



Porcupine Caribou News

Welcome to the Porcupine Caribou News

The Porcupine herd is one of the largest migratory caribou herds in North America. In 2013, when the most recent photocensus was completed, the herd had an estimated 197,000 caribou. In addition to being one of the largest herds, Porcupine caribou have the longest land migration of any animal in the world.

Porcupine caribou don't just belong to Alaska, the herd spends considerable time in Canada too. During the winter the herd forages along wind swept ridges from the Brooks Range, Alaska to the Richardson Mountains, Canada. Every spring, cows migrate hundreds of miles to the Arctic Coastal Plain for calving.

The Porcupine herd's range is remote and mostly roadless. In Alaska, communities in the Northeast Arctic rely on Porcupine caribou as a dietary staple and an important link to their cultural heritage.

Managing the Porcupine herd to ensure the hunting needs of Alaskans are met is challenging and requires a thorough understanding of caribou populations. This newsletter aims to explain caribou research and monitoring efforts for the Porcupine caribou herd. Our goal is to keep residents of the Northeast Arctic updated on the herd's population status and trends.



Deep trails left by thousands of migrating Porcupine caribou in the Kekiktuk river drainage near Shrader Lake.

Box Holder



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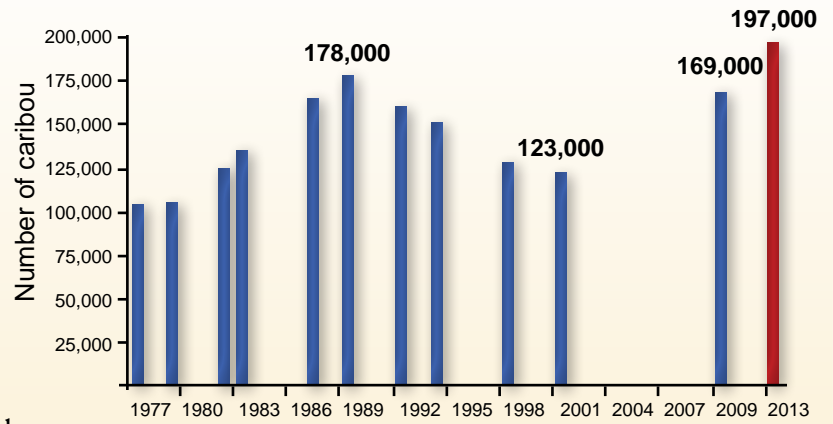
How big is the herd?

At about 197,000 caribou, the Porcupine herd currently has the largest population recorded since monitoring began in 1977. The last photocensus (completed in 2013) indicated that the herd had grown 5% annually since 2010. A photocensus was completed in July 2017 and a new population estimate will be available by winter.

Caribou populations are known for dramatic population changes. Once a herd becomes too large for its habitat, the caribou become nutritionally stressed and the herd will decline.

These fluctuations are a normal part of caribou herd biology. Although there are no indications that the Porcupine herd will decline soon, biologists expect that the herd may eventually reach a peak and the population may begin to go down again.

Estimated Porcupine caribou herd size (1977–2013)



Counting the herd

During the summer when caribou are harassed by insects, the herd groups together and escapes to ridgelines, snowfields and coastlines. When the caribou group up like this, biologists fly over them and attempt to photograph the entire herd. Back in the office, biologists line up all the photos and count every caribou. ADF&G conducts a photocensus of the Porcupine herd every 2 to 4 years if weather conditions are right.

Why are surveys necessary?

Porcupine caribou are used by many people in Alaska including local communities, resident nonlocal hunters, nonresident hunters as well as communities in Yukon and Northwest Territories, Canada. To ensure that there are enough animals in the herd to sustain current harvest by these groups, herd managers need to know the population size. Without this information, they must manage the herd conservatively and cannot increase or decrease hunting opportunity according to herd population dynamics.

