

ጋብረኛዎች ምርጫ

ΛσϰΔϵ ρϰΔϵ: 5110-04-6

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(ልጋፅሚ: ኔታሊያ ዲናሞስ ኔብራውክስ፣ ሙኔር(ፕሮጀክት) ቢረድ ወይም ኔብራውክስ ሎንደን፣ ቡሪግ-ኦፕሽን ወይም ልዩነት አለመኖር (Rangifer tarandus groenlandicus) ነው፣ ወይም።

14

ከግራም ወደ ሚሊግራም 68.8

Λ²σ²

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15

ᐱᓂᓄᓇᓕᓗᓂᑦ: 22

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ረ። 10.8 ልዩነት ስርዓት ስርዓት 21

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	\$25.0k
የዲፕሎማሲክና ሰላም ጋዖፕናርፕላቅ	\$64.0k
የዲፕሎማሲክና ሰላም ጋዖፕናርፕላቅ ልዩነት	\$ 0.0k
ጠቅላላ	\$ 89.4K

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- [illegible]

PROPOSAL REVIEW

PROJECT NUMBER: 5110-04-6

APPLICANT: Mitch Campbell

TITLE: Monitoring Condition, Feeding Habits and Demographic Parameters Of Island Bound Barren-Ground Caribou (*Rangifer tarandus groenlandicus*) Southampton Island, Nunavut.

RANK: 14 **TOTAL SCORE:** 68.8

Priority: 15

Quality: 22

ELIGIBLE FOR MULTIYEAR?: N/A

Funding: 10.8

Consultation: 21

PROJECT SUMMARY: Following is a research proposal to examine the condition, demographics and past and present feeding habits of Southampton Island caribou using stable isotope analysis. The Condition work will be carried out during the annual commercial harvest while the tissue samples, rumen samples and tooth samples collected as a result of the condition monitoring will undergo stable isotope analysis. This analysis will be compared to isotopic signatures of plant samples collected across the Island to determine historic feeding patterns. These analyses will help us determine the current and future status of the Southampton Island Caribou Herd as both a domestically and commercially utilized population. A population survey flown in June 2003 observed a 40% decline in caribou numbers from the June 1997 survey. These findings place some urgency on re-establishing our understanding of the herd's current state of health. A classification study is proposed for March/April 2004 to estimate both the sex ratio and age structure of the herd as well as recruitment. Management of this herd is presently based on information that is out of date. Responsible Management of this herd will require the collection of current information.

	04/05
REQUESTED FROM NWMB:	\$ 25.0 K
FUNDING BY APPLICANT:	\$ 64.4 K
FUNDING BY OTHERS:	\$ 0.0 K
TOTAL	\$ 89.4 K

EVALUATION: This new project will undertake survey work and the collection of samples from the Southampton Island caribou population to assess the current health of this population. A population count in 2003 indicated a decline in this population triggering this proposal. Only one year of funding is sought.

Southampton Island caribou were not identified as a priority in the 2001 Kivalliq wildlife priorities workshops. However, the community has indicated a concern based on the recent survey results and therefore this should be considered of some priority. The proposed work appears well designed to meet the objectives of the project.

The majority of the funding for the project is being provided by DSD, with NWMB providing the remainder of the funding. DSD is also contributing employee time to the project and approximately one month of local employment will be created for Inuit to assist with the work.

The researcher has held meetings with the HTA in order to develop this project and this final proposal is being circulated to the HTA and the Kivalliq Wildlife Board for comments at this time. There are good plans for reporting to the community and in the scientific literature and the researcher has a history of excellent reporting.

RECOMMENDED FUNDING CONDITIONS: If this project is funded, then the following conditions should apply:

1. Funding should be conditional on other funding, as identified in the proposal, being approved. This should be confirmed in writing.
2. Funding should be conditional on a letter of support from the Coral Harbour HTA.

RESEARCH PROPOSAL TO THE NUNAVUT WILDLIFE MANAGEMENT BOARD

Prepared by: The Department of Sustainable Development
Kivalliq Region
P.O. Box 120
Arviat, NU. X0C 0E0

November 15th, 2003

Title: Monitoring Condition, Feeding Habits and Demographic Parameters Of Island Bound Barren-Ground Caribou (*Rangifer tarandus groenlandicus*) Southampton Island, Nunavut..

