



# Central Arctic Caribou Herd News

Alaska Department of Fish and Game, Winter 2016-17

**Recent decline in the Central Arctic caribou herd prompts proposal to limit harvest and season length**



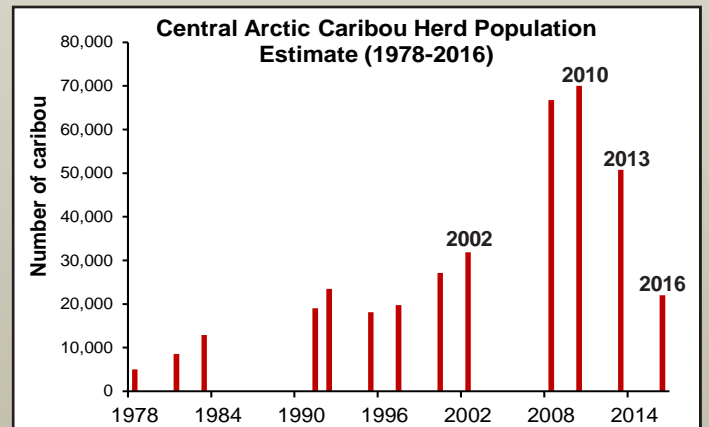
## Welcome to the Central Arctic Caribou Herd News

Since the official opening of the Dalton Highway to public traffic in 1991, the Central Arctic caribou herd (CAH) has been an important resource to both resident and nonresident hunters. During past years, harvest management was fairly liberal due to a large and growing herd. However, the most recent photocensus indicates a sharp decline in herd size. Continue reading to learn about potential causes of the decline as well as possible reductions in seasons and bag limits.

### How much has the herd declined?

From 1997 to 2008 CAH increased at an impressive 10-13% annually. ADF&G biologists attributed this increase to high pregnancy rates, good calf survival, and low adult female mortality. The herd peaked in 2010 at approximately 70,000 caribou.

In 2013, a late spring resulted in high adult and yearling mortality followed by a significant drop in population size to 50,000 animals. Even so, the population was considered stable or slightly declining. In 2016 a new census indicated that the herd was less than half of the size it was in 2010 (22,630 caribou).



CAH population estimates over a 38-year period. Population surveys are attempted 2-3 years after a successful one.

The population objective for CAH is 28,000-32,000.

Alaska Department of Fish and Game  
Division of Wildlife Conservation  
1300 College Road  
Fairbanks, AK 99701



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### Note to Hunters!

Even hunters who live north of the Yukon River now need a harvest ticket to hunt caribou in Units 24A & B, 25A, B&D, and 26B & C.

## Why did the herd decline?

The two major contributing factors accounting for the decline between 2013 and 2016 were high **adult female mortality** and animals **switching herds**. Of the 54 radiocollared caribou ADF&G located in the 2013 photocensus, 29 (54%) died prior to the 2016 photocensus and 10 (18%) were found with either the Porcupine caribou herd or the the Teshekpuk caribou herd in 2016. Each radiocollared animal represents many animals. Mortality and emigration (animals leaving the herd) greatly exceeded recruitment (animals brought into the population) during these three years.

### A drop in adult female survival

Survival of adult female caribou is the most important factor influencing population size in arctic caribou herds. In general, when female survival is below 80% for a few years, it is an indication that the population may be declining. In the Central Arctic herd, from 2001 to 2011 adult female survival was 88%. During 2012-2015 it dropped to 75%.



