURE 2). Federal resource and land management agencies, the State of Alaska, and Alaska Native Corporations are all major landholders. 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, including the Western Arctic herd. The variety of land status and management authorities creates a complex situation for managing this herd, as caribou do not recognize political boundaries. Resource agency mandates are described in APPENDIX 1.

FIGURE 1 Western Arctic caribou herd seasonal range map.

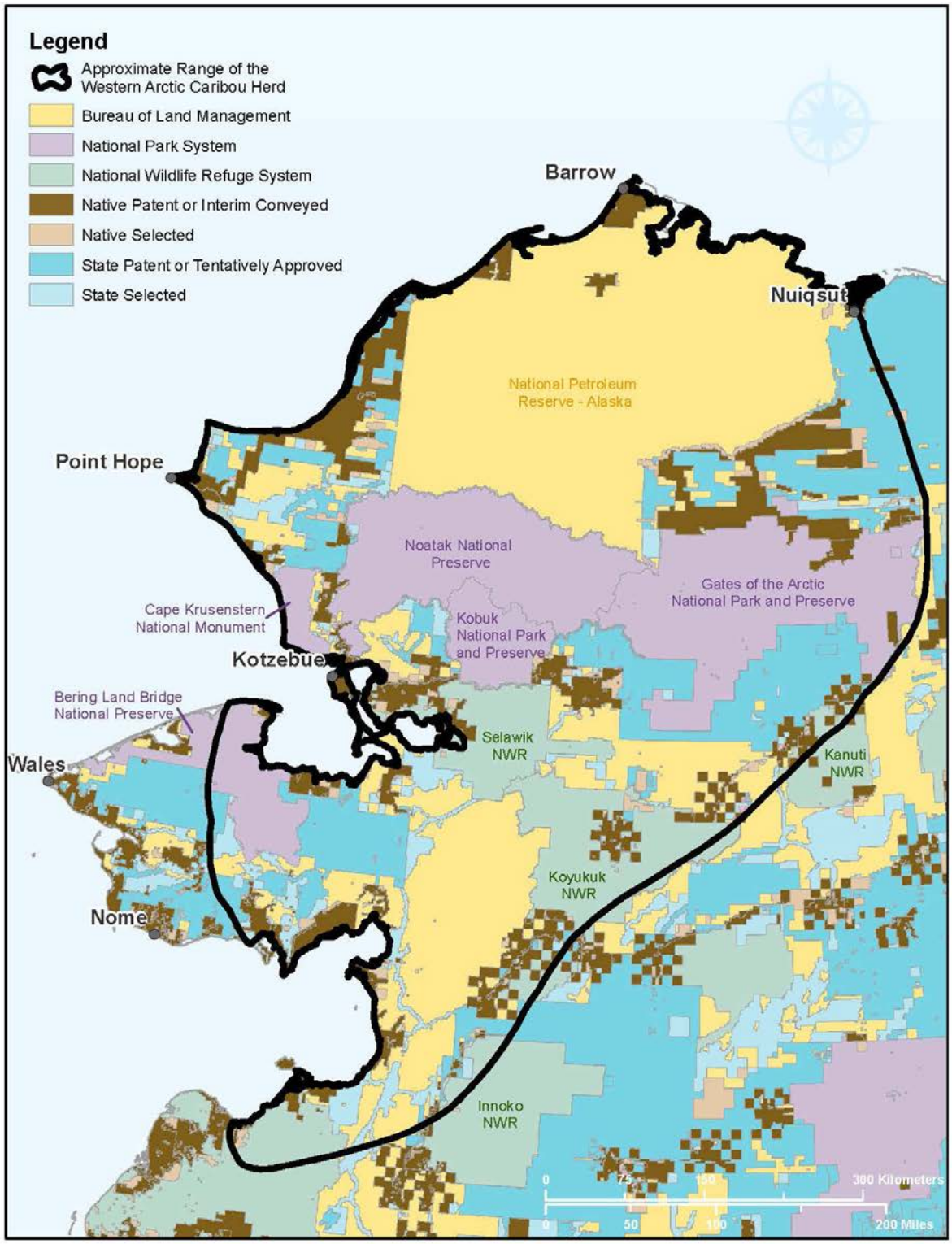

FIGURE 2 General land status within the range of the Western Arctic caribou herd. The black line shows the approximate range of the herd.

