Summary of the Southampton Island Barren-ground Caribou Population

Management Plan 2011-2013

Summary

Historically, barren-ground caribou were abundant on Southampton Island. During the early to mid-1900s the population declined dramatically as a result of over harvesting, and was extirpated from the island by 1955. In 1968, 48 caribou from Coats Island were successfully reintroduced onto Southampton Island. Between 1968 and 1997 the population increased rapidly from 48 individuals to 30,381 ±3,982 individuals. An aerial survey in 2003 detected the first decline since their reintroduction with a population estimate of 17,981 ± 2,127 individuals. Between 2003 and 2011 the population continued to decline and was estimated at 7,762 ± 1,858 individuals in 2011. Explanations for this downward trend in abundance include: the reproductive disease *Brucellosis suis,* which was first identified in the population in February 2000 and had infected over 50% of the population by 2006, reduction in pregnancy rates from approximately 80% in 1997 to 37% in 2011 and extensive icing events in 2011 resulting in inaccessibility to food and decline in condition.

Southampton Island Caribou Range

The Southampton Island barren-ground caribou population range extends to all of Southampton and White Island and includes small coastal islands along the eastern shores of Southampton Island. This range covers two ecozones: the Northern Arctic Ecozone and the Southern Arctic Ecozone (Figure 1).

History of Harvesting and Harvest Management

The main harvesters of the Southampton Island caribou population are citizens of Coral Harbour, though harvesters from Repulse Bay and Cape Dorset undertake a smaller harvest on White Island and occasionally the northern extents of Southampton Island.

Since their reintroduction the Government of the Northwest Territories and presently the Government of Nunavut have been managing the Southampton Island caribou population. Management strategies include aerial surveys, Geographic Information Systems Analysis and a health monitoring system. The first caribou hunt since the reintroduction was carried out in 1978. Since then, different management measures such as quotas and non-quota limitations have been applied, modified or removed as needed based on the population estimate.

The first commercial harvest since the reintroduction was in 1993, when five caribou were commercially harvested (Table 1). Since then, commercial quotas continued to increase reaching 6000 animals in 1997. In addition, an export market of caribou meat from Southampton Island to other Nunavut communities has recently been developed by Coral Harbour harvesters, and is thought to have accelerated to unsustainable levels (Figure 2).

Management of the Southampton Island Caribou Population

The objectives of Southampton Island Caribou Management:

1. To manage the Southampton Island Caribou Population in a co-operative manner that involves the full participation of the Hunters and Trappers Organization, community and government.
2. To include local knowledge, Inuit Qaujimajatuqangit and scientific knowledge equally in the management process.
3. To promote local and regional involvement in decision-making.
4. To conserve and manage in order to maintain a healthy Southampton Island barren-ground caribou population and to recover a depleted population.
5. To meet (Government of Nunavut, Nunavut Tunngavik Inc. and Coral Harbour Hunters and Trappers Organization) at least once per year to re-visit management plan goals and objectives.

The Management Plan has identified four specific priorities, which are:

1. To establish harvesting limitations either through Hunters and Trappers Organization regulated bylaws, non-quota limitations, and/or through the establishment of a Total Allowable Harvest for the purposes of sustainably harvesting the Southampton Island caribou population.
2. Establish a mutually agreed upon monitoring program using Inuit Qaujimajatuqangit, local knowledge and scientific knowledge to inform priority one.
3. To insure the management plan recommendations remain flexible to allow for timely adjustment to priorities one and two where and when necessary.
4. To meet (Government of Nunavut, Nunavut Tunngavik Inc. and Coral Harbour Hunters and Trappers Organization) at least once per year to re-visit and re-asses management plan priorities.

Harvest Management

The management plan identifies over-harvesting as the single greatest risk to the long-term survival of the Southampton Island caribou population (Table 2, Figure 3), and recommends the practice of sustainable harvest management. The management plan uses known productivity rates and pregnancy rates to estimate the total sustainable harvest.

The Southampton Island caribou herd sex ratio is estimated to be approximately 70% females to 30% male. Due to the prevalence of *Brucella suis*, pregnancy rates have declined to 35% (Figure 4). Therefore, only an estimated 60% of the females are capable of successfully calving. Using these rates, a 20% calf mortality rate and the 2011 population estimate, the management plan estimated that 1,304 calves are introduced into the population annually. Harvest exceeding this amount would be unsustainable.

Herd Management

The Management Plan recommends three approaches to overall monitoring and management of the population that accounts for natural long term population fluctuations (Table 3).