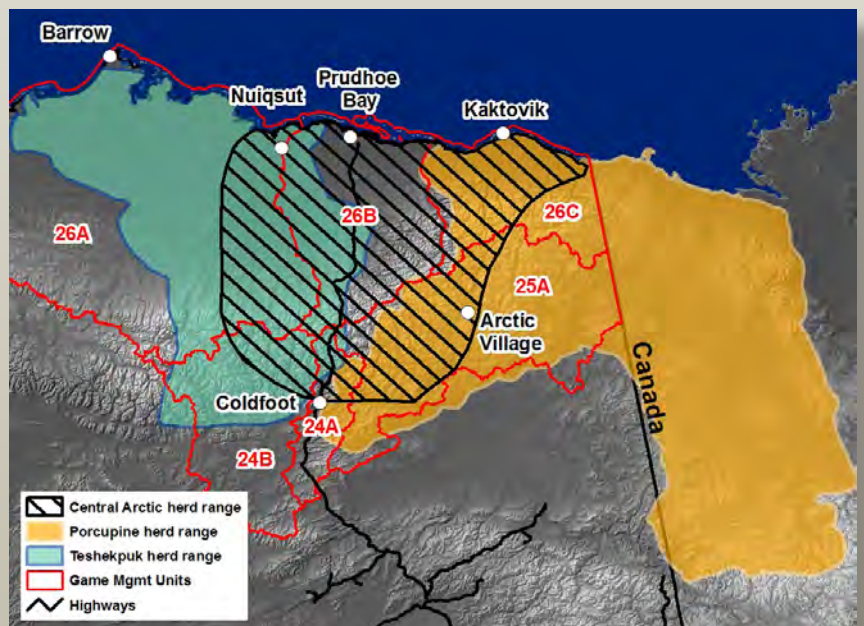
Determining the approximate survival of females is accomplished by tracking deaths of radiocollared animals. Since 2010, ADF&G has maintained about 55 radio collars on females one year and older. These radio collars are also used to determine pregnancy rates, early calf survival, adult female survival, locate groups for photocensuses and fall composition counts, and determine movement patterns of the herd.

### Why did female survival drop?

- There was likely a large proportion of older and aging females in the population from high pregnancy rates and high calf survival during the 2000s. These animals account for a large proportion of the herd and are now dying.
- Late springs in 2013 and 2014 also may have contributed. Spring migration is already taxing on pregnant cows, and an extra month of winter could reduce access to food at this critical time. No other major weather events (such as the past icing events that killed large numbers of the Western Arctic caribou herd) have been linked to the CAH decline.

### Herd mixing and switching

From 2013 to 2015, extensive mixing occurred between the CAH, Porcupine, and Teshekpuk herds after calving and during the winter. Several thousand caribou left CAH and joined other herds.



## Other factors also examined

### Range quality

Poor range quality can cause herd decline until the habitat has time to recover. Because of range overlap, the habitat may be getting overused. This could contribute to reduced female nutrition and reduced female survival. Ongoing research examining calf weights/survival and pregnancy rates will provide more information about range quality.

The impact of oil infrastructure on CAH has also been considered, but is not thought to be contributing to the decline since the herd grew substantially during peak oil development.



## Calf production

In 2014 and 2015, radiocollared females had slightly lower pregnancy rates than previous years. However, calves appeared to be in good physical condition during the 2016 fall composition survey, and the number of calves per cows was high.

In addition to pregnancy rate surveys and herd composition surveys, ADF&G is currently conducting a calf survival research study which will provide more insight into herd population dynamics in 2018.



## Bull to cow ratio

The management objective is a ratio of 40 bulls per 100 cows. A herd composition survey in October 2016 indicated that the bull to cow ratio was 39:100. This is slightly lower than the average ratio of 56:100 during 2009–2012.

## Predation

Prior studies indicate that predation has not played a major role in calf mortality in CAH. Predation is not considered to be a major factor of the decline although future research may be necessary to determine the extent that predation is having on adult survival.

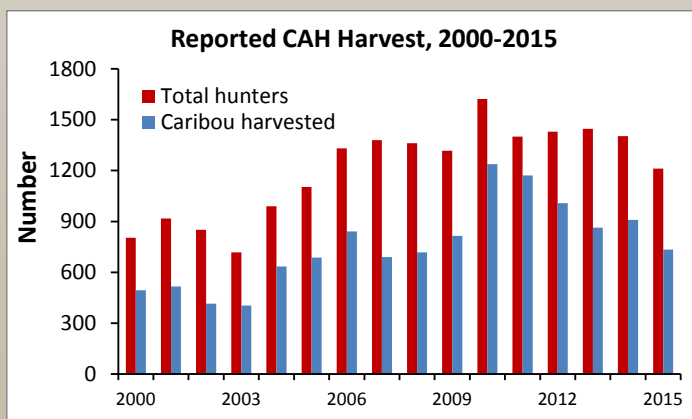


## Disease

Disease has not been implicated, but monitoring of some diseases will likely be implemented in the future.