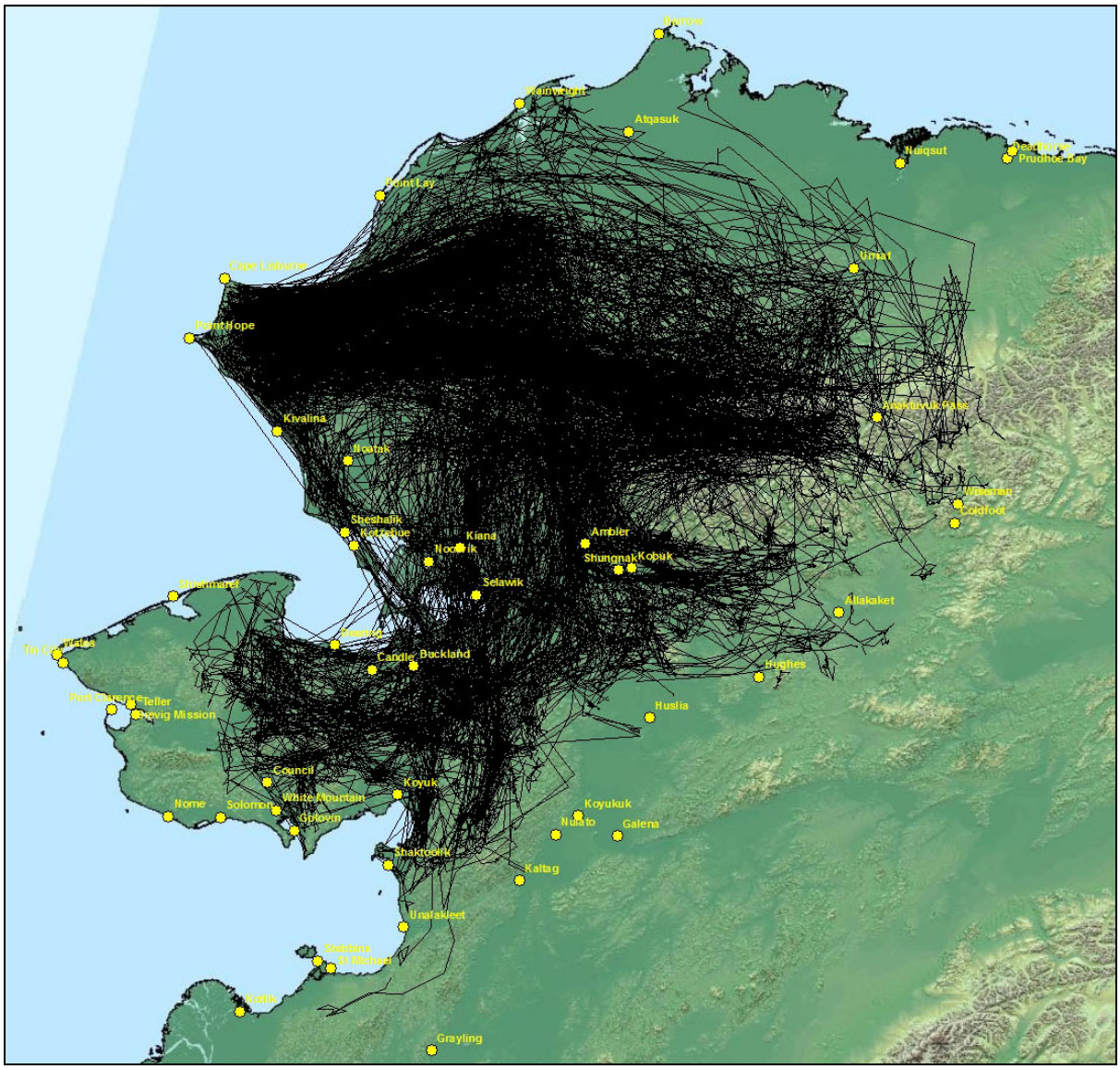

FIGURE 3 Movement patterns and range use of the Western Arctic caribou herd based on satellite collar locations: track line history from May 1988 – June 2012.
Total Collars = 209 PTT or GPS-collared caribou; Total Locations = 19,804