Level – 1: Core Management (Stable or increasing trend/high population)

Level 1 core management actions apply at all times during the population cycle and represents the minimum level of population management activities that need to be conducted. Core management actions are used to detect a decline in productivity and abundance.

Level – 2: Enhanced Management (Declining trend)

Level 2 is implemented when there is an indication that the population is declining. The management actions are designed to detect changes at a finer scale. At this level a total allowable harvest may have to be applied and/or modified.

Level – 3: Critical Threshold Management (Population level below Basic Needs Level)

Level 3 is implemented when there are not enough caribou to meet the basic needs level. Management actions for level 3 will remain the same for those at level 2, but would involve more intensive harvest management. At this level it is expected that non-quota limitations will be introduced and a Total Allowable Harvest will have to be set below the Basic Needs Level.

Recommendations and Actions

Following three meetings between Coral Harbour Hunters and Trappers Organization and Government of Nunavut, Department of Environment, both parties agreed that scientific and local knowledge indicate that the Southampton Island Caribou Population had attained “Level 3” status and required Critical Threshold Management.

Based on this decision the Management Plan recommends the following key management actions:

1. Set a Total Allowable Harvest of 600 caribou up until June 31st/2012 at which time a Total Allowable Harvest of 1,000 will be applied to the 2012/2013 harvesting season commencing July 1st, 2012 and terminating June 31st, 2013. The setting of this Total Allowable Harvest is conditional on the following:
2. Ban all forms of commercial harvesting and remove all tag and tag allocations related to any and all commercial harvest of caribou on Southampton Island (Including White Island, considered a part of the Southampton Island caribou population).
3. Establish 2 non-quota limitations designed to maximize the available quota. These limitations include:
    a. A restriction on the harvesting of any/all mature bulls.
    b. A restriction on the harvesting of any/all Cow/calf pairs.

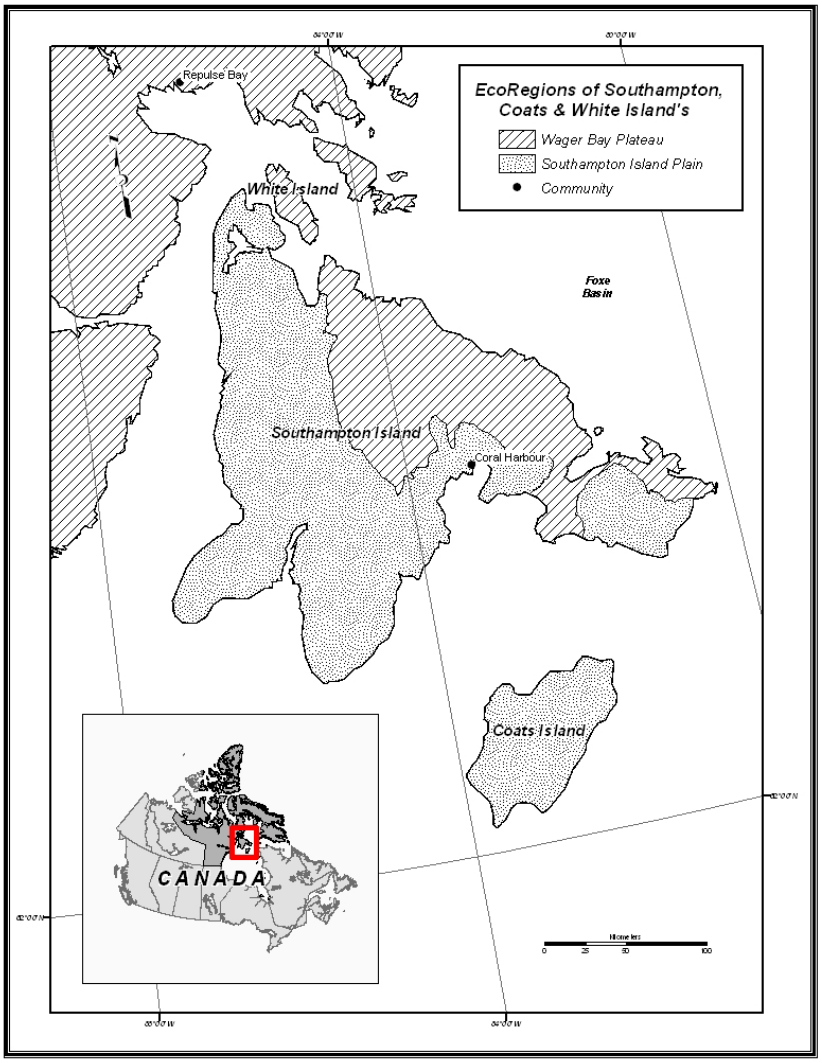

Figure 1. Ecoregions of Southampton Island, Coats Island and White Island (Natural Resources Canada, 2007).