Regular herd surveys also allow biologists to detect problems in the herd early on, before there is a serious decline. Disturbance to the caribou during these surveys is minimal. The information gained is extremely valuable.



Photocensus image of caribou grouped on a snowfield to avoid biting insects.

New technology

Since the 1970s, ADF&G has used the same World War II era black and white film camera to photocensus Alaska's caribou herds. Last fall, the department upgraded to a new digital system that is linked to GPS and compatible with innovative software. There are four main benefits to the new system:

1. Photos can be taken under a wide range of light conditions. ADF&G can now survey when skies are overcast.
2. Individual photos have a larger footprint, so fewer photos and less time are needed to photograph the herd. This will reduce disturbance to caribou.
3. Digital imagery allows automated alignment of multiple photos to eliminate overlap.
4. Images are in color and high resolution. This makes it easier to pick out individual caribou, so population estimates are more accurate.



Old approach

ADF&G biologist Jason Caikoski manually lines up black and white photos of caribou to count every animal in the herd.



New approach

The new digital system is compatible with computer software that seamlessly aligns multiple color photos, eliminating the manual process of lining up individual photos.

What is the condition of the herd?

Many tools are used to monitor the Porcupine herd. Biologists track the percentage of pregnant females, calf survival, adult and yearling cow survival, and cow/calf ratios. Each of these measurements provides important information about the nutritional status and survival rates of the herd. This information helps biologists predict if the herd will grow, decline, or remain stable. In 2017, all measurements indicated that the herd was in good condition.

- ✓ **Pregnancy rates-** 88% of radiocollared females (that were at least four years old) were pregnant. This value was higher than the average pregnancy rate (81%).
- ✓ **Calf survival-** 84% of calves survived their first month. This value was higher than the average survival rate (72%).
- ✓ **Adult survival-** Since 2013, on average 85% of adult cows survive each year.
- ✓ **Cow/calf ratios-** There were 72 calves to every 100 cows. This value was much higher than the average ratio of 58 calves per 100 cows.

Local residents have also reported that the caribou they harvest are in good condition. Charley Swaney from Arctic Village said that caribou harvested in the winter of 2016 had more fat than usual, which he associated with fewer mosquitoes. "We had a wet summer, there were less mosquitoes, it made it easier for the caribou to eat ... bugs usually make them move around a lot more."

Where does the herd go?

Porcupine caribou are known for their extensive and varying migration. Although they generally winter in the mountains and calve along the coast, the herd does not return to the exact same location or follow the same route every year. To understand these movements, ADF&G uses GPS and radiocollars to track individual animals within the herd.

Where did collared caribou winter?

■ **2008–2011:** Most of the Porcupine herd wintered in Alaska along the south side of the Brooks Range.

▣ **2012:** For the first time in four years, the herd spent the winter in the Old Crow Flats and the Olgivie Basin in Canada.