## Hunting the Central Arctic caribou herd

Since 2010, about 1,300 people hunted the Central Arctic herd each year, harvesting around 800 caribou annually. On average, 74% of hunters were residents. Resident hunter success rate tends to be lower (44%) than nonresident hunters (64%). Nonresident success is likely higher because nonresident hunters use more guided hunts and aircraft to access caribou, whereas resident hunters mostly hunt off of the Dalton Highway.



Total number of individuals who reported hunting the Central Arctic caribou herd compared to total number of animals harvested.

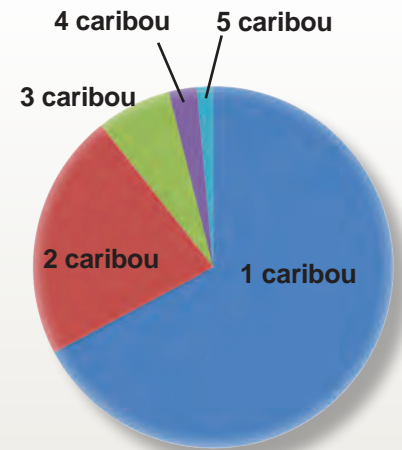


Lanell Graham, Zeb Graham, Angelina Graham Wright, Doug Graham, and Greg Wright with a caribou taken near the Sag River in September 2013 on a family hunting trip.

## Did liberal bag limits contribute to the decline?

Current regulations throughout most of the CAH's range (Unit 26B) allow the harvest of up to 5 caribou over an extended fall and winter season. Biologists do not believe that hunting pressure contributed to the decline, because harvest rates during 2010–2015 were 2–5% of the herd population.

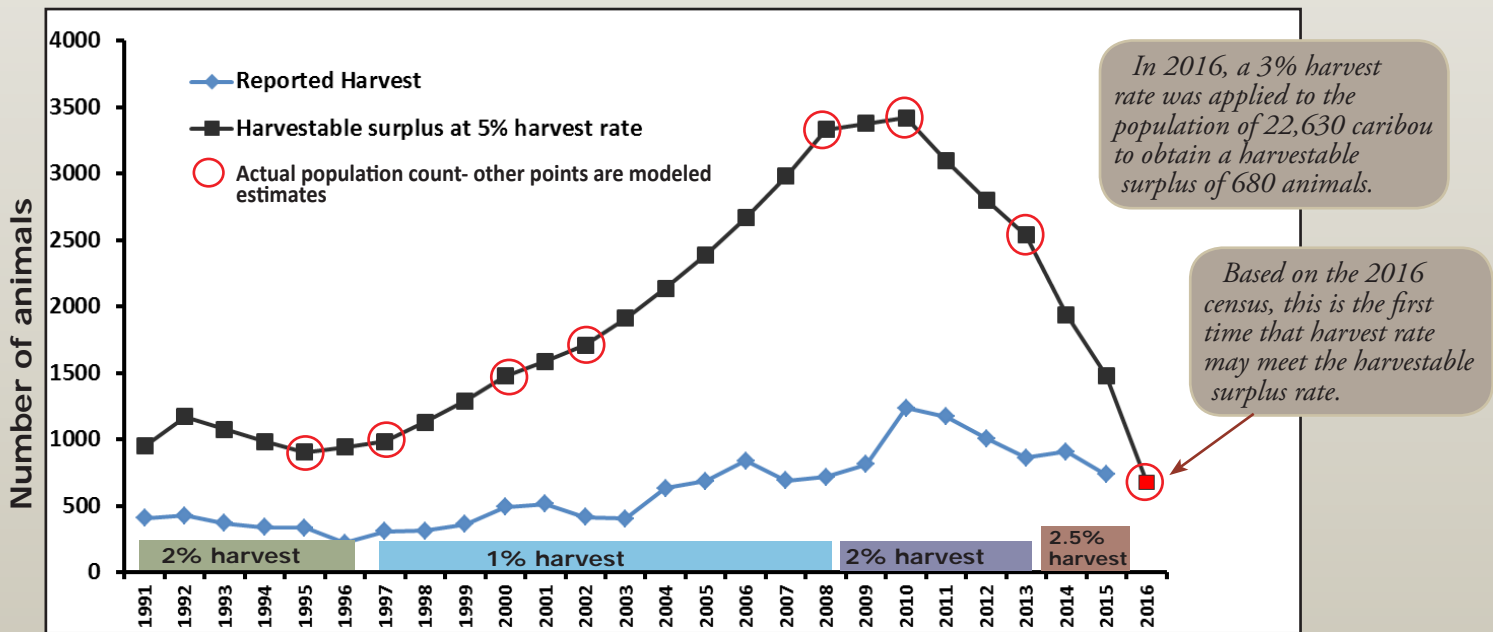
Under current regulations, cow harvest is allowed for much of the season. During 2010–2015, the number of cows taken ranged from 135 to 346 (this represents an approximately 0.25- 0.75% harvest rate of the herd population). Even though this is a very low rate, future growth of the herd will likely require a reduction of cow harvest.