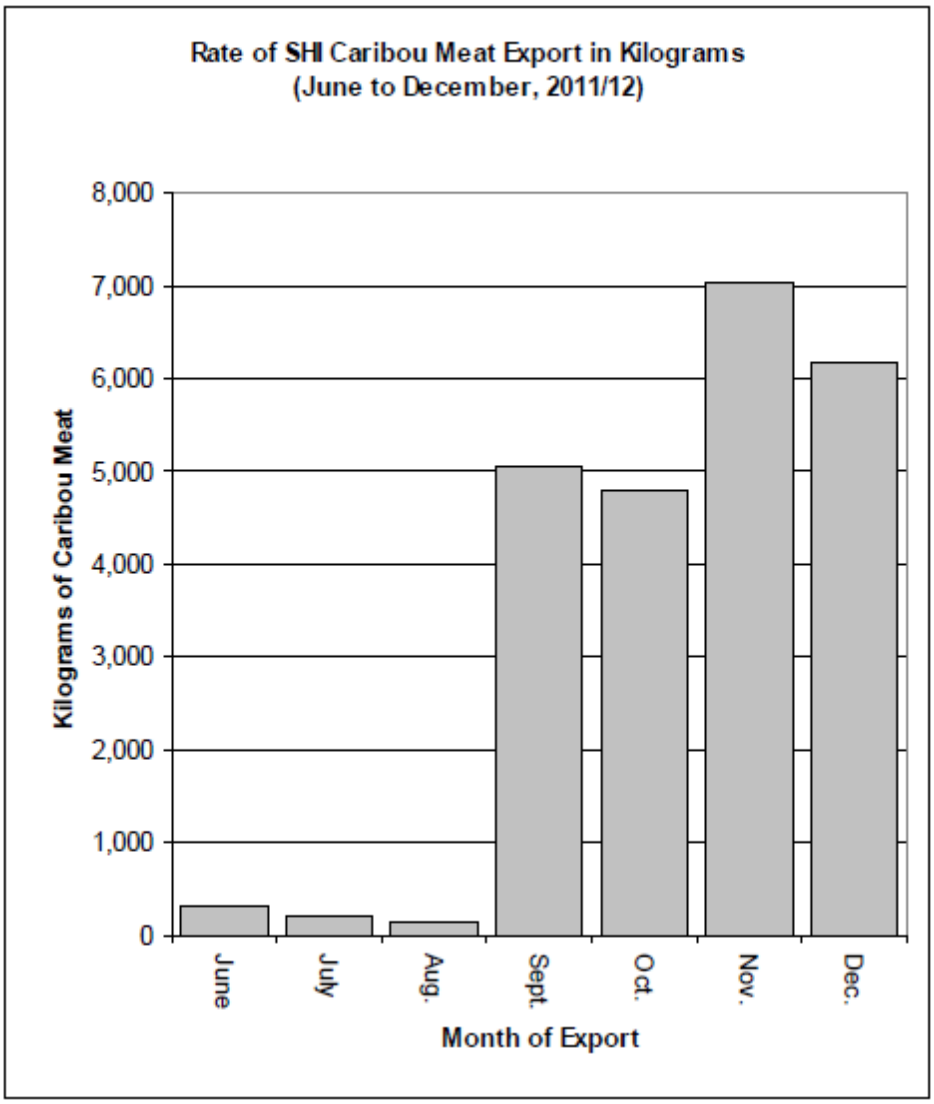

Figure 2. Airfreight records indicating kilograms of Southampton Island caribou meat shipped off the island per month. Baffin Island communities make up the predominate destinations.