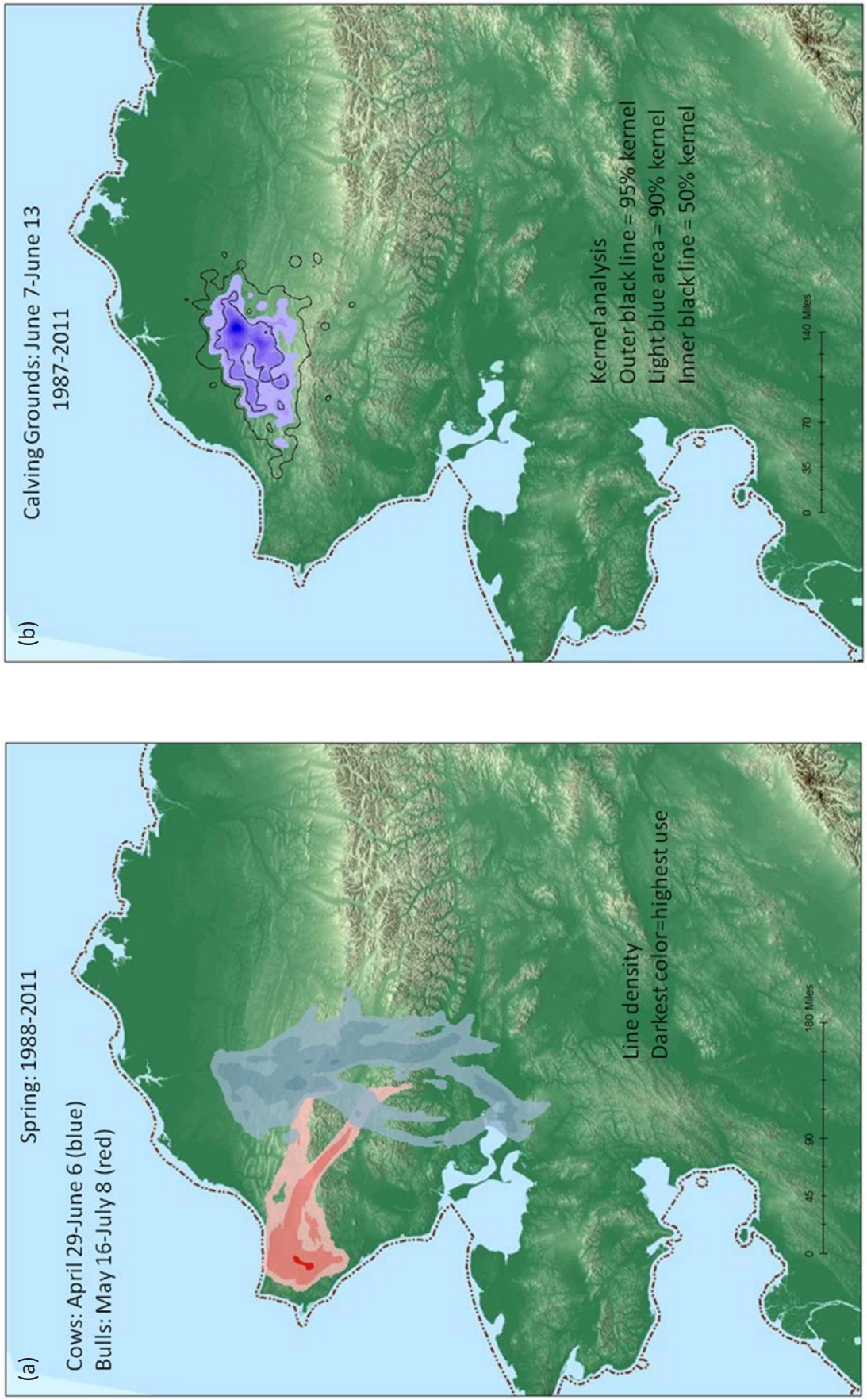

FIGURE 4 Movement patterns and range use of the Western Arctic caribou herd based on satellite collar locations: spring migration of cows and bulls (a), and calving grounds (b). Satellite records exclude eight months post-collaring due to unequal mixing in the herd; all collars standardized to one location every six days. Darker shading and color indicates heavier use.

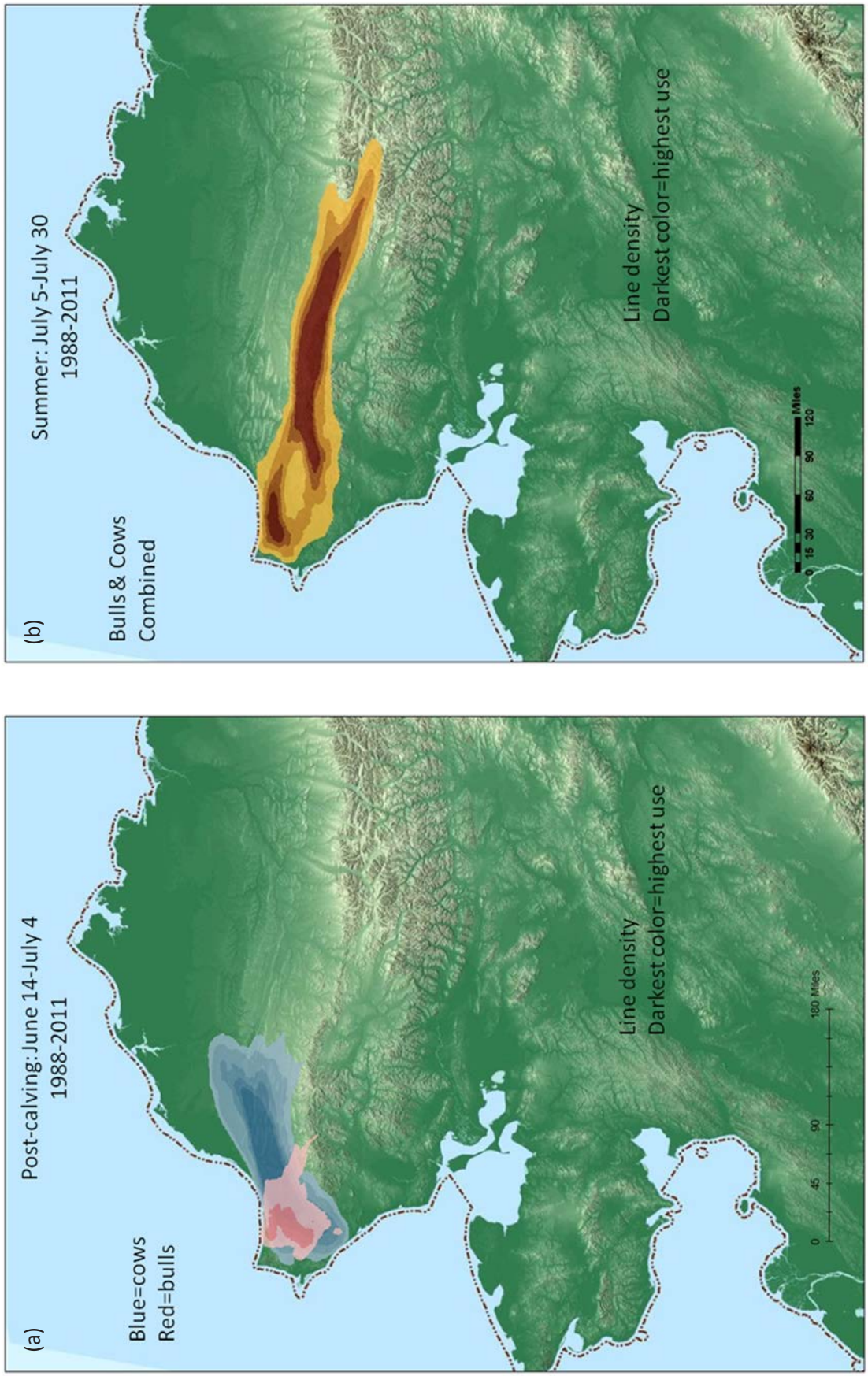

FIGURE 5 Movement patterns and range use of the Western Arctic caribou herd based on satellite collar locations: post-calving distribution of cows and bulls (a), and summer period (b). Satellite records exclude eight months post-collaring due to unequal mixing in the herd; all collars standardized to one location every six days. Darker shading and color indicates heavier use.