Proportion of hunters who harvested the 1–5 caribou bag limit from 2010 to 2015. Most hunters (93%) harvest either one or two caribou, and fewer than 0.01% harvest a full 5 caribou bag limit.

## Harvestable surplus and harvest rate

*Harvestable surplus* is the estimated number of animals that can be harvested from a population without affecting that population size at the beginning of the next hunting season. The *harvest rate* is the level of harvest that managers can apply to a population to potentially affect the population size. Depending on the management strategy, harvest can be manipulated to increase, decrease, or stabilize the herd. Different strategies are used based on the population size relative to the management population objective. The harvest rate for CAH has always been very low.



This graph shows the actual percent harvest rates of CAH based on the annual population size. Even when the population was declining, harvest remained conservative and below the sustainable harvest rate of 5%. At this rate, harvest was unlikely to have had an effect on the decline.

From 1991 to 2015 CAH was above the population objective. Once a population is low, however, managers may reduce the harvest rate and reduce cow harvest to help the herd grow. CAH is now below the population objective. Applying a 3% harvest rate will provide a harvestable surplus of 680 caribou.

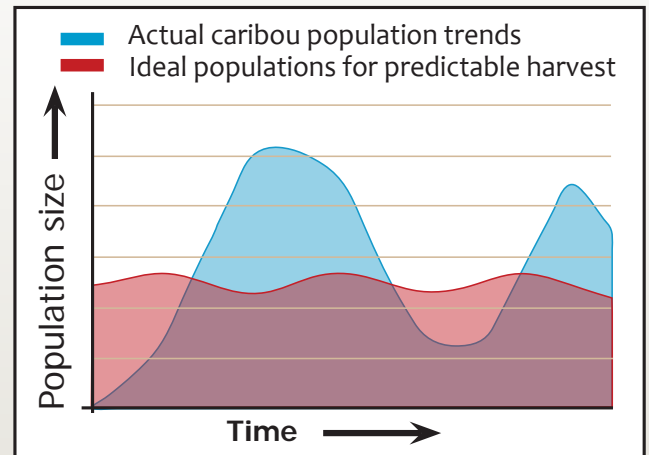
*ADF&G attempts to conduct a caribou photocensus 2-3 years after a successful one. A successful census requires a lot of conditions to be perfect. In many years, these conditions just don't occur. The weather must be hot and relatively calm, caribou must be gathered into large groups in areas where they try and escape harassing insects, and multiple airplanes must be available to locate these congregations for the photo plane.*

## Population fluctuations are normal

Nearly all caribou herds experience dramatic population fluctuations depending on weather conditions, habitat quality, disease, predation, and other factors. These fluctuations are a normal part of caribou biology.

### Why do herds decline?

- When caribou populations reach their peaks it is usually a short-term occurrence. If a herd is too large for its habitat, animals become nutritionally stressed. Cows generally have fewer calves and survival of both calves and adults decreases. Population peaks also tend to coincide with high parasite loads and disease susceptibility.
- Because of the sheer number of animals, even at low reproductive rates the herd can continue to grow for a while. A large herd can also support a large number of wolves. But, as productivity and caribou numbers decline, the abundance of predators can have an increased impact on caribou numbers.
- Once the population bottoms out, the herd's range can recover again. With fewer caribou, predators may eventually decline. With reduced predator pressure and improved nutrition, cows can produce more and healthier calves. Eventually, depending on predator abundance, the population may increase.