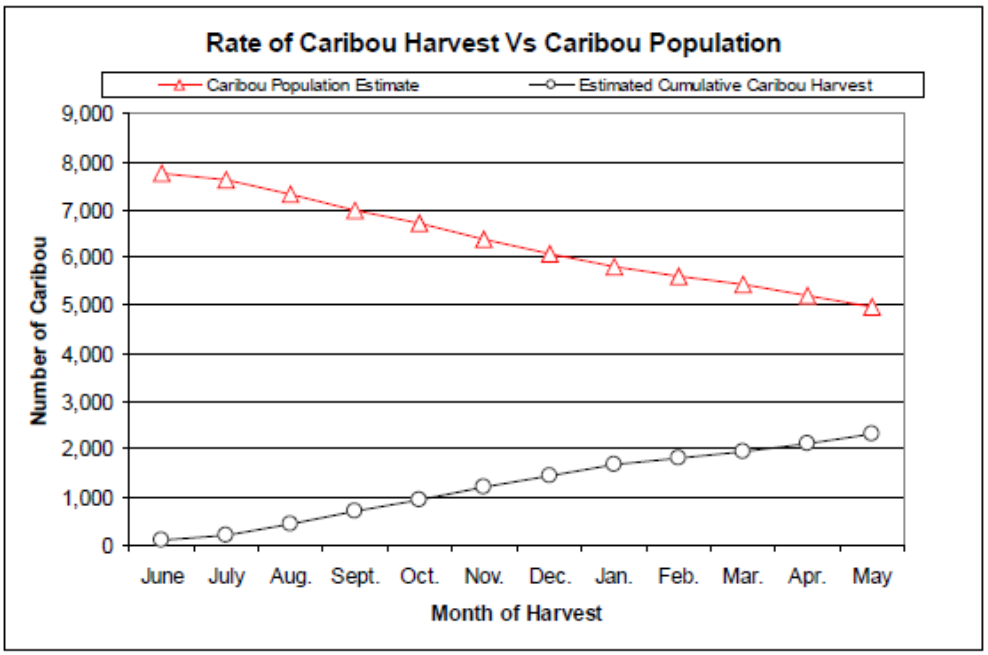

Figure 3. The estimated rate of decline over one year for the Southampton Island caribou population. Harvest rates are based on estimates of export (Airfreight records, June – January, 2012) and subsistence use (Priest and Usher, 2004). The lowest annual values for subsistence harvest were used to estimate total annual rate of harvest. Caribou population estimates include a 7.5% natural annual mortality rate (not including predation) spread across an 11 month period (Haskal and Bellard, 2005).

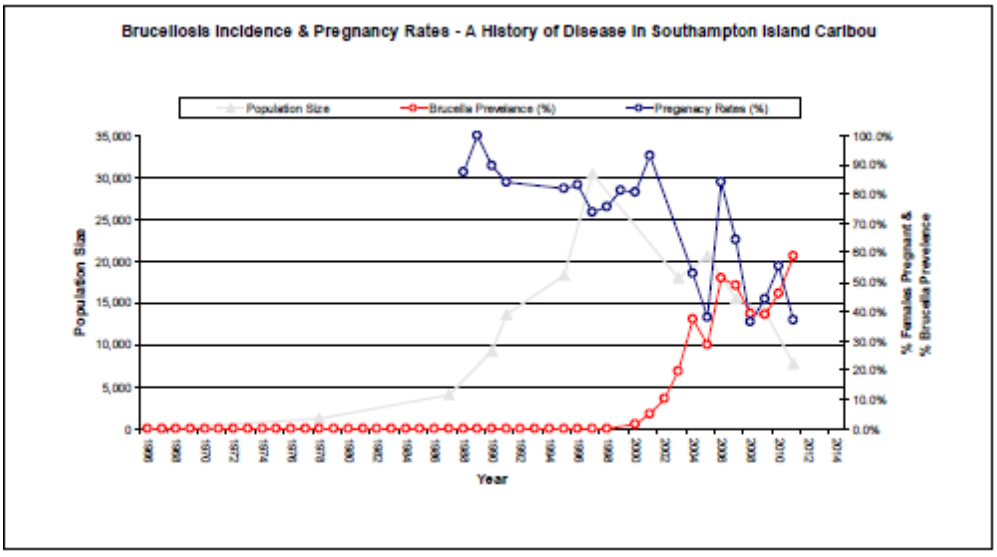

Figure 4. *Brucella* prevalence and pregnancy rates and herd abundance.

Table 1. A brief history of the Southampton Island harvest including actual commercial harvest and estimated subsistence harvest (subsistence harvest estimated using government reports, HTO correspondence and personal communications with wildlife staff).