Project Leader: Mitch Campbell
Regional Wildlife Biologist
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Summary

Following is a research proposal to examine the condition, demographics and past and present feeding habits of Southampton Island caribou using stable isotope analysis. The Condition work will be carried out during the annual commercial harvest while the tissue samples, rumen samples and tooth samples collected as a result of the condition monitoring will undergo stable isotope analysis. This analysis will be compared to isotopic signatures of plant samples collected across the Island to determine historic feeding patterns. These analyses will help us determine the current and future status of the Southampton Island Caribou Herd as both a domestically and commercially utilized population. A population survey flown in June 2003 observed a 40% decline in caribou numbers from the June 1997 survey. These findings place some urgency on re-establishing our understanding of the herd's current state of health. A classification study is proposed for March/April 2004 to estimate both the sex ratio and age structure of the herd as well as recruitment. Management of this herd is presently based on information that is out of date. Responsible Management of this herd will require the collection of current information.

Background:

Wolves (*Canis lupus*) and barren-ground caribou (*Rangifer tarandus groenlandicus*) were a common component of Southampton Island ecology until the early 1900's. The decline of these animals became obvious by 1935 and was followed by the local extinction of wolves by 1937 (Parker, 1975). The extirpation of caribou from Southampton was complete by 1952, a result in part of over hunting. The absence of this resource was keenly felt by residents of Coral Harbor prompting both the local HTO and government to initiate the re-introduction of caribou onto the Island. In 1967, 14 years following their extirpation, 48 caribou from Coats Island were introduced onto Southampton Island. Caribou numbers have since increased rapidly which is in part due to exceptional range conditions resulting from the 14-year absence of caribou from the Island. The lack of predation and low initial harvest rates also played a role in the overwhelming success of the introduction which was first realized following a population survey in 1978, estimating 1,200 +/- 340 caribou (Heard and Ouellet, 1994). Since the 1978 survey the Southampton caribou population continued to grow rapidly to 5,400 +/- 1,130 in 1987, 9,000 +/- 3,200 in 1990, 13,700 +/- 1,600 in 1991, 18,275 +/- 1,390 in 1995 (Heard and Ouellet, 1994), 30,381 +/- 3,982 in 1997 and finally 17,981 +/- 2,127 in June 2003 (Campbell and Mulders in press.). These survey results, suggest a population growth rate of approximately 27 %/year up until 1997 followed by a 40% decline between June 1997 and June 2003. During this six-year period 8,529 adult males and 10,221 adult females were harvested commercially and an estimated 7,000 males and 7,000 females were harvested domestically for an estimated total of 15,529 males and 17,221 females.

The Southampton Island Caribou Herd is extensively utilized both commercially and domestically. The latest estimates for annual domestic use are +/- 2,000 animals. Commercial harvests have seen a general increase from 564 in 1992, to 759 in 1993, 1,554 in 1994, 2,356 in 1995, 1,839 animals in 1996, 3,365 in 1997, 2,956 in 1998, 1,094 in 1999, 2,166 in 2000, 3,696 in 2001, 3,834 in 2002 to 5005 animals in 2003. Following the June 2003 survey a meeting between the Aiviit HTO and DSD (Department of Sustainable Development) staff was held November 5, 2003. During this meeting the Aiviit HTO discussed with DSD recommendations that the commercial caribou quota be reduced to 2000. Following much discussion and additional information (calving success and observed densities provided by HTO members), both parties agreed to recommend a commercial quota reduction from the 6000 tags currently in place to 3300 tags (300 of which will remain dedicated to Coral Harbour's sport hunting industry). As the community of Coral Harbour has been commercially harvesting in excess of 3300 animals each of the last 2 years, this will mean that the financial benefits to the community will be substantially reduced. Responsible management of the commercial harvest in the shadow of the observed six year decline will require a renewed effort to monitor the herds condition, feeding habits, demographics and range condition.