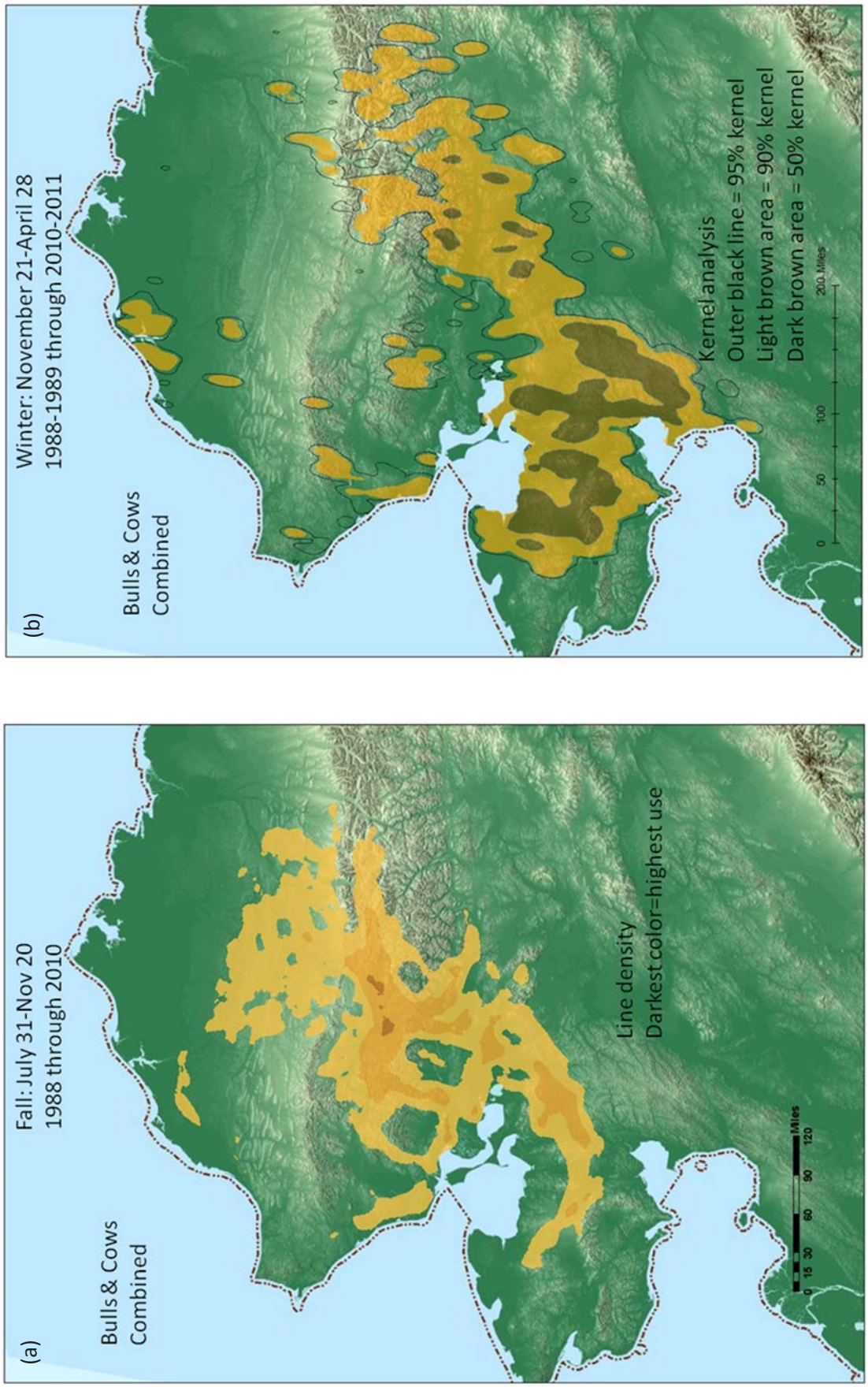

FIGURE 6 Movement patterns and range use of the Western Arctic caribou herd based on satellite collar locations: fall migration period (a), and winter period (b). Satellite records exclude eight months post-collaring due to unequal mixing in the herd; all collars standardized to one location every six days. Darker shading and color indicates heavier use.

