



## Arctic Network

Bering Land Bridge N Pres. • Cape Krusenstern NM  
Gates of the Arctic NP & Pres. • Kobuk Valley NP • Noatak N Pres.

## Caribou Resource Brief

February 2012, no. 19



*Approaching herds during river crossings is the safest way to capture and collar caribou for monitoring.*

### Status & Trends

## Monitoring the Western Arctic Caribou Herd

NPS monitoring of the Western Arctic Caribou Herd (WAH) began in 2009 in cooperation with the Alaska Department of Fish and Game, the Fish and Wildlife Service, and the Bureau of Land Management. Since that time over 65 GPS collars have been deployed which have collected well over 100,000 caribou locations. Collared caribou have utilized all 5 ARCN Park Units. During September 2010 to August 2011, the Kobuk Preserve section of the Gates of the Arctic NP&P was heavily utilized by WAH caribou, while Bering Land Bridge National

Preserve was also used - but to a lesser extent - as winter range. The herd calved north of the Noatak Preserve in early June. The herd walked about 3,100 km (1,900 miles) each year during its annual migration cycle – one of the longest terrestrial movements on the planet. Caribou used the historic Onion Portage crossing of the Kobuk River both in fall and spring. The fall 2010 migration was concentrated towards the eastern end of the Noatak River, away from many large

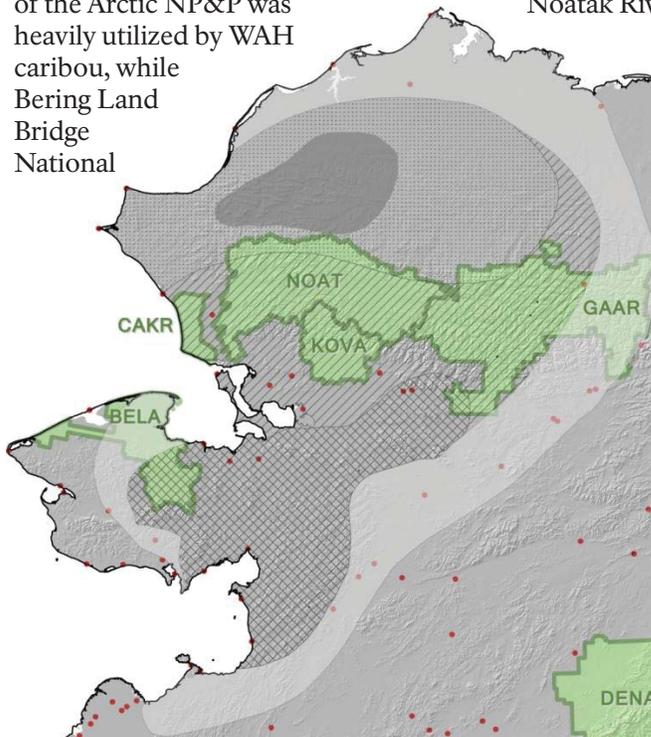
subsistence communities including Kotzebue, Noatak, Kiana, Selawik, and Noorvik and occurred, as an average,

on September 24. It is too soon to identify trends in the timing and distribution of WAH movements. New analyses confirmed the importance of lichens as a key winter forage for WAH caribou. Numerous studies and reports have been published thus far, which can be found on the Caribou vital sign web page, including an analysis of the effects of cow harvest on the trajectory of the herd (<http://science.nature.nps.gov/im/units/arcn/index.cfm?rq=12&vsid=19>).

### Objectives

#### What do we want to know about caribou in the Arctic Network?

- Radiocollar WAH caribou to maintain a sample size of 30-40 GPS collars
- Obtain frequent (>2/day) location data via GPS-satellite telemetry
- Define seasonal ranges (calving, insect relief, summer, winter)
- Define migratory routes
- Detect changes in range distribution over time
- Detect changes in adult survivorship over time
- Detect changes in migration routes and movement phenology over time



- calving area
- summer range
- ▨ migratory areas
- ▩ core winter range
- outer range
- parks
- villages & towns

**Figure 1. Study area and the range of the Western Arctic Herd** (range data courtesy of the Alaska Department of Fish and Game).