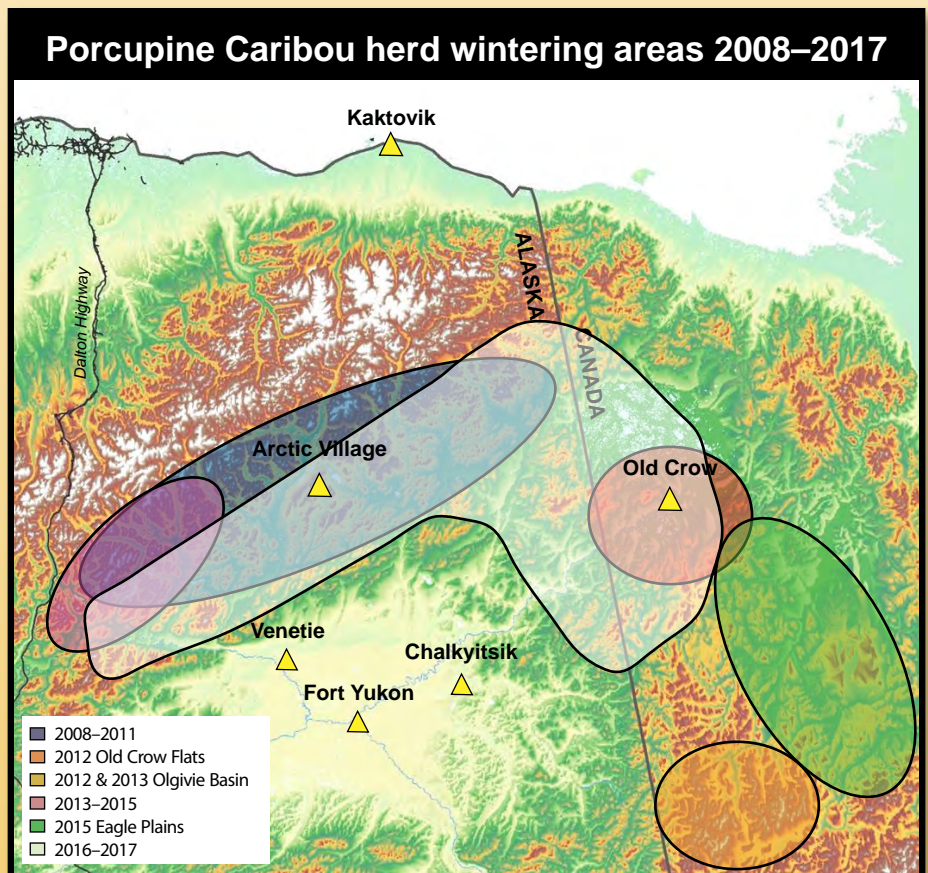
▣ **2013–2014:** Most of the herd returned to Alaska and wintered between the Dalton Highway and Arctic Village. In 2013, a few caribou remained in the Olgivie Basin.

▣ **2015:** Most of the Porcupine herd crossed the international border and wintered near the Eagle Plains in Canada. However, a few animals remained in Alaska and wintered between the Dalton Highway and Arctic Village.

□ **2016–2017:** The herd wintered along the southern foothills of the Brooks Range to the upper Porcupine River and into Old Crow Flats. In 2016, the herd's range along the southern foothills was more narrow.



Arctic village hunter, **Charley Swaney**, said he noticed big changes in migration routes over the last few years. Although the herd still travels through the area, their route has changed. “In the past they used to come from the north a little at a time ... now when they come, they are not on their main migration route ... and they show up in large groups.” He believes these changes are due to global warming and shrub expansion. Areas where he used to easily walk, are now overgrown with willows well over his head. Because the herd usually comes through Arctic Village during August and September, Swaney thinks the caribou have switched their route to avoid damaging their velvet in the tall dense shrubs.



Have calving areas shifted?

The Porcupine herd calves along Alaska and Canada's Arctic coast. Recent GPS data shows that, just like during the winter, the herd does not always return to the same calving location.

1980s and 1990s: During the 1980s and 1990s most of the Porcupine herd calved south of Kaktovik in Arctic National Wildlife Refuge along the coastal plain, in the region known as the 1002 area.

2004–2011: Beginning in 2004, large portions of the herd calved along the Canadian border in Ivvavik National Park, Canada.

2012–2013: GPS data from 2012 and 2013 showed that most radiocollared cows calved on the coastal plain or adjacent foothills between the Babbage River, Canada and Kongakut River, Alaska.

2014–2015: Portions of the herd still calved in Canada, but the majority moved back to Alaska and calved on the coastal plain between the Hulahula and Kongakut Rivers.