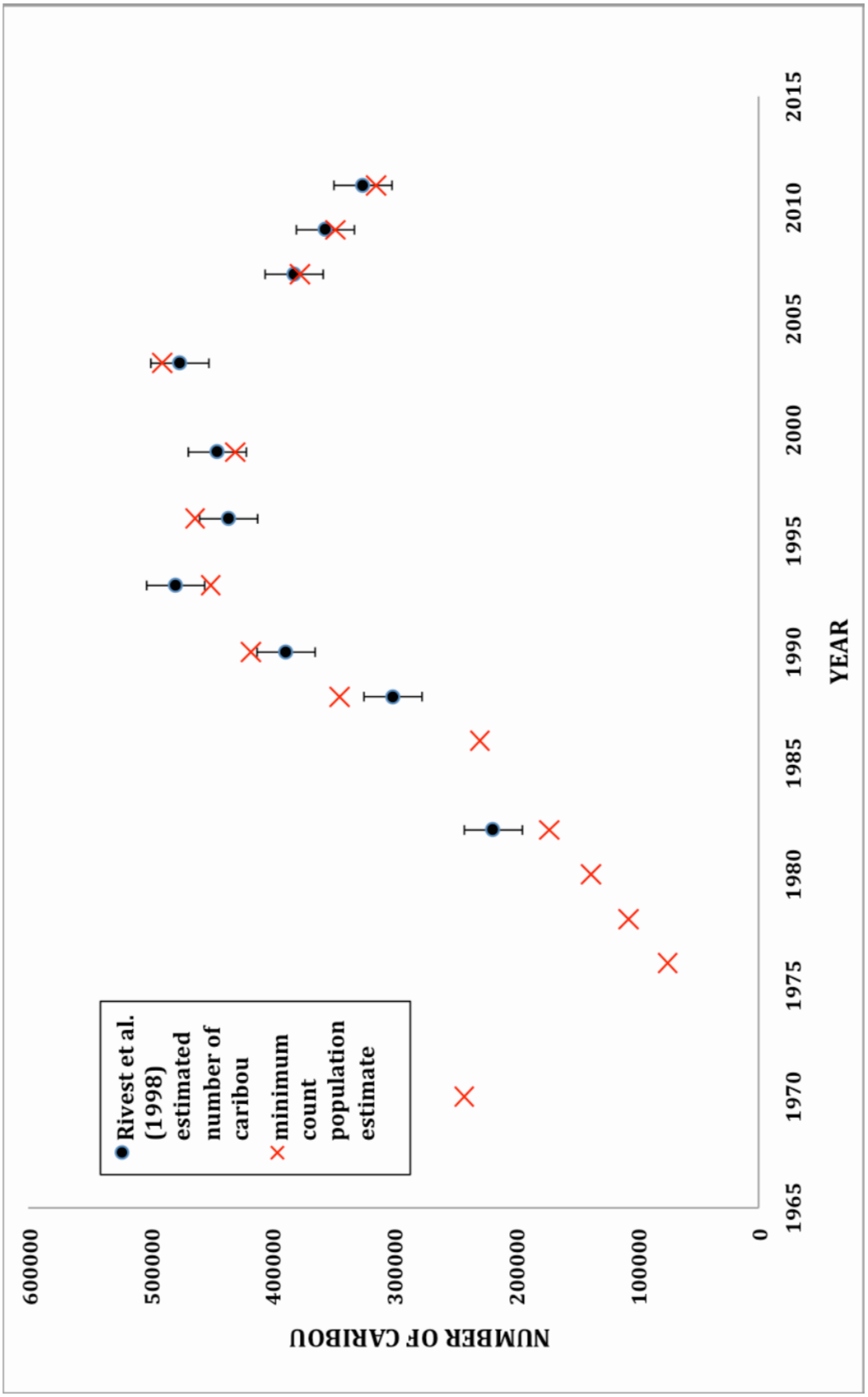

FIGURE 7 Western Arctic caribou herd population estimates, 1970–2011. Brackets around the open circles represent 95% confidence intervals for Rivest population estimates.

PLAN ELEMENTS

The Western Arctic Caribou Herd Cooperative Management Plan consists of seven Plan Elements: Cooperation, Population Management, Habitat, Regulations, Reindeer, Knowledge and Education. 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 an all-inclusive list. However, 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.

1. COOPERATION

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

Goal 2: Encourage cooperation and exchange of information with international organizations involved with caribou research and co-management with indigenous peoples.

Strategies:

A. Use the Working Group to improve communication and cooperation.

B. The Working Group will serve as a forum to facilitate communication 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.

C. 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 in Anchorage with additional meetings to be scheduled in villages when the need and funding allows.

2. Publish and distribute at least one "*Caribou Trails*" newsletter a 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 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 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.

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 can be expected to change over time. At low population levels management must integrate applicable federal and state regulations to conserve this herd and protect subsistence priority and uses. 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, management strategies for the herd consider population sizes at multiple levels (critical to liberal), population trend (stable, increasing or decreasing), and varying harvest rates (low to high) to determine management actions and harvest scenarios for long-term conservation of the herd. 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 population 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.

This plan prescribes ranked, color-coded management levels for differing population sizes and trends of the Western Arctic caribou herd (TABLE 1). Harvest rates applicable to declining, stable and increasing populations are prescribed 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 surveillance will intensify. “Preservative” management (yellow) will prompt increased restrictions where harvest may be limited to subsistence use only and biological surveillance of the herd will be maximized. Under “Critical” management (red), harvest will be highly restricted, restoration efforts may be enacted, and maximum biological surveillance of the herd will be maintained.

TABLE 1 provides a guide to herd management level determined by population size, trend and harvest rate. Population sizes guiding management level determinations are based on recent (since 1970) historical data for the Western Arctic herd.

TABLE 1. Western Arctic caribou herd management levels using herd size, population trend and harvest rate.

	Population Trend		
Management Level and Harvest Level	**Declining** **Low: 6%**	**Stable** **Med: 7%**	**Increasing** **High: 8%**
Liberal	**Pop: 265,000+** **Harvest: 18,550-24,850**	**Pop: 230,000+** **Harvest: 16,100-21,700**	**Pop: 200,000+** **Harvest: 16,000-21,600**
Conservative	**Pop: 200,000-265,000** **Harvest: 14,000-18,550**	**Pop: 170,000-230,000** **Harvest: 11,900-16,100**	**Pop: 150,000-200,000** **Harvest: 12,000-16,000**
Preservative	**Pop: 130,000-200,000** **Harvest: 8,000-12,000**	**Pop: 115,000-170,000** **Harvest: 8,000-12,000**	**Pop: 100,000-150,000** **Harvest: 8,000-12,000**
Critical **Keep Bull:Cow ratio** **≥40 Bull:100 Cow**	**Pop: <130,000** **Harvest: 6,000-8,000**	**Pop: <115,000** **Harvest: 6,000-8,000**	**Pop: <100,000** **Harvest: 6,000-8,000**

Each year, or as needed, agency biologists will evaluate the status of the herd in the Technical Committee meeting, and develop recommendations on herd management level for the Working Group. Population size, trends in adult mortality and calf survival, sex and age composition, range condition, caribou body condition and health, and other factors determined by the Technical Committee will provide the basis for evaluating the herd condition and management level that is reported to the Working Group.

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 8). 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.

