

Literature Review of Human Effects on Barren-Ground Caribou: Caribou Protection Measures

Prepared for the Nunavut Wildlife Management Board

By NovaSila Wildlife Consulting
in collaboration with Trailmark Systems

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Outline

Nunavut's existing Caribou Protection Measures

- Origins
- Rationale
- Assessment

Summary of guidelines in other jurisdictions

- Protected Areas
- Calving Grounds
- Migration Routes and Water Crossings
- Other Habitat Considerations
- Vehicles and Aircraft

Existing Caribou Protection Measures in Nunavut

Keewatin Regional Land Use Plan ²⁰

- Contains the original Caribou Protection Measures
- Protection for Beverly and Qamanirjuaq herds

North Baffin Regional Land Use Plan ²¹

- Contains the Caribou Protection Measures as an example
- Modifications for north Baffin never adopted

West Kitikmeot Regional Land Use Plan (Draft) ¹⁴

- Contains modified Caribou Protection Measures
- Plan was never signed off

Origins of Existing Caribou Protection Measures in Nunavut

- In **1978** a German company was interested in mining uranium near Baker Lake ²⁰
- Caribou populations were **declining** ²⁰
- Consultants looked in to the effects of the project on wildlife ¹⁵
- Report recommended that development activities be separated from caribou ¹⁵

Origins of Existing Caribou Protection Measures in Nunavut

Conflict:

- AANDC: caribou decline was due to harvesting and wolf predation ¹⁵
- Baker Lake: industrial activity posed a threat to caribou ¹⁵

Ruling:

- Finding in the report to serve as the basis for caribou protection ¹⁵
- AANDC produced the Caribou Protection Measures ¹⁵

Origins of Existing Caribou Protection Measures in Nunavut

1979 - 1990

- AANDC studied land use opportunities in Lancaster Sound ²¹
- Lancaster Sound Regional Planning Commission formed ²¹
- Land use plans for Keewatin and Lancaster Sound developed ^{15, 21}
- Monitoring stopped in 1990 due to a lack of funds ¹⁵

1993 – 1996

- Change in land use management with signing of the NLCA ^{20, 21}
- Existing land use plans were updated ^{20, 21}

Rationale of Existing Caribou Protection Measures in Nunavut

Intended to provide protection:

- During calving season ⁸
- At water crossings ⁸



Photo credit: Rebecca Jeppesen

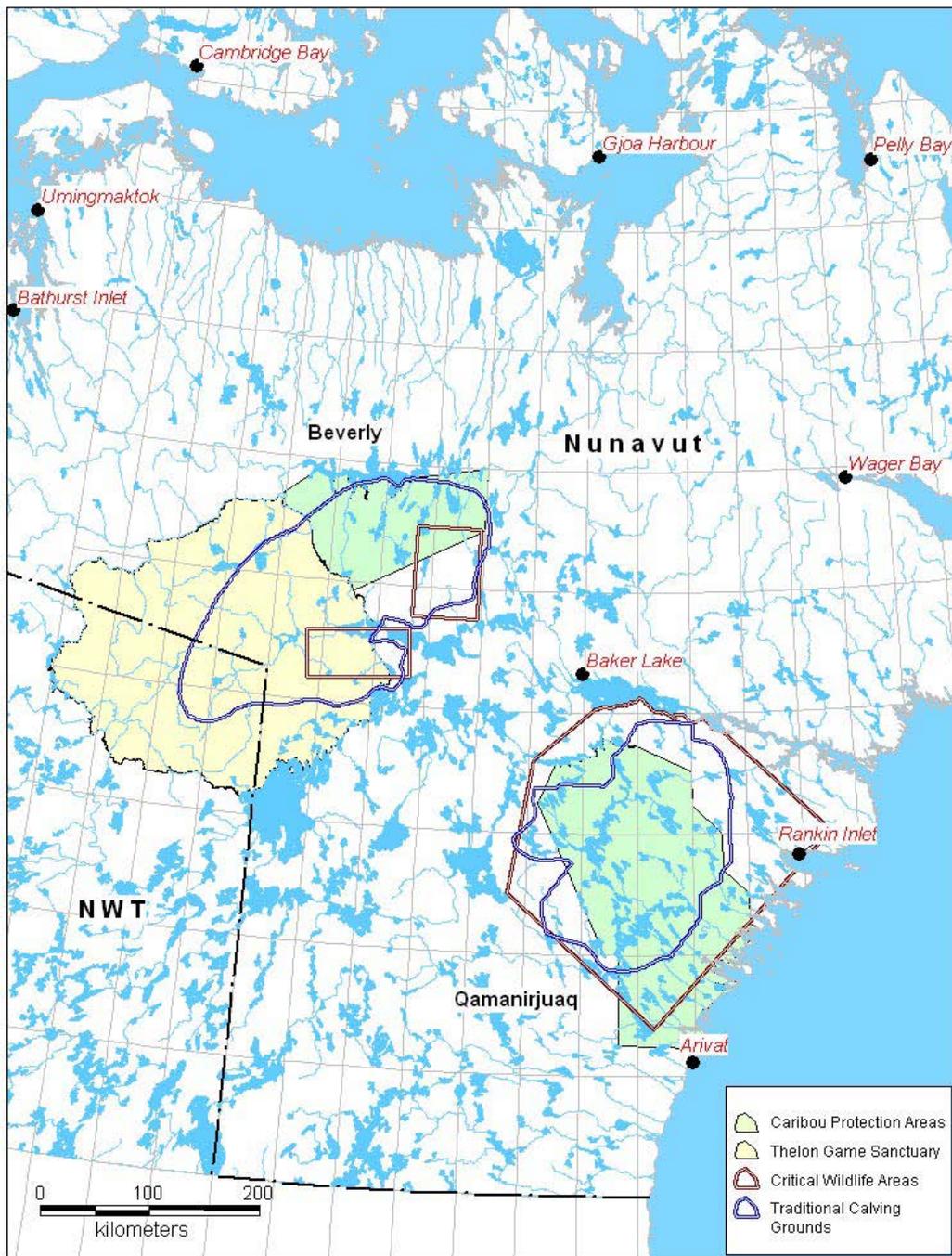
Caribou Protected Areas:

- Based on traditional calving grounds ¹⁵
- Actual calving locations monitored until 1990 ¹⁵
- Boundaries were modified accordingly ¹⁵

Rationale of Existing Caribou Protection Measures in Nunavut

During 2000 revision of Keewatin Regional Land Use Plan, it was determined that additional protection was warranted. ²⁰

- Thelon Game Sanctuary
- Fall Caribou Crossing (National Historic Site)
- Sentry Island (National Historic Site)



Location of the Beverly and Qamanirjuaq Caribou Protection Areas, Critical Wildlife Areas, and Traditional Calving Grounds, Kivilliq Region, Nunavut.

Figure and caption from Gunn et al, 2007. Page 2.



Rationale of Existing Caribou Protection Measures in Nunavut

Inside Caribou Protected Areas: ²⁰

- No activity May 15 to July 15
- Original monitoring program allowed flexibility
- Land use inspectors could lift restrictions



Photo from www.trailmarksys.com

Outside Caribou Protected Areas: ²⁰

- Activity continues unless caribou are present

Assessment of Existing Caribou Protection Measures in Nunavut

2000 Assessment: ¹⁵

- Consultants hired by AANDC
- Interviewed land users and wildlife managers
- Impossible to assess effectiveness or compliance
- Unknown amount of protection offered
- Caribou are protected but not the habitat

2000 Nunavut Planning Commission:

“...the existing regulatory structure provides sufficient protection for these areas at this time”