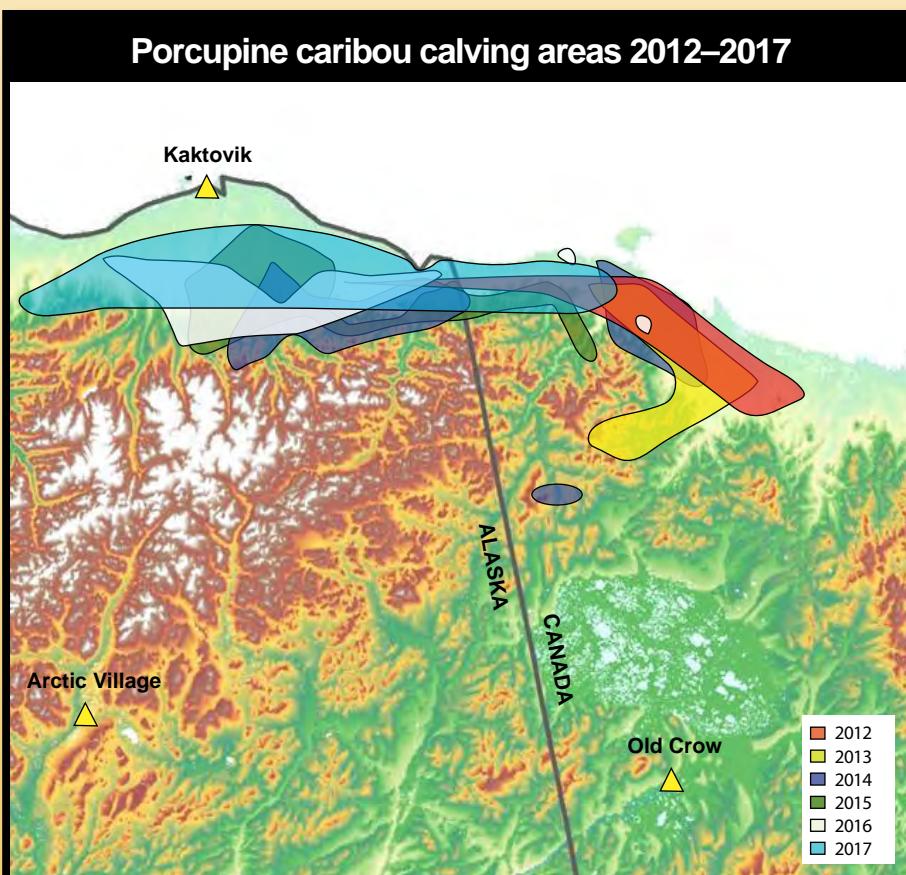
2016: Most calving occurred on the coastal plain between the Alaska/Canada border and the Sadlerochit River, Alaska.

2017: The herd calved on the coastal plain from the Sadlerochit Mountains, Alaska to Babbage River, Canada.



Residents of Kaktovik have noticed changes in the Porcupine herd's movements on the calving grounds too. **Edward Rexford**, the President of Kaktovik, said the herd's summer movement patterns have become more sporadic than years past. "(When I was young) the Porcupine herd used the coastal plain (near Kaktovik) every summer and stayed longer ... now the herd is just here for a week or less."

He went on to say that because the herd does not have a set migratory route they follow every year, the community cannot always rely on them for food. Although community members harvest Porcupine caribou when they are available, they relied much more heavily on the Central Arctic herd in recent years.



Why use GPS or radio collars?

Biologists use GPS and radiocollars to see where animals go during different times of the year. Jointly with other agencies, ADF&G maintains 75 to 90 collars on Porcupine cows and 10 to 20 on bulls. These collars provide information about range distribution, migration routes, and changes in calving and rut locations. The collars also help biologists monitor reproduction and survival rates.