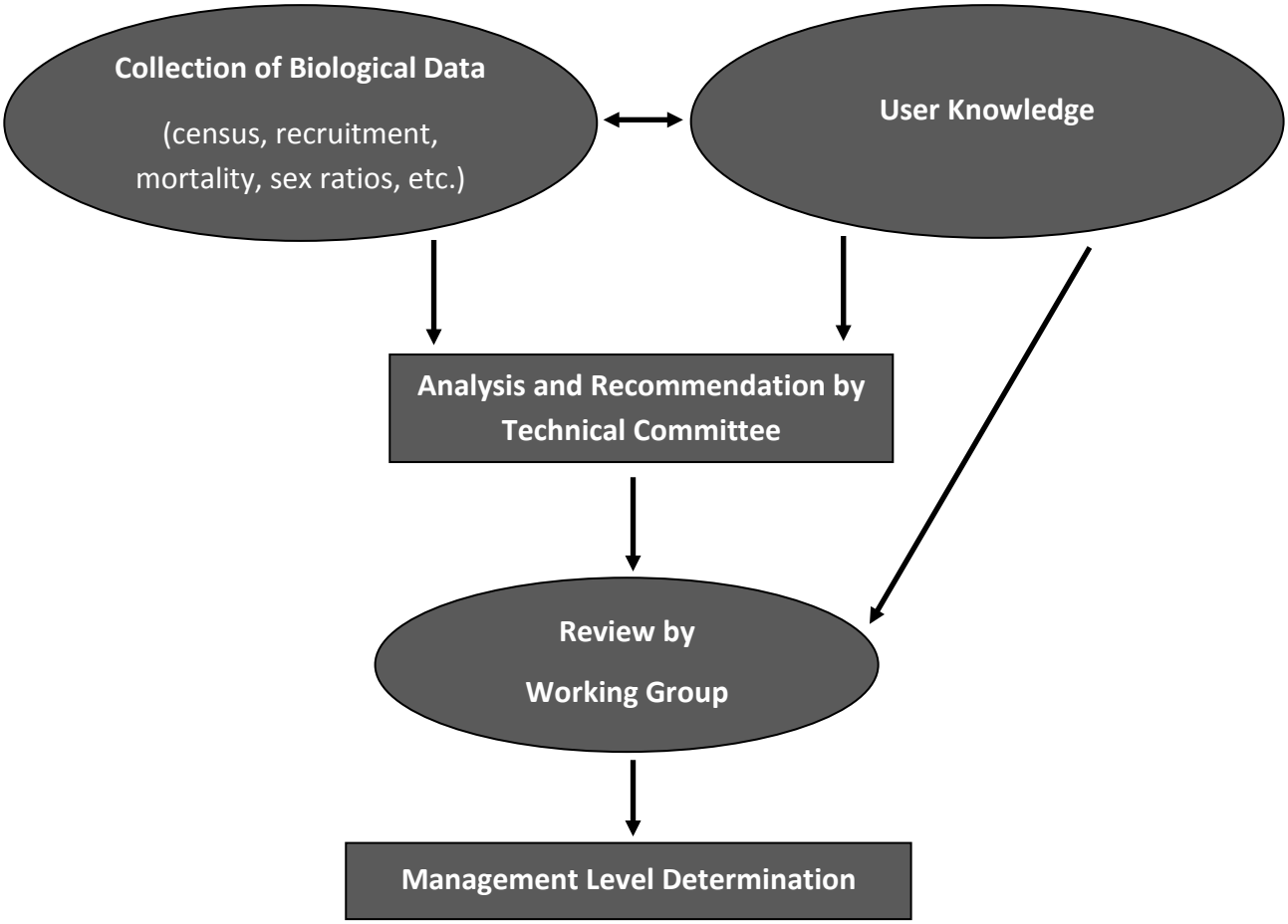

FIGURE 8 Management level decision-making process diagram.

Goal 3: 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 conditions to help guide decisions about management actions and caribou harvest. Four management strategies are prescribed, related to population level and trend (TABLE 1). The population categories presented in TABLE 1 need 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 APPENDIX 2 may be appropriate.

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 landowners, 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 caribou use of the landscape, especially migration routes and wintering areas, can be influenced by external factors, including weather events. Long-term research and monitoring by appropriate agencies will be necessary to address climate change and associated changes in weather patterns, freeze-thaw cycles and fire regimes, and possible future development in the arctic. Publication and mapping of this information is also essential and will involve interagency cooperation.

Goal 4: Assess and protect important habitats of the Western Arctic 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 use available data to model possible responses by the herd to future changes in habitat related to climate change, fire, and/or development.

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 herd.

D. Consider the cumulative effects of resource exploration and development and how it may impact Western Arctic herd habitat (for example, hard rock and coal mining, road building, and oil and gas development).

Management Actions:

Habitat Description

1. Improve understanding of habitat use, needs and availability of the Western Arctic 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 migrations and other habitat uses by the Western Arctic herd.

d. Identify and investigate factors that influence the distribution of the herd and its use of the range.

e. Place a high priority on describing and monitoring caribou winter range and associated habitats.

f. Identify areas that may be important to the Western Arctic herd in the future as environmental conditions change in response to climate change or development-related phenomena.

2. Encourage management agencies and other organizations to develop a 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, landownership, 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 update it every 15–20 years.

4. Encourage expansion of weather data collection efforts throughout the range of the herd.

5. Identify the effect of climate change on important habitat areas.

Habitat Protection

1. Identify, monitor, and report to the Working Group on potential impacts to habitat and the herd population from resource extraction, transportation activities and other potential sources of disturbance.

   a. Recommend a cumulative impact analysis be done on existing human-caused modifications to the habitat to establish a baseline of impacts on the herd to date, and recommend similar analyses be done on all new actions.

   b. Identify and recommend permanent or seasonal protection measures needed for important habitats.

2. Measure contaminants and attempt to assess/monitor impacts from pollutants, such as toxic substances and nuclear radiation, on the herd and its habitat.

3. Review and report on existing and/or standard mitigation measures for various land use activities of concern to the Working Group.

