

Executive Summary:

Long-term trends in abundance and distribution of the Southampton Island caribou herd: 1978-2017

Barren-ground caribou (*Rangifer tarandus*) were introduced onto Southampton Island (SHI) from Coats Island, in the Kivalliq Region of Nunavut, in 1968, following their extirpation from SHI in the early 1950s. This demographic study illustrates large fluctuations in abundance and distribution of caribou on SHI since its re-occupation. The SHI caribou herd grew from the 48 animals introduced in 1968 to an estimated population of 30,381 animals (+/- 3,982, 95% CI) by June 1997, with an annual rate of increase of approximately 23%. The SHI herd supported a subsistence harvest beginning in 1978, and a largescale commercial harvest beginning in 1993. After nearly 30 years of growth, herd abundance declined from the estimated 30,381 in June 1997 to 20,582 (95% CI=3,065; CV=0.075) in June 2005, to 15,452 (95% CI=1,858; CV=0.061) in June 2007, to 13,953 (95% CI=1,790; CV=0.065) in June 2009, to 7,903 (95% CI=1,261; CV=0.081) in June 2011, and then to 7,287 (95% CI=1,045; CV=0.073) in May 2013. By May 2015, the population had increased again to 12,297 (95% CI = 1,844; CV = 0.076). However, by 2017, the population had declined again to 9,887 (95% CI = 1,438; CV = 0.080). During the decline caribou distribution gradually concentrated into a core area within the south-central portion of the Island in the vicinity of the Kirchoffer River. Harvest estimates over the same periods varied widely. Following the 2011 survey, an annual Total Allowable Harvest (TAH) of 1,000 caribou was applied over the 2012, 2013, and 2014 harvesting seasons. Following the population increase detected in 2015, the TAH was increased to 1,600 caribou annually then dropped by the community of Coral Harbour to 1,000 caribou following the 2017 estimated declines. Susceptibility to disease and parasites due to low genetic heterogeneity has been a concern since the introduction of caribou to SHI, and was a likely catalyst to the wide spread infection of caribou with *Brucellosis suis* first detected in the population February 2000. Prevalence of Brucellosis climbed from 1.7% in February 2000 to 58.8% in March 2011 and this increase is thought to have contributed

to decreased pregnancy rates over the same period. Pregnancy rates dropped from a high of 93.1% in February 2001 to a low of 37% in March 2011. Trend analysis suggests that the SHI caribou population has been decreasing at a rate of 9% per year since the 1997 survey. A genetic analysis and local knowledge confirmed the occurrence of a movement event between the mainland and SHI between the winters of 2014 and 2015 which likely increased the population. However, comparison of the 2015 and 2017 survey estimates suggests the 9% decline continued over the two to three years following this event. Given the continual and steep nature of the decline, combined with the reliance of users on this population for subsistence and commercial harvesting purposes, a reduction in TAH is recommended to reduce the rate of decline and maintain the population over the long term.