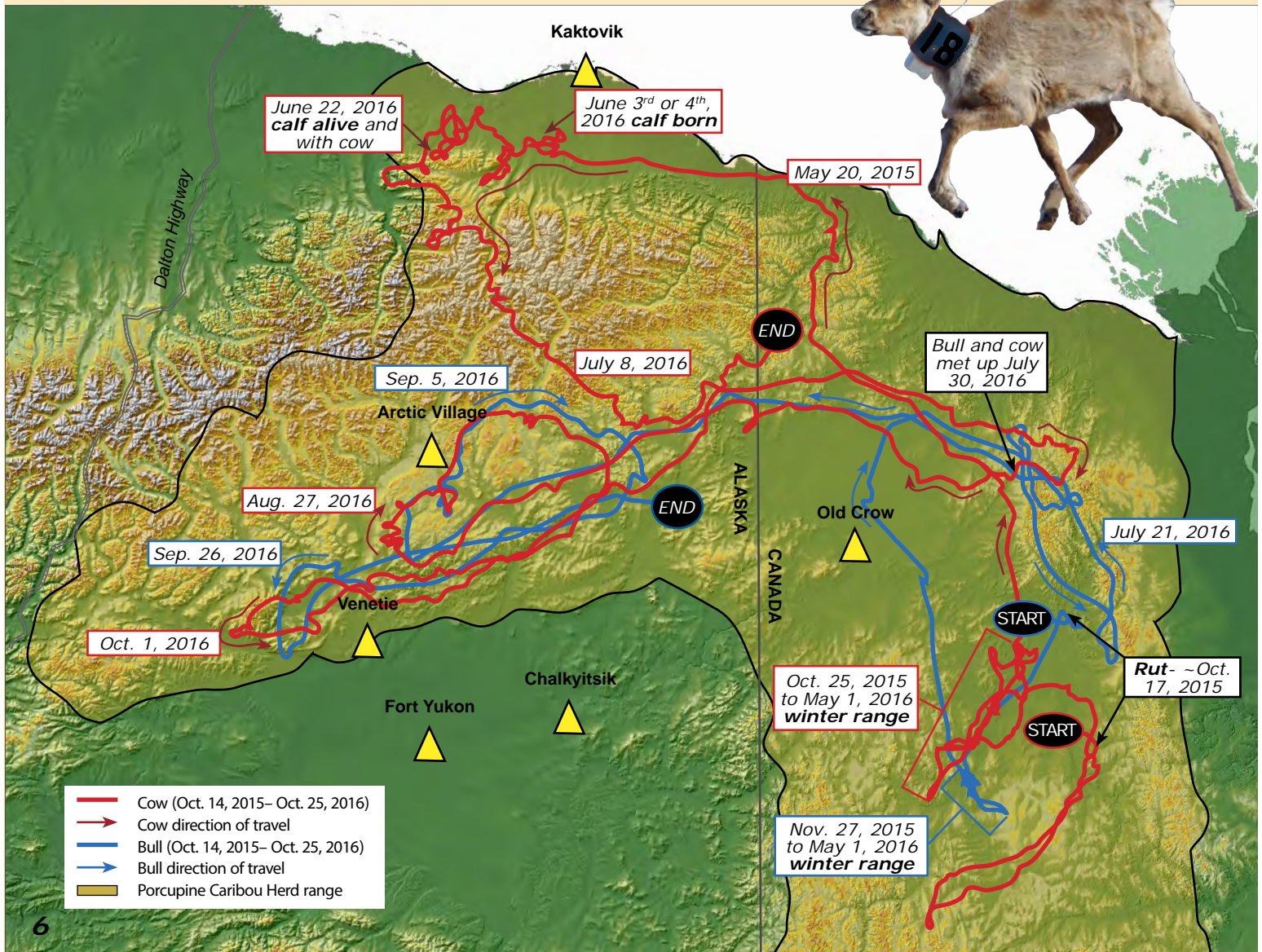


How do collars work?

There are two types of collars. Radio collars are equipped with a small radio transmitter and attached to caribou for tracking movements from airplanes. GPS collars are a newer and more expensive technology that provides location data through Global Positioning Satellite (GPS) transmissions, so movements can be tracked without using aircraft to locate individual animals.

