Ecological History of Peary Caribou and Muskox on Northern Ellesmere Island, ca. 4300 BP to present

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Over the past four decades, the Peary caribou (Rangifer tarandus pearyi) of the Queen Elizabeth Islands have suffered declines of more than 90%; from a population of 26 000 in 1961 to as few as 2000 animals. These declines can be attributed to a number of factors and their intensity and inter-relations vary among different caribou populations. Some of the primary factors include 1) availability of forage which can be influenced by climate or competition within or between grazing species and 2) predation which comprises natural and human sources of mortality. Since limited information is available on distribution and movement of Peary caribou, undetected movements of caribou or distribution shifts may also be mis-interpreted as declines or die-off.

To better understand the dynamics of the northern Ellesmere Island endangered Peary caribou population, we recognized the need to use different sources of information. To this end, our study incorporates observations and understanding from Inuit hunters, archeological evidence and historical documents. It further analyzes Peary caribou population data collected by biologists of Quttinirpaaq National Park over the last decades, and uses available data for muskoxen (Ovibos moschatus), a more abundant species, to gain comparative insights into the population ecology of the species.

Archaeological data identify Peary caribou and muskoxen use among Inuit and antecedent populations over the past 4000 years.

Historical data (ca. 1850-1970), primarily based on the diaries and other records produced by Elisha Kent Kane, Robert E. Peary, Donald B. MacMillan, and the American Museum of Natural History, NYC, enable historical population levels to be charted and potential impacts of the explorers' activities on the two species to be assessed.

Recent biological data including wildlife surveys (1988 to present), satellite telemetry work, remote sensing and climate data examine the animals' movement patterns, seasonal distribution and population estimates.

From these complementary sources of information and in collaboration with Inuit hunters, ecological and population parameters are derived, critical areas for Peary caribou and potential population limiting factors are discussed.