4. Recommend project-specific mitigation to land managers as projects are proposed within the range of the herd.

5. Ensure that communities are consulted during the review and permitting process for all developmental activities within the range of the herd.

6. Identify and communicate important habitat areas to all agencies responsible for land management within the range of the herd.

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.

3. Regularly review and evaluate agency fire management plans and fire management options to ensure they reflect the best interest of the Western Arctic herd.

4. Manage at a landscape level to allow caribou the ability to shift their seasonal ranges in response to environmental variability.

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 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 a summary of regulations affecting hunters of the Western Arctic herd, consult the Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska and Alaska Hunting Regulations.

Goal 5: Promote consistent, understandable and effective state and federal regulations for the conservation of the Western Arctic herd.

Strategies:

A. Support 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 regulations according to the herd management strategies outlined in this plan which consider both herd size and population trend. Ensure that communities within the range of the herd are consulted during the development and review of hunting regulations.

D. Simplify caribou hunting regulations.

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 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 native corporation trespass programs, tribal courts, boroughs and the users themselves.

3. Support efforts such as the Game Management Unit 23 Working Group, 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 to the appropriate advisory committees and regional advisory councils for their review and comments, before formal proposals are submitted by those respective groups to their regulatory boards. Note that if there is an urgent need for action, the Working Group may submit its recommendations directly to the regulatory boards, with copies to the advisory committees and regional advisory councils.

5. REINDEER

Goal 6: Seek to minimize conflict between the reindeer industry and the Western Arctic herd.

Strategy:

A. Use the Working Group and agencies 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 both caribou and reindeer on reindeer ranges in a timely manner.
2. Work cooperatively with the Kawerak Reindeer Herders Association to reduce intermingling of reindeer with caribou, and to reduce conflict between hunters and herders.
3. Educate the public 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

Goal 7: Integrate scientific information, traditional ecological knowledge of Alaska Native users, and knowledge of all users into management of the Western Arctic 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 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 and website.

2. Seek knowledge from consumptive and non-consumptive users about the Western Arctic caribou herd.

3. Develop an information database on traditional knowledge of caribou in Northwest Alaska.

4. Obtain funding for 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 discuss funded research and research needs annually 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 and compile sources of information on 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. Encourage all those interested in doing research on the Western Arctic herd to discuss their ideas with the Working Group and local users before developing their research plans.

9. 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 herd and post the bibliography on the website. Update the bibliography annually at Working Group meetings.

2. The Working Group's Technical Committee will maintain a priority list of information needs concerning conservation of the Western Arctic herd and update the list annually.

7. EDUCATION

Goal 8: Increase understanding and appreciation of the Western Arctic herd through use 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 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.

HOW WE WROTE THE PLAN

The first management plan for the Western Arctic caribou herd was written in 1984 by biologists in ADF&G. Since then, the herd has grown larger, resource development has continued in Northwestern Alaska, and economic conditions have changed for many Alaskans.

In 1999 the Working Group began work on the first version of a cooperative management plan for the Western Arctic caribou herd. People who use and value the herd wrote the plan together with biologists and land managers. A Planning Committee consisting of Roy Ashenfelter; Lee Anne Ayres; Jeanie Cole; Phil Driver; Don Frederick; Joanna Fox; Earl Kingik; Sverre Pedersen; John Schoen (Committee Chair); Elmer Seetot, Jr; Dave Spirtes; Raymond Stoney; John Trent and Pius Washington was established. The committee used a collaborative planning process along with Joseph Ballot, John Coady, Randy Rogers (facilitator), and biologists (Jim Dau and Peter Bente) to develop further drafts for extensive public review. The Planning Committee reported progress and received further direction from the Working Group at regular twice-yearly meetings. The Working Group adopted the completed plan in 2003 with revisions recommended every five years.

A five-year review of the 2003 plan began with the full Working Group at its December 2009 meeting. More work through the Technical Committee and Working Group members continued in 2010 and the revised plan was presented to the full Working Group for approval in December 2011. This revision of the Cooperative Management Plan adds more detail about population management, important issues, and concerns identified by the Working Group to help improve future management of the herd.

IMPLEMENTATION: PUTTING THE PLAN TO WORK

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

Working Group Activities

The Western Arctic Caribou Herd Working Group is an organization of stakeholders that meets annually to reach consensus concerning the conservation and management of the Western Arctic caribou herd. The Working Group 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 written cooperative agreements to share information, resources, and technical support concerning the plan.