Let's follow a cow and bull for a year

The two GPS tracks below follow a 10-year-old cow (red) and a bull (blue) from October 14, 2015 to October 25, 2016. In 2015, both animals wintered in Eagle Plains, Canada. On May 1, they started their spring migration north. The bull remained in the Ogilvie Mountains while the pregnant cow continued north to the Hulahula River for calving. At the end of June, she headed back south meeting up again with the bull during the end of July. Both animals traveled along the south side of the Brooks Range reaching Chandalar Lake before turning around and heading back toward Canada. During her journey, the cow traveled **2,725 miles**, a full 1,250 miles further than the bull.



Why do caribou movements change?

Like rural residents, biologists have also noticed shifts in the Porcupine herd's calving, wintering and migration routes. These changes can be influenced by many factors including fire, development and habitat change.



Fire ... is it always bad for caribou?

Fire can affect caribou in different ways depending on the time of year and where the burn occurs. Local residents noted changes in Porcupine caribou migration following a large fire. Sometimes, burns along migration routes can benefit caribou. After a burn, sedges and grasses are often abundant and provide quality forage for migrating herds.

Caribou usually avoid burned areas on the wintering range. During the winter, caribou feed on lichen. These fragile organisms can take up to 80 years to recover after a fire.



Cotton grass

Lets talk about food

When a herd is as large as the Porcupine, forage quality can influence movement patterns. During the summer, cotton grass abundance can impact calving locations. This plant is important for calf growth because it provides essential nutrients to nursing cows.

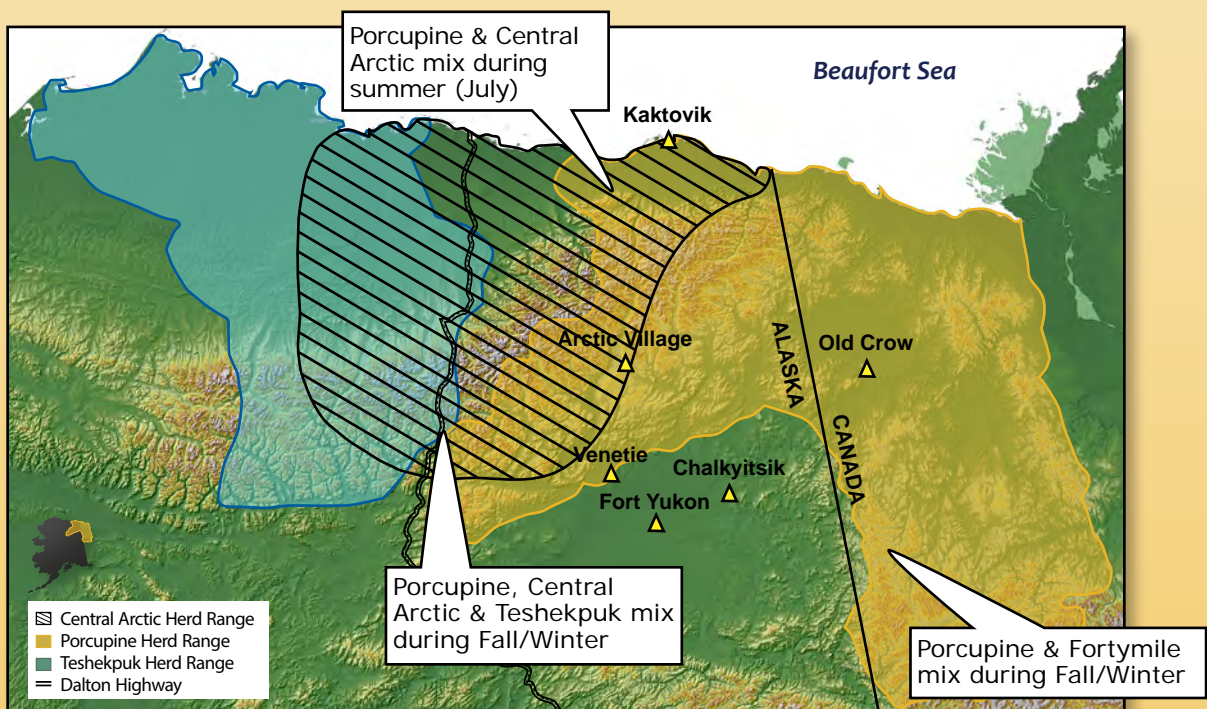
To which herd do the caribou belong?