Caribou are being monitored in all five Arctic Network parks:

### Importance

#### Why are caribou important in the Arctic Network?

Many residents of northwest Alaska are Natives that identify themselves as “caribou people”. The caribou is ingrained in the history, traditions, and psyche of this region. Approximately 15,000 caribou are harvested annually from the Western Arctic Herd (WAH) by local rural residents; most of which still live a subsistence lifestyle. The herd has been one of the largest herds in the

world, nearing 500,000 animals in 2003, though it declined to 348,000 by 2009. A herd of this size can substantially impact its habitat, which covers all of northwest Alaska (over 360,000 km<sup>2</sup>), its primary predators (wolves and grizzly bears), as well as suite of other animals through cascading trophic effects. The herd’s ecological impacts on the parks have not yet been fully appreciated.



photo: Jing Zhou

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### Management Applications

#### How can monitoring protect caribou in ARCN?

- Improve management of the Western Arctic Caribou Herd
- Improve management of subsistence hunting
- Identify factors that may alter patterns of habitat use and migration routes
- Identify changes in herd distribution, health or productivity

More information on NPS caribou monitoring is available at <http://science.nature.nps.gov/im/units/arcn/index.cfm?rq=12&vsid=19>. The WAH Working Group's Web site address is <http://westernarcticcaribou.org/>.



### Long-term Monitoring:

#### How do we monitor caribou in the Arctic Network?

Our goals are to monitor the movements, distribution and health of these caribou. The caribou use different Park units at different times of year. Further, the timing and spatial pattern of the herd's migration plays a critical role in the harvest of caribou by rural villages.



NPS Biologist Kyle Joly collaring a caribou.

Changes to these patterns may affect these subsistence users, the vitality of the herd and the ecosystem as a whole. Herd productivity and health will be monitored using a variety of different indices.



Monitoring the Western Arctic Caribou herd by air.



## ARCTIC NETWORK

# USING SCIENCE TO PROTECT OUR PARKS

**THE ARCTIC NETWORK (ARCN) IS A MAJOR COMPONENT OF THE NATIONAL PARK SERVICE'S STRATEGY TO BETTER UNDERSTAND AND MANAGE PARK LANDS USING SCIENTIFIC INFORMATION. IT IS ONE OF FOUR INVENTORY AND MONITORING NETWORKS IN ALASKA AND 32 NATIONWIDE.**

The Arctic Network provides scientific support to five parks covering more than 19 million acres. Bering Land Bridge National Preserve and Cape Krusenstern National Monument share similar coastal resources and biogeographic ties to the former land bridge between North America and Asia. Kobuk Valley National Park, Noatak National Preserve

and Gates of the Arctic National Park and Preserve span extensive, mountainous terrain at the northern limit of treeline.

The Arctic Network is developing long-term monitoring protocols for 19 'vital signs', or physical, chemical and biological indicators that were selected to represent the overall health of these parklands.

Many of these vital signs are expected to show change due to regional and global stressors including climate change and deposition of industrial contaminants. Many vital signs also have important human values including for subsistence.

### ARCN VITAL SIGNS:

- Air Quality
- Brown Bears
- Caribou
- Climate
- Coastal Erosion
- Dall's Sheep
- Fire Extent & Severity
- Lagoon Communities & Ecosystems
- Lake Communities & Ecosystems
- Landbird Monitoring
- Moose
- Muskox
- Permafrost
- Snow & Ice
- Stream Communities & Ecosystems
- Terrestrial Landscape Patterns & Dynamics
- Terrestrial Vegetation & Soils
- Western Yellow-billed Loons
- Wet & Dry Deposition

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