Objectives:

The objectives of the proposed research are to: 1) monitor the condition of Southampton caribou and how any change in condition relates to range condition, availability and/or extent; 2) monitor recruitment and the sex and age structure of the population in April 2004; 3) study feeding habits using stable isotope analysis of tissue and rumen samples as well as plant samples from across the Island. The proposed objectives can be broken down into the following questions:

- 1) Determine the condition of Southampton Island caribou. *Biological rationale:* The monitoring of sex and age specific condition will be achieved through the analysis of the Riney kidney fat index, the recording and sampling of any apparent disease and/or diseased tissue, the recording and sampling of parasitic infections, the measurement of back fat, bone marrow condition, pregnancy rates, fetal sex and age through the analysis of cementum-annuli. As condition work was monitored up until February 2001 a continuation of this long-term data set will greatly enhance our understanding of Southampton Island harvest management issues as well as our ability to predict future trends.
- 2) Determine the important forage species for caribou on Southampton Island. *Biological Rationale* The identification of important winter forage species is a crucial component of any range study. In conjunction with the present commercial harvest rumen samples will be collected and analyzed to determine vegetative content and isotopic signatures. Isotopic Signatures will also be developed for caribou tissue samples collected during the harvest.
- 3) Utilize the stable isotope analysis of rumen and tissue samples to determine whether important forage species can be identified through tissue samples alone and through time using the isotopic signatures developed through the analysis of cementum annuli and determine if these signatures can be temporally associated with mapped plant communities using digital Landsat data. *Biological Rationale:* The study addresses monitoring objectives through the development of standardized methods for determining and monitoring changes in the dietary status and health of caribou herds and comparing the feasibility of numerous monitoring techniques (e.g., stable isotope and rumen analysis) for widespread, standardized use in the north as a means of assessing caribou herd status and health.
- 4) Herd classification and recruitment monitoring. *Biological Rationale:* Determining the sex ratio of the Southampton Island caribou population is a necessary first step to understanding the Herds reproductive potential. Once the age and sex structure of the herd has been estimated spring recruitment figures will provide a good indication of the herd's rate of growth. Recruitment can then be monitored locally between population estimates as a window into TAH (total

allowable harvest) and how that may impact the BNL (basic needs level) of the community.

Application of Results:

The application of project results will lead to the refinement of a scientifically based management plan for Southampton Island caribou. It is hoped that an understanding of Southampton caribou condition, food, range requirements and population status and trend will help managers make crucial harvest management decisions regarding an extensive commercial harvest on the Island. These management tools are necessary if we are to maintain the basic needs of the community of Coral Harbour. Precise action will be required if we are to mitigate future hardships that will result from large-scale population fluctuations and the extensive long-term range damage and recovery that would inevitably follow.

Study Area:

At 43,000 Km² Southampton Island is the largest Island in Hudson Bay (Figure 1). The entire western and much of the Southeastern portions of the Island are dominated by low, flat often-exposed limestone plains sparsely to densely vegetated by *Dryas integrifolia* (mountain avens) barrens and *Carex* spp. (sedge) meadows. The remainder of the Island is shaped by an undulating Precambrian shield dominated by a lichen (*Allectorina* spp., *Cetraria* spp.) and heath tundra (Heard and Ouellet, 1994). The snow season persists from mid-September to mid-June and accumulates up to 133cm of snow (Parker, 1975).

Project Design:

Southampton Island caribou condition will be monitored using the Riney kidney fat index, the recording and sampling of any apparent disease and/or diseased tissue, the recording and sampling of parasitic infections, the measurement of back fat, bone marrow condition, pregnancy rates, fetal sex, and age through the analysis of cementum-annuli. All sampling will be carried out in conjunction with the commercial harvest which runs from mid-February to early May. Preferred forage species will be identified using rumen analysis and stable Isotope analysis of tissue and rumen samples. Isotopic signatures for Southampton Island plant species have already been recorded and will be used comparatively with the tissue and rumen signatures.

We propose to classify Southampton Island caribou in early April 2004 using a Cessna grand caravan, Bell 206B helicopter and 2 ground crews made up of local hunters chosen by the Coral Harbour HTO. An aerial reconnaissance

survey will be flown in advance of the classification work to determine relative densities. Following the reconnaissance survey the Island will be divided into density strata within which caribou will be classified from the ground and air. Strata difficult to reach by snowmobile will be classified using a helicopter and 2 observers. Caribou will be classified within each stratum (both ground and aerial) using Cochran's (1977) jackknife method to calculate the mean number of cows in each stratum until a coefficient of variation of 0.01 is obtained. Aerial classification will proceed from the most distant (from fuel) end of the stratum in a pre determined zig-zag path to avoid classifying animals more than once.