Caribou herds are always on the move. No one can predict exactly when they will move or where they will go. Sometimes, caribou from multiple herds end up in the same area. How do biologists know which herd the caribou belong? Most herds are drawn to a specific calving area during the spring.

The herds mix

There is a lot of mixing between the Teshekpuk, Central Arctic and Porcupine herds. In 2016, six collared Central Arctic caribou, representing up to 6,000 animals (there are about 1,000 animals for every collared cow), followed the Porcupine herd after calving. The Porcupine herd growth may have caused increased overlap with the Central Arctic herd during recent years, especially after calving and during the winter.

Rural residents have also noticed mixing between the herds. Margorie Gemmill, from Arctic Village, said hunters in her community are concerned about mixing because they believe Central Arctic caribou are "shorter and smaller, with lower body fat ... (and) aren't as healthy as the Porcupine animals."



Who manages the herd?

The United States and Canada jointly manage the Porcupine caribou herd. The two countries signed a treaty in 1978 establishing an advisory board, the International Porcupine Caribou Board, to coordinate research, management, and conservation of the herd. The board relies on a team of biologists, called the Porcupine Caribou Technical Committee, to provide advice on the herd's biological status and habitat use.

Both governments recognize that rural residents have harvested Porcupine caribou for generations and will continue to do so into the future. Consequently, rural residents are important participants on the international board. Alaska currently has two representatives, Edward Rexford of Kaktovik and Edward Frank of Venetie.

In Alaska, the Board of Game makes decisions about Porcupine herd management based on proposals submitted by the public, ADF&G, and/or local advisory committees. ADF&G biologists Jason Caikoski and Beth Lenart monitor the Porcupine herd and provide management recommendations to the Board of Game. Caikoski is also the co-chair of the Porcupine Caribou Technical Committee.



ADF&G biologists Jason Caikoski and Beth Lenart jointly manage the Porcupine herd in Alaska.

Harvest reporting ensures your community gets the caribou they need!

Porcupine herd harvest is thought to be between 1 to 2% of the herd annually. Canada's Harvest Management Plan requires that all hunters accurately report harvest each year. In 2013–2014, about 2,920 Porcupine caribou were harvested in Canada, with more than 95% of the harvest by Gwich'in or Inuvialuit hunters. In Alaska, harvest is primarily by local hunters in Arctic Village, Venetie, and Kaktovik. Reported harvest by these communities is estimated to be 200 to 500 caribou each year, but harvest reporting is usually low. Reported harvest by nonlocal Alaska resident or nonresident hunters is usually less than 175 caribou.

How harvest reporting helps research and your community

ADF&G biologists rely on rural hunters to report their caribou harvest. Harvest reporting is used by biologists to determine how many people hunted and the number of males, females and young caribou that were removed from the population each year. This data combined with biological monitoring helps biologists better understand the herd. Harvest reporting is **important** and **beneficial** for subsistence communities and the local way of life because it helps document the number of caribou the community needs. If accurate reporting is not available, managers may not be able to identify the extent that a community uses the Porcupine herd.

Keep a look out for future information about how to properly report your harvest.

Contact us

Alaska Department of Fish and Game biologists would like to hear from you. If you have questions, comments or concerns about the Porcupine herd contact:

- Jason Caikoski, Assistant Area Biologist at (907) 459-7300; jason.caikoski@alaska.gov, or
- Beth Lenart, Area Biologist at (907) 459-7242; beth.lenart@alaska.gov.