

Caribou Resource Brief 2018

by Layne Adams

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Population dynamics of the Denali Caribou Herd have been investigated continuously since 1984. The goal of this long-term research program is to document population trends, primary vital rates (calf production, calf recruitment, adult female survival), and other important population characteristics (female age structure, adult sex ratios) that determine the status of the Denali Caribou Herd. At this time, we are monitoring 99 radiocollared adult females to meet research objectives. In addition to maintaining and regularly locating the collared caribou sample, we assess pregnancy status of females in mid-May, conduct an annual census in early June, and determine herd composition in late September each year.

Herd Size

The preliminary herd size estimate for September 2018 is 3,230 caribou; that number will be adjusted and finalized based on results of the 2019 census. The Denali Herd has increased at about 7% per year since Autumn 2013 (Figure 1). During these 5 years, caribou numbers have increased by about 40%, or 930 caribou, as a result of generally low winter snowfalls and the resulting high winter survival of adult females. Caribou numbers are higher than they have been since they peaked in 1989, prior to a population crash during a series of severe winters.

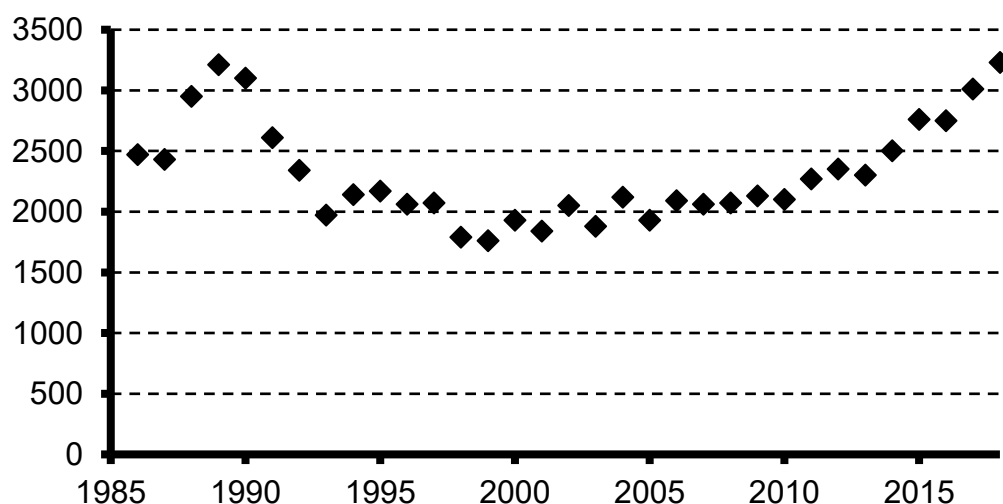


Figure 1. Late September population estimates for the Denali Caribou Herd, 1986–2018 (2018 estimate is preliminary).

Adult Sex Ratio

In September 2017, we determined an adult sex ratio of 42 bulls:100 cows. Adult sex ratios declined from an average of 56:100 during 1984–1989 to a low of 29:100 during 1997–1998 as a result of increased mortality of males during severe winters in the late 1980s and early 1990s along with very low recruitment of calves. Bull:cow ratios increased slowly from 1998 to 2010, and have averaged 42:100 since then.

Calf Production and Survival

Productivity of cows ≥ 1 year old was estimated at 82% in mid-May 2018, based on 83 radiocollared females in the age-structured sample. The calf production has varied from 59% in 1990 to 92% in 1994 and is primarily influenced by the number of yearlings in the herd, the highly variable productivity of 2-year-olds, and the proportion of females ≥ 13 years old in the herd.

During the mid-June 2018 postcalving surveys, we noted 25 calves:100 cows; by the late September composition count that ratio had declined to 16:100. Based on these measures of calf production and survival, and accounting for adult female survival between mid-May and late September, fall calf survival was estimated at 19% for 2018 calves. Fall calf survival has averaged 28% since 2004, compared to 42% and 15% during 1987–1990 and 1991–2003, respectively.

Female Survival and Age Structure

During October 2017-September 2018, we estimated an annual mortality rate of only 4% for adult females, lower than the long-term study average of 11% (range of annual values = 2-23%). Females ≥ 13 years old made up 8% of the population in May 2018. Based on data collected from radiocollared caribou since September 1986, age-specific survival rates of females are high during 2-7 years of age, averaging 94%, then decline slowly during 8–13 years of age prior to declining markedly among older individuals. The 2 oldest caribou females we have monitored died in May as they turned an estimated 20 years old.