YEAR	Actual Harvest								Total Harvest (Estimated)
	Subsistence (Values Estimated)				Commercial				
	Female (#)	Male (#)	Unknown (estimated)	Total (estimated)	Female (#)	Male (#)	Unknown	Total (#)	
1978	0	25	0	25	0	0	0	0	25
1979	0	50	0	50	0	0	0	0	50
1980	0	50	0	50	0	0	0	0	50
1981	0	50	0	50	0	0	0	0	50
1982	0	50	0	50	0	0	0	0	50
1983	20	50	0	50	0	0	0	0	50
1984	20	50	0	50	0	0	0	0	50
1985	20	50	0	50	0	0	0	0	50
1986	20	50	0	50	0	0	0	0	50
1987	50	250	0	250	0	0	0	0	250
1988	0	300	0	300	0	0	0	0	300
1989	100	300	0	300	0	0	0	0	300
1990	0	400	0	400	0	0	0	0	400
1991	0	400	0	400	0	0	0	0	400
1992	0	400	0	400	0	0	0	0	400
1993			500	500			5	5	505
1994			500	500			1,000	1,000	1,500
1995			1,000	1,000			2,356	2,356	3,356
1996			1,000	1,000			1,839	1,839	2,839
1997			1,500	1,500	2,356	1,009	0	3,365	4,865
1998			1,500	1,500	2,069	887	0	2,956	4,456
1999			1,500	1,500	514	580	0	1,094	2,594
2000			1,500	1,500	1,170	996	0	2,166	3,666
2001			2,000	2,000	2,070	1,626	0	3,696	5,696
2002			2,000	2,000	959	2,875	0	3,834	5,834
2003			2,000	2,000	3,403	1,602	0	5,005	7,005
2004			2,000	2,000			3,200	3,200	5,200
2005			2,000	2,000	2,766	1,272	0	4,038	6,038
2006			2,000	2,000	2,892	1,136	0	4,028	6,028
2007			2,000	2,000	1,446	1,129	0	2,575	4,575
Grand Totals				25,475				41,157	66,632

Table 2. Estimated mortality rates and their impacts on population abundance of the Southampton Island barren-ground caribou population. All bold entries indicate statistically calculated estimates based on actual reports (Priest and Usher, 2004; Air Freight manifests, 2011; Haskellet al 2007). Non bold italics indicate estimates based on best available evidence and past trends, lacking statistical analysis to determine variability in the estimate.

Month (2011-2012)	*Estimated Number of Caribou Removed From The Population Through:*			**Estimated Monthly Population Abundance**
	Caribou Meat Exports	**Subsistence Harvesting**	**Natural Mortality**	
June	**9**	**87**	*0*	**7,762**
July	**6**	**85**	*53*	*7,619*
August	**4**	**256**	*53*	*7,305*
September	**144**	**130**	*53*	*6,978*
October	**137**	**65**	*53*	*6,723*
November	**202**	**82**	*53*	*6,386*
December	**177**	**73**	*53*	*6,083*
January	*100*	**107**	*53*	*5,823*
February	*100*	**61**	*53*	*5,609*
March	*100*	**29**	*53*	*5,427*
April	*100*	**63**	*53*	*5,211*
May	*100*	**90**	*53*	*4,969*
Annual Totals	***1,180***	***1,128***	***582***	***4,969***

Table 3. Management actions taken at each herd management level (Table not included in Management Plan).

Management Action	Level 1	Level 2	Level 3
Meeting with Hunters and Trappers Organization and community to discuss accumulated local knowledge and Inuit Qaujimajatuqangit to determine current trends, productivity and overall caribou herd status	Annually	2 meetings annually with co-management partners attendance	2 meetings annually with co-management partners attendance
Aerial population estimates to confirm trends in productivity and abundance	Every 5 to 8 years	Every 2 years	Every 2 years
Condition and disease sampling (late February/early March) to monitor pregnancy rates, overall health and the prevalence of *Brucellosis suis*	Every 2 years	Annually	Annually
Fall meeting with Coral Hunters and Trappers Organization	Annually to assess the need to apply, modify or remove a Total Allowable Harvest	Annually to assess the need to apply, modify or remove a Total Allowable Harvest and/or apply any non-quota limitations	Annually to assess the need to modify an existing Total Allowable Harvest and/or apply any other non-quota limitations
Over winter calf survival surveys to estimate recruitment	N/A	Every 2 years	Annually
Research and Inuit Qaujimajatuqangit studies to determine mechanisms of decline and discuss any possible actions that may help offset these mechanisms in a way that would increase caribou productivity	N/A	Initiated when and where necessary	Initiated when and where necessary
Subsistence harvest levels and non-quota limitations	Unrestricted	Unrestricted	Subject to a total allowable harvest and Non-quota Limitations to maximize Total Allowable Harvest. Consideration of a herd wide moratorium if necessary.
Commercial harvesting levels	Adjusted only if an unsustainable harvest is identified	Adjusted first if a Total Allowable Harvest is applied	Restricted
Re-evaluate, update or otherwise address Management Plan content in accordance with all co-management partners	Annually	Annually	Annually