Managing caribou for stability is not possible except for highly road-accessible herds where harvest rates can be manipulated more easily and harvest can have a larger impact. The highly accessible Nelchina herd in Unit 13 is the only Alaska herd successfully managed to keep herd size stable.

### Have CAH movements changed?

In both 2015 and 2016, few animals moved south toward the Brooks Range during August and September. Instead, the majority of the herd remained far north and west of the Dalton Highway in the Kuparuk oil fields. This shift in movement patterns resulted in relatively few caribou near or crossing the road during peak hunting season.

Hunters reported greater effort for successful harvest. Air transporters also had difficulty accessing the herd since most landing strips are east of the highway. These issues were reflected in a lower harvest during 2013–2015 than during previous years.

### Future research

If weather and conditions allow, biologists will conduct another photocensus in 2017 as well as continue examining calf weights and survival. ADF&G is also collaborating with ConocoPhillips and ABR, Inc. to investigate herd movements, migration routes, and herd switching.

Another research effort will focus on evaluating summer range condition. Collaborating with the U.S. Geological Survey, the data from GPS collared caribou will be used to identify the relationship between summer habitat selection patterns and weather conditions. This information could help biologists better understand how caribou foraging strategy is influenced by insect harassment.

*ADF&G can't tell hunters where the caribou are located. State law prohibits providing exact locations of caribou to the public.*





## What are the proposed regulations changes?

In light of the recent CAH population decline, ADF&G will recommend that the Board of Game reduce harvest in Unit 26B by 200–300 caribou. This can be achieved by reducing the bag limit from five animals to one or two, as well as shortening the hunting season. Cow harvest will also likely be restricted or closed entirely for all hunters. If the proposal passes, regulatory changes could go into effect spring of 2017. *See Proposal 105 and subsequent ADF&G recommendations located at:*

*ADF&G website > Regulations > Board of Game > Meeting information > Interior Region – or this URL:*

*[www.adfg.alaska.gov/index.cfm?adfg=gameboard.meetinginfo&date=02-17-2017&meeting=fairbanks](http://www.adfg.alaska.gov/index.cfm?adfg=gameboard.meetinginfo&date=02-17-2017&meeting=fairbanks)*

Even under these changes, the herd may continue to decline. Some adult mortality already occurred from July to October 2016, prior to winter when most mortality usually occurs.

### Note to Nonresidents!

Due to potential changes to season dates, nonresident hunters should wait to book their hunts until the Board of Game meets in February 2017.



## How can you provide input to the Board of Game?

ADF&G does not create hunting regulations. Instead the Board of Game makes decisions about wildlife management based on proposals submitted by the public, local advisory committees, and/or ADF&G. Biologists at ADF&G provide recommendations to the board based on management and research data for each proposal. It is up to the board to determine if the information presented is adequate reason to change hunting regulations.

The Interior region Board of Game meetings will be held in Fairbanks during February 17–25. The public is encouraged to attend and provide input on proposals through written comments or oral testimony. For questions about the board meeting contact [nissa.pilcher@alaska.gov](mailto:nissa.pilcher@alaska.gov). For questions about CAH and proposed regulation changes contact [beth.lenart@alaska.gov](mailto:beth.lenart@alaska.gov) or call (907) 459-7206.



## Are you leaving an impact on the Dalton Highway?

North Slope hunters are concentrated along the Dalton Highway, which has no facilities along most stretches. Recent reports suggest substantial impacts by hunters during the fall and winter caribou season. Please remember to pack out your trash. Also consider bringing clean waste bags (available at most outdoor stores) to transport human waste out of areas with no restroom facilities.



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Hunters are important founders of the modern wildlife conservation movement. They, along with trappers and sport shooters, provided funding for this publication through payment of federal taxes on firearms, ammunition, and archery equipment, and through state hunting license and tag fees.