

Implementation Plan for the Ongoing Management of South Peace Northern Caribou (*Rangifer tarandus* *caribou* pop. 15) in British Columbia



Prepared by Ministry of Environment



Ministry of
Environment

March 2013

About British Columbia Implementation Plans

The Province prepares implementation plans to meet its commitments to manage and/or recover species at risk under the *Accord for the Protection of Species at Risk in Canada*, and the *Canada–British Columbia Agreement on Species at Risk*. Species at risk management and/or recovery is the process by which the decline of an endangered, threatened, or extirpated species is reduced, arrested, or reversed, and threats are removed or reduced to improve the likelihood of a species' persistence in the wild.

What is an implementation plan?

An implementation plan outlines the response of the provincial government to the need to manage species at risk for which management and/or recovery in British Columbia may have significant socioeconomic implications. Implementation plans guide and prioritize management actions that are required to meet objectives and goals identified through government decisions. Such government decisions are informed by science and technical information, but are also made with consideration of socioeconomic factors.

What's next?

Directions set out in this implementation plan are intended to involve governments, communities, land users, and other interested parties in cost-effective implementation of conservation activities that build towards managing and/or recovering the species.

For more information

To learn more about species at risk recovery in British Columbia, please visit the Ministry of Environment Recovery Planning webpage at:

<<http://www.env.gov.bc.ca/wld/recoveryplans/rcvry1.htm>>

**Implementation Plan for the Ongoing Management of South Peace
Northern Caribou (*Rangifer tarandus caribou* pop. 15) in British
Columbia**

Prepared by the Ministry of Environment

March 2013

Recommended citation

B.C. Ministry of Environment. 2013. Implementation plan for the ongoing management of South Peace Northern Caribou (*Rangifer tarandus caribou* pop. 15) in British Columbia. Victoria, BC.

Cover photograph

Elena Jones

Additional copies

Additional copies can be downloaded from the B.C. Ministry of Environment Recovery Planning webpage at:

<<http://www.env.gov.bc.ca/wld/recoveryplans/rcvry1.htm>>

Publication information

Library and Archives Canada Cataloguing in Publication

Implementation plan for the ongoing management of South Peace northern caribou (*Rangifer tarandus caribou* pop. 15) in British Columbia [electronic resource] / prepared by Ministry of Environment.

Electronic monograph in PDF format.

Includes bibliographical references.

ISBN 978-0-7726-6695-6

1. Woodland caribou--British Columbia--Peace River (Regional district).
 2. Caribou populations--British Columbia--Peace River (Regional district).
 3. Wildlife management--British Columbia--Peace River (Regional district).
- I. British Columbia. Ministry of Environment

QL737 U55 I46 2013

333.95'9658

C2013-980050-6

Preface

This implementation plan outlines the direction provided by the Government of British Columbia to manage South Peace Northern Caribou. This direction reflects the potentially significant socioeconomic implications of managing this population, including the recognition of the Treaty 8 First Nations right to harvest caribou. The Ministry of Environment, as the agency responsible for species at risk policy and planning in British Columbia, developed this plan with support from other B.C. government agencies. The Ministry of Forests, Lands and Natural Resource Operations is charged with leading implementation activities to meet government's commitments for the management of South Peace Northern Caribou. This plan identifies the responsible agencies and organizations involved in delivering government's management actions.

This document identifies the management actions that are deemed necessary, based on the best available scientific and technical information and considering socioeconomic values, to increase the population of South Peace Northern Caribou to ≥ 1200 animals within 21 years across their range. Implementation of the management actions to achieve the goals and objectives identified herein are subject to the priorities and budgetary constraints of participatory agencies and organizations. It may also be necessary to modify these actions, respecting their original intent, to 1) to incorporate new science and knowledge resulting from effectiveness monitoring of management actions, and continuing and new research; (2) to address socioeconomic objectives in South Peace Northern Caribou management; and/or (3) to meet new direction provided by the Government of British Columbia.

Where there are significant residual impacts after efforts have been exhausted to avoid, mitigate, and restore impacts to South Peace Northern Caribou and their habitat, financial offsetting will be used as a management prescription to fund management activities for South Peace Northern Caribou. The financial offsetting amounts have been developed through pilot application to various projects including mineral exploration and proposed mine projects.

Success in the recovery of this species depends on the commitment and cooperation of many different parties that may be involved in implementing the directions set out in this plan. The Province of British Columbia encourages all Canadians to participate in the conservation of South Peace Northern Caribou.

ACKNOWLEDGEMENTS

The Ministry of Environment thanks staff from the Ministries of Environment; Energy, Mines and Natural Gas; and Forests, Lands and Natural Resource Operations; the Oil and Gas Commission; and various stakeholders and First Nations for constructive input in the development of earlier drafts of this implementation plan. Chris Pasztor (B.C. Ministry of Environment) prepared this document and Leah Westereng (B.C. Ministry of Environment) provided a technical review.