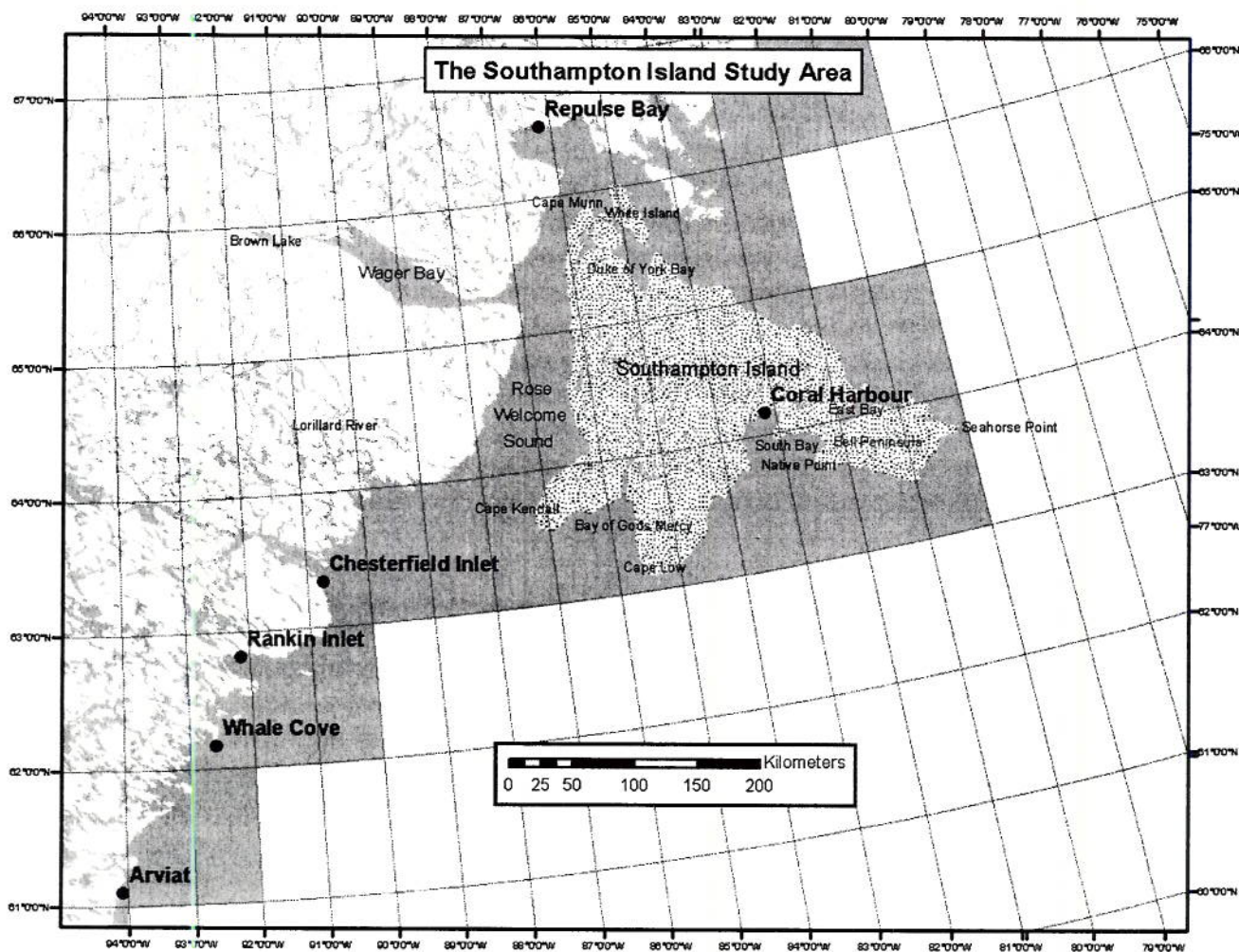


Figure 1 The Southampton Island study area including White Island.

Ground crews will be instructed to follow transects through more accessible stratum classifying all animals encountered en-route. Ground transects will be spaced so that double counting will be unlikely. The classification results will be

used with the June 2003 population estimate to estimate both sex ratio and recruitment.