Keewatin Regional Land Use Plan, Nunavut Planning Commission 2000

Assessment of Existing Caribou Protection Measures in Nunavut

2007 Assessment: ¹⁵

- Compared Caribou Protected Areas with actual calving locations using monitoring and telemetry data
- Data from 1978 to 2005 was used
- An average of 68% of annual calving grounds were in the Caribou Protected Areas
- The timing of calving varies from year to year
 - Tends to be earlier one year and later the next
 - Overall shift to later in the season

Assessment of Existing Caribou Protection Measures in Nunavut

2007 Assessment: ¹⁵

- Caribou would have been exposed to 83 projects if there were no Caribou Protection Measures
- Caribou would have been protected from 65 projects in the caribou Protection Areas without monitoring
- Between 1993 and 2005 there were 14 projects that may have been suspended if monitoring had continued
- No independent data on compliance is available

Additional Protection Offered through Existing Land Use Plans

Conformity Requirement 2.6²⁰

Prohibits development activities on both Inuit Owned and public lands and waters in caribou calving areas during calving season, and in caribou water crossings

Conformity Requirement 2.8²⁰

Identifies sites located within caribou calving areas as a priority for clean-up of industrial waste

Additional Protection Offered through Existing Land Use Plans

Code of Good Conduct for Land Users #3 ²⁰

Recommends against low altitude flights whenever possible in areas where they will disturb wildlife

Code of Good Conduct for Land Users #4 ²⁰

Land use activities should be conducted in a way that conserves renewable resources in a given area

Code of Good Conduct for Land Users #6 ²⁰

Land use activities should be restricted during calving, post-calving and migration

Mary River:

Project Specific Caribou Protection Measures

January 2014 joint statement from Qikiqtani Inuit Association and Baffinland : ²⁴

- Mitigation measures during calving season
- Designated water crossings
- Monitoring will trigger mitigation strategies
- Caribou presence and herd size will be considered

“...prospecting permits, quarry permits or leases, mineral claims and surface land leases are also potential sources of human activity on calving and post-calving ranges (that currently do not require land-use permits) as of September 2006, (AANDC) had issued 37 prospecting permits, 417 mineral claims and 10 mineral leases for the BQ calving grounds . At this stage, it is unknown how those translate into activities on the ground. The only protection for caribou is if any of the activity reaches the stage of application for a Land Use Permit.”

(Gunn et al., 2007: page 32)



Photo from ACCWM, 2014
included therein courtesy of Kristen Callaghan



Questions?

Discussion?

Caribou Protection Measures in Other Jurisdictions

Northwest Territories:

- Protection plans, mitigation strategies, and monitoring programs developed by land users ¹³
- Specific to the scope and nature of the project ¹³
- Community conservation plans required by a number of Inuvialuit communities ⁸

Caribou Protection Measures in Other Jurisdictions

Yukon:

- Interim measures implemented in 2009 for Porcupine herd ⁹
- Working on developing guidelines ⁹

Nunavik:

- Caribou identified as a priority species ¹⁶

Caribou Protection Measures in Other Jurisdictions

Labrador: ¹⁷

- Evaluation of land use change is a priority
- Identified need to develop guidelines and regulations

Alberta: ¹²

- Caribou specific protection plans must be submitted
- Conditions attached to land use permits

Manitoba: ¹⁹

- Project-specific mitigation measures
- Attached as conditions to land use permits

Caribou Protection Measures in Other Jurisdictions

British Columbia: ⁵

- Mitigation plans must indicate no impact or a net gain
- Within 10 years of project approval

Alaska: ⁸

- Recommendations included as stipulations to development permits

Caribou Protection Measures in Other Jurisdictions: Designated Protected Areas

- The need for **designated protected areas** is well recognized ^{6, 7, 14, 17, 19, 20, 21, 23}
- Can be a **complex** and often lengthy process