EXECUTIVE SUMMARY

Three ecotypes of woodland caribou in British Columbia—Boreal, Mountain, and Northern—express distinct behaviours and habitat associations. There are approximately 16,560 Northern Caribou currently residing in the province. This document focuses on seven Northern Caribou (*Rangifer tarandus caribou* pop. 15) herds found in the southern Peace area of British Columbia (hereafter South Peace Northern Caribou): Graham, Moberly, Scott, Burnt Pine, Kennedy Siding, Quintette, and Narraway. There are estimated to be 1100¹ South Peace Northern Caribou in B.C.

The following designations apply to the South Peace Northern Caribou even though these assessments have been made at a population level. The South Peace Northern Caribou are within the Southern Mountain National Ecological Area and as such the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated them as Threatened in May 2002. As a result, they were listed as Threatened in Canada on Schedule 1 of the *Species at Risk Act* (SARA). In British Columbia, these herds are included as part of the Northern Caribou population (*Rangifer tarandus caribou* pop. 15), which is ranked S3 (special concern, vulnerable to extirpation or extinction) by the Conservation Data Centre and is on the provincial Blue List. The British Columbia Conservation Framework ranks this population as a priority 2 under goal 2 (prevent species and ecosystems from becoming at risk). They are protected from capture and killing under the B.C. *Wildlife Act*, and are also listed as a species for which an Ungulate Winter Range (UWR) is necessary for the winter survival, which requires special management attention under the *Forest and Range Practices Act* (FRPA) and the *Oil and Gas Activities Act* (OGAA) on Crown land.

Industrial landscape changes at low elevations over the past few decades have coincided with declining numbers of caribou in the south Peace. The decline in caribou is believed to be a result of habitat changes that favour increased moose and wolf populations that subsequently alter the regional predator–prey system and subject caribou to higher risk of predation. South Peace Northern Caribou spend a significant proportion of their time in high elevation habitat (e.g., alpine or parkland) and it is believed that this habitat acts as a refuge from predation, compared to lower elevation forests, potentially reducing some of the impacts associated with increased wolf numbers. Industrial impacts now threaten high elevation habitats that provide some security for these caribou, which may reduce alpine habitat use and displace individuals into lower elevation habitats, thereby increasing their risk of predation.

The Government of B.C. has identified management actions to address these threats, recognizing the potentially significant socioeconomic implications of managing South Peace Northern Caribou and the Treaty 8 First Nations right to harvest caribou.

¹ The South Peace Northern Caribou population estimate is 1100 (B.C. Ministry of Environment, *in prep.*).

The following population and distribution goal, identified by the Government of B.C., will guide management efforts:

1. Increase the population of South Peace Northern Caribou to ≥ 1200 animals within 21 years across their range.

The following management objectives provide measurable targets for action and evaluation:

1. Protect 90% of identified high elevation winter habitat across the range of South Peace Northern Caribou:
 - Protect $\geq 90\%$ of identified high elevation winter habitat in the Graham, Moberly, Burnt Pine, Scott, Kennedy Siding, and Narraway herd ranges; and
 - Protect $\geq 80\%$ of identified high elevation winter habitat in the Quintette herd range.
2. Conduct South Peace Northern Caribou population management to address non-habitat related threats (e.g., predation) to certain South Peace Northern Caribou herds.
3. In all ranges, manage the industrial footprint in identified high and low elevation habitats by requiring standardized industry management practices across all industry sectors to reduce or prohibit surface disturbance and habitat alteration, and support long-term sustainable caribou habitat conditions.
4. In all ranges, monitor the compliance and effectiveness of management actions and modify actions accordingly to ensure the population and distribution goal is being achieved.

The goal and objectives of this implementation plan are intended to balance conservation efforts to benefit South Peace Northern Caribou and support recovery efforts with resource development opportunities and the Treaty 8 First Nations right to harvest caribou. This approach strives to maintain both consideration to socioeconomic and environmental values, which are important to the people of British Columbia and the global community as a whole.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	III
EXECUTIVE SUMMARY	IV
1 SCOPE OF THE IMPLEMENTATION PLAN	1
1.1 Associated Documents	1
2 SUMMARY OF THE SCIENCE UPDATE	1
2.1 Species Status Information.....	2
2.2 Populations and Distribution	2
2.3 Threat Assessment.....	5
3 IMPLEMENTATION ACTIONS.....	5
3.1 Population and Distribution Goal	5
3.2 Rationale for the Population and Distribution Goal.....	5
3.3 Implementation Objectives	7
3.4 Actions and Performance Measures	8
3.5 Narrative to Support Action and Performance Table	12
3.5.1 Planning	12
3.5.2 Habitat Protection.....	12
3.5.3 Species and Population Management.....	13
4 MONITORING	13
5 EFFECTS ON OTHER SPECIES.....	14
6 REFERENCES	15