Community consultation:

The proposed work is a component of a larger management plan being drafted by the Coral Harbour HTO and the Department of Sustainable Development. The goals of the management plan are to provide a long term management framework that will focus on maintaining caribou numbers at or above levels necessary to 1) sustain current and future domestic harvesting needs (BNL) (primary objective), and, 2) sustain commercial harvesting needs (TAH)(secondary objective). A copy of the proposal is currently being circulated to all regional HTOs and the Kivalliq Wildlife Board for critical comment. A meeting was held in Coral Harbour in Fall 2003 to discuss current results and formulate an action plan for the coming year. This proposal is the result of these talks and represents the initial stage of a more formal action plan for the Management of this herd.

Schedule:

Project: Monitoring Condition, Feeding Habits and Demographic Parameters Of Island Bound Barren-Ground Caribou (<i>Rangifer tarandus groenlandicus</i>) Southampton Island.				
Output or Step	Start Date	End Date	Person Days	Overtime (hrs)
Classification/recruitment	April (2004)	April (2004)	20	15
Community meeting (Update)	Oct. (2004)	Oct. (2004)	6	15
Condition sampling	Feb. (2005)	Feb. (2005)	7	30
Isotope Analysis	March (2005)	March (2005)		
Totals			33	60

Anticipated Outputs:

- 1) Annual status reports to DSD HQ, contributing agencies, community HTOs and co-managers.
- 2) The distribution of the Kivalliq Wildlife Research Update twice a year (October and March)
- 3) DSD file reports (in press).
- 4) Published scientific papers in refereed journals following the completion of the file report.
- 5) Community meetings and/or radio shows describing methods and benefits of research and to obtain recommendations and/or address concerns.
- 6) Summaries/maps of caribou distributions to all communities as requested.
- 7) The generation of 20 person days of employment to local peoples.

Literature Cited:

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- Reimers, E. 1982. Winter mortality and population trends of reindeer on Svalbard, Norway. *Arctic and Alpine Research*. 14(4): 295-300.
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data. Journal of Applied Ecology. 17:125-138.

Personnel:

Mitch Campbell, Regional Wildlife Biologist, DSD, Arviat, NU.

- Project design and implementation

Jonathon Pameolik, Wildlife Technician, DSD, Arviat, NU.

- Coordinator of project logistics

Four to five local hunters to be named by the Coral Harbour Hunters and Trappers Organization.

- Ground and aerial observers.

Partners:

The proposed studies are a cooperative effort between the Department of Sustainable Development and the Coral Harbour Hunters and Trappers Organization. Present and future roles each of the organizations will play in the financial and logistic structure of the Southampton Island Management plan are being discussed.

PROPOSED BUDGET 2004-2005**Project Name: Southampton Island Caribou****Project Code: 11740??****Year: 2004-2005**

	ORIGINAL TOTAL
Casual Wages	
Research Assistant – (4 observers X 6 days X \$300/day)	\$7,200.00
Travel and Accommodations	
Travel (2 DSD staff X \$1,100.00)	\$2,200.00
Meals/accom (north) (2 (DSD staff) X \$300/day X 8 days)	\$4,800.00
Meals/accom (north) (1 (Pilot) X \$300/day X 8days)	\$4,800.00
Materials and Supplies	
fuel purchase	
*scientific supplies - non-disposable	
Field supplies disposable	\$1,500.00
Purchased Services	
freight/cargo	\$1,000.00
telephone charges (satphone)	\$500.00
fuel delivery charges	
Contract Services	
Air charter (fixed) (10hrs / day @ \$1200 / hr x 1 days)	\$12,000.00
Air charter (rotary) (8hrs / day @ \$900 / hr x 5 days)	\$36,000.00
community contracts (fuel caching 10 drums X \$500/drum)	\$5,000.00
community contracts (other)	
technical services (consultants, south) (rumen, ageing)	\$8,600.00
translation/interpretation	\$1,000.00
technical services (Isotope analysis / consultants, south)	\$4,800.00
quarterly totals	
PROJECT TOTAL	\$89,400.00
Overtime (estimated hours total for two GN Staff)	60

Contributions:

Population estimate and condition of island bound barren-ground caribou (<i>Rangifer tarandus groenlandicus</i>), Southampton Island NU.			
AGENCY	CONTRIBUTION		
	2004/2005 (PY)	2004/2005 (Funds)	Confirmed/Requested
DSD	0.25	\$64,400.00	Requested
NWMB		\$25,000.00	Requested
TOTALS	0.25	\$89,400.00	