Plan Review

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

SIGNATORIES FOR THE WESTERN ARCTIC CARIBOU HERD WORKING GROUP

1 **Anchorage Fish and Game Advisory Committee**

Grant Klotz (Alternate) — Date: 11-30-11

2 **Buckland, Deering, Selawik**

Ron Moto — Date: 11-30-11

3 **Anaktuvuk Pass, Nuiqsut**

Esther Hugo (Alternate) — Date: 11/30/11

4 **Elim, Golovin, White Mountain**

Charles Saccheus — Date: 11/30/11

5 **Fairbanks Hunters**

Larry Bartlett — Date: 11/30/11

6 **Hunting Guides**

Phil Driver, Vice Chair — Date: 11/30/11

7 Kivalina, Noatak

Raymond Hawley — Date: 9/25/2008

8 Kotzebue

Willie Goodwin — Date: 11-30-11

9 Koyukuk River

Pollock Simon, Sr. — Date: 11-30-11

10 Lower Kobuk River

Vern Cleveland, Sr. — Date: 11-30-11

11 Middle Yukon River

Benedict Jones — Date: 11-30-11

12 Point Hope, Point Lay

Ted Frankson — Date: 11-30-11

13 Nome

Roy Ashenfelter, Chair — Date 11/30/2011

14 Conservationists

Wendy Loya — Date 11/30/11

15 Northern Seward Peninsula

Elmer Seetot, Jr. — Date 11/30/2011

16 Reindeer Herders Association

Tom Gray — Date 11-30-11

17 Southern Seward Peninsula

Frank Kavairlook — Date 11.30.11

18 Transporters

Judy Jesperson (Alternate) — Date 11-30-11

19 Upper Kobuk River

Sally Custer — 10-17-2012
Sally Custer — Date

20 Atqasuk, Barrow, Wainwright

Enoch Oktollik — 11-30-11
Enoch Oktollik — Date

SIGNATORIES FOR THE RESOURCE MANAGEMENT AGENCIES

1 Alaska Department of Fish and Game

11-30-11
Steve Machida — Date
Regional Supervisor

2 US Bureau of Land Management

Shelly Jacobson — 11/30/11
Shelly Jacobson — Date
Northern Field Office Manager

3 US Fish and Wildlife Service

11-30-11
Lee Anne Ayres, Refuge Manager — Date
Selawik National Wildlife Refuge

4 US National Park Service

11/30/11
Greg Dudgeon, Superintendent — Date
Gates of the Arctic National Park & Preserve

GLOSSARY

The following are not legal definitions but are intended to assist a reader's understanding of this 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.

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)

Carrying capacity — The concept that there is a maximum population size an ecosystem can sustain without causing long-term habitat damage and a reduction in the population size. Carrying capacity changes through time.

Climate change — 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). Climate change 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 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 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 herd for survival and reproduction. Calving grounds and migration corridors are examples of certain habitats used by the Western Arctic 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 herd, the term refers to the population's capability to reproduce and survive.

Herd — Used as a synonym for the term "population" in this plan.

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 herd. Important habitats can describe calving grounds, insect relief areas, winter and summer feeding areas and migration corridors.

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.

Nonconsumptive uses/user — Usually refers to outdoor recreationists who do not hunt or fish. Wildlife viewing and photography, river rafting, and canoeing are nonconsumptive 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 herd with the aid of a large 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 herd grew larger, showing an increasing population trend.

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 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 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 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.

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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 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.

US 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 oversees management at the state level while Field Offices have regional responsibilities. The Fairbanks District Office located in Fairbanks is responsible for the management of the northern half of Alaska including most of the range of the Western Arctic herd.

US Fish and Wildlife Service (FWS)

The mission of the US 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, 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 be focused singularly on wildlife conservation, and the Secretary of the Interior maintain the biological integrity, diversity, and environmental health of the refuge system. The Act also established a process for determining compatible uses of refuges, a requirement for preparing comprehensive conservation plans, and established 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 Northwestern Alaska was established 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.

US National Park Service (NPS)

The National Park Service is guardian of more than 390 areas in 49 states covering more than 83 million acres representing our nation's natural, cultural and recreation 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 NPS cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The overall natural resource management objective of the NPS is to maintain natural and wilderness conditions, environmental integrity, and the dynamics of natural processes operating within the park and preserve. The National Park system requires implementation of management policies that strive to maintain the natural abundance, behavior, diversity, and ecological integrity of native animals as part of their ecosystem. The NPS will not intervene in natural biological or physical processes, except in very limited circumstances such as when human life and property are at stake.

APPENDIX 2

Population Management Actions and Potential Harvest Recommendations

(Refer to TABLE 1)

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. Monitor sex and age composition of the herd at least once every 2–3 years.
4. Monitor herd age structure and caribou body size through annual jaw collections. When possible, evaluate caribou body condition through marrow fat analyses from jaws or other methods.
5. 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.
6. 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.
7. Investigate environmental contaminants as necessary.
8. Conduct thorough and timely investigations of local caribou die-offs.
9. Monitor changes in vegetation and habitat conditions, including winter and summer range, and consider both long term (decades) and short term (seasons) changes.
10. Monitor weather conditions year round throughout the Western Arctic herd range and snow conditions annually at least in Western Arctic herd wintering areas.
11. Monitor numbers of wolves and brown bears in selected areas throughout the herd's range.
12. Estimate impacts of proposed development projects on caribou.

Caribou harvest recommendations may include:

1. Reduce harvest of bulls by nonresidents to maintain at least 40 bulls:100 cows.
2. No restriction of bull harvest by resident hunters unless bull:cow ratios fall below 40 bulls:100 cows.

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 annually.
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. No harvest of calves.
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 40:100 bull:cow ratio.

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 40 bulls:100 cows.
4. Harvest restricted to residents only, according to state and federal law. Closure of some federal public lands to nonqualified users may be necessary.

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 40 bulls:100 cows.
4. Harvest restricted to residents only, according to state and federal law. Closure of some federal public lands to nonqualified users may be necessary.

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

Photos (left to right starting at the top): Ambler student Timothy Cleveland viewing caribou through scope, photo by Ann Washburn. Reindeer herd at Kakaruk Handling near Canyon Creek outside of Teller, Alaska, photo by Morna Greig. Brooke, Jordan, and Rick Meredith hunting caribou outside of Bettles, Alaska, photo by Brooks Range Aviation. Roy Ashenfelter, Loretta Bullard and Mike Tall with a fat bull, photo by Bruce Tungwenuk. Devon Harris with his first caribou in the boat, photo by Joanne Harris. Students and biologists preparing caribou meat for dinner at Onion Portage, photo by MK Romberg. Alaska Department of Fish and Game employees (l-r) Patrick Jones, Jim Dau, Charlotte Westing, and Lincoln Parrett taking blood samples from caribou, photo by ADFG.

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, December 2011. 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 the herd, and all share in decision-making.

The Working Group is not a management or regulatory body. 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 to integrate indigenous knowledge with Western Science.