Photo from Protected Areas Secretariat, 2014

Caribou Protection Measures in Other Jurisdictions: Designated Protected Areas

Thelon Game Sanctuary (2000): ²⁰

- Established with modification of Keewatin Regional Land use Plan

Edézhíe Candidate National Wildlife Area (2015): ²³

- Surface and subsurface rights withdrawn
- 14,000 square kilometers

Broadback River Watershed (proposed): ⁷

- Two levels of protection

Recommendations from the Literature: Designated Protected Areas

- Highest quality habitat should be **protected** ¹⁰
- **Expand** existing areas ¹⁸
- Different herds may have **different needs** ²¹
- Account for **variation** between years ^{15, 27}



Photo from www.nwmb.com

Caribou Protection Measures in Other Jurisdictions: Calving Grounds

Alberta: 12

- No industrial activity mid-February to mid-July

Alaska: 8

- Minimal traffic during calving season

Quebec: 27

- Designated calving grounds for Leaf River and George River Herds as Wildlife Habitat

Recommendations from the Literature: Calving Grounds

Gunn et al. (2007) in Northwest Territories:

- Variation in location and timing of calving
- Weather patterns can influence migration

Taillon et al (2012) in Quebec:

- Significant variation in calving ground locations
- Protected areas may not provide long term habitat protection

Caribou Protection Measures in Other Jurisdictions: Migration Routes and Water Crossings

Alaska: ⁸

- Often prohibit permanent facilities in travel corridors
- Pipelines to be elevated or ramped



Photo credit: Rebecca Jeppesen

Recommendations from the Literature: Migration Routes and Water Crossings

Water Crossings:

- Nunavut Tunngavik Inc. (1994) noted that shipping traffic in areas of dense ice formation should be considered in land use planning

Migration Routes:

- A study of habitat use in Yukon emphasized the importance of maintaining migration corridors ¹⁰

Caribou Protection Measures in Other Jurisdictions: Other Habitat Considerations

Northwest Territories: ⁸

- Measures must be in place to prevent or mitigate negative impacts to caribou

British Columbia: ⁵

- Impacts must be considered in all seasons
- Identify options to minimize impacts

Alaska: ⁸

- Specifies need for insect relief areas

Recommendations from the Literature: Other Habitat Considerations

- Consider multiple **spatial scales** ^{11, 17, 18}
- Critical habitat may include **more** than calving areas ^{10, 18}
- Sites should be **remediated** ^{4, 25}

Recommendations from the Literature: Mobile Protection measures

Gunn and Poole (2009) Pilot study in Northwest Territories:

- If a collared cow came into a defined area around a mine, an aerial survey was triggered.
- Survey would indicate if shut down was likely
- Determined method was appropriate for late winter

Appeal?

- Protection moves with the herd
- Allows for variation in migration and calving
- Minimizes impact to industry

“Habitat – [we] need to look at [that]. Caribou manage their habitat – the caribou move to other areas and then move back to that area. We need to include more about habitat. (Tsiigehtchic)”

(ACCWM, 2014: page 106)



Caribou Protection Measures in Other Jurisdictions: Vehicles and Aircraft

Alberta:

- Use temporary seasonal roadways ^{3, 12}

Alaska:

- Maximum speed 15 mph when caribou are present ⁸

Northwest Territories and Yukon: ⁸

- More stringent recommendations for pilots than those issued by Transport Canada

Recommendations from the Literature: Vehicles and Aircraft

- Assess disturbance ¹⁸
- Investigate consequences ¹⁸
- Develop guidelines ¹⁸



Photo from Rudolph et al 2012, credit to MRNF

Recommendations from the Literature: Continued Research and Monitoring

Population Parameters:

- Population size 10, 18, 26
- Population structure 5, 10, 18, 26
- Growth rate 5, 10, 26
- Health 5, 10, 26
- Distribution and habitat use 4, 18, 26

Recommendations from the Literature: Continued Research and Monitoring

- Once measures are in place, determine whether they are **effective** ^{2, 4, 6, 15, 18, 19}
- Where possible, monitor the direct **responsiveness** of caribou to land use activities ^{4, 10, 19}



Taima

Nakurmiik

End Notes

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