LIST OF TABLES

Table 1. Implementation actions for South Peace Northern Caribou management.	8
--	---

LIST OF FIGURES

Figure 1. South Peace Northern Caribou herds in B.C.	4
Figure 2. Current and estimated 20-year range populations in the South Peace, based on status quo management (i.e., no incremental management actions) (from Wilson 2012).	6

1 SCOPE OF THE IMPLEMENTATION PLAN

This implementation plan is limited to the seven herds referred to as the South Peace Northern Caribou² that are found in the southern Peace area of British Columbia (B.C.): Graham, Moberly, Scott, Burnt-Pine, Kennedy Siding, Quintette, and the Bearhole-Redwillow portion of the Narraway herd. This document represents direction provided by the Government of B.C. to manage this population (see Section 3).

1.1 Associated Documents

This implementation plan was informed by the following technical information, and additional scientific information on the management of South Peace Northern Caribou in British Columbia.

B.C. Ministry of Environment. *in prep.* Science update for the South Peace Northern Caribou (*Rangifer tarandus caribou* pop. 15) in British Columbia. Victoria, BC.

Seip, D.R. and E. Jones. 2012. Population status of caribou herds in the Central Mountain Designatable Unit within British Columbia. Prepared for B.C. Ministry of Environment, Victoria, BC.

Wilson, S.F. 2012. South Peace Northern Caribou management model. Prepared for B.C. Ministry of Environment, Victoria, BC.

More information on South Peace Northern Caribou and copies of these documents can be found at:

< <http://www.env.gov.bc.ca/wld/speciesconservation/nc/index.html> >

2 SUMMARY OF THE SCIENCE UPDATE

Only basic species assessment and status information are presented in this section. Please refer to B.C. Ministry of Environment (2013 *in prep*) for more complete information about South Peace Northern Caribou, including: population and distribution information within the seven range areas (Graham, Moberly, Burnt Pine, Kennedy Siding, Scott, Quintette, and Narraway), habitat and biological needs, threats, existing management actions, and knowledge gaps regarding this species.

² Note that South Peace Northern Caribou is used as the naming convention throughout this document. In British Columbia, these herds are included as part of the Northern Caribou. This is synonymous with, but differs from, the English name, Caribou (northern mountain population), which is the provincial standard.

2.1 Species Status Information

South Peace Northern Caribou ^{a,b}		
Legal Designation		
FRPA : ^c Species of Risk & Ungulate	<i>B.C. Wildlife Act</i> : ^d Schedule A	COSEWIC: Threatened (2002)
OGAA : ^c Species of Risk & Ungulate		SARA Schedule : 1- Threatened (2003)
Conservation Status ^e		
B.C. List: Blue	B.C. Rank: S3 (2010)	Global Rank: G5T5 (2012)
Other Subnational Ranks : ^f AB:S1		
B.C. Conservation Framework (CF) : ^g		
Goal 1: Contribute to global efforts for species and ecosystem conservation		Priority: ^h 4 (2009)
Goal 2: Prevent species and ecosystems from becoming at risk		Priority: 2 (2009)
Goal 3: Maintain the diversity of native species and ecosystems		Priority: 3 (2009)
Action Groups :	Review Resource Use; Monitor Trends; Compile Status Report; Species and Population Management; Planning; Habitat Protection; Habitat Restoration; Private Land Stewardship	

^a Note that designations apply to the South Peace Northern Caribou herds even though they may have been assessed at a population level (e.g., included as part of the Caribou [northern mountain population], *Rangifer tarandus* pop. 15 in B.C.; or included as part of the Southern Mountain Caribou population by COSEWIC).

^b Data source: B.C. Conservation Data Centre (2012) unless otherwise noted.

^c Ungulate = a listed species for which an Ungulate Winter Range (UWR) is necessary for the winter survival of the species and requires special management attention to address the impacts of forest and range activities under the FRPA (Province of British Columbia 2002) and the impacts of oil and gas activities under OGAA (Province of British Columbia 2008) on Crown land; Species at Risk = a listed species that requires special management attention to address the impacts of forest and range activities under the FRPA (Province of British Columbia 2002) and the impacts of oil and gas activities under the OGAA (Province of British Columbia 2008) on Crown land (as described in the Identified Wildlife Management Strategy; Province of British Columbia 2004).

^d Schedule A = designated as wildlife under the B.C. *Wildlife Act*, which offers it protection from direct persecution and mortality (Province of British Columbia 1982).

^e S = subnational; N = national; G = global; T = refers to the subspecies level; X = presumed extirpated; H = possibly extirpated; 1 = critically imperiled; 2 = imperiled; 3 = special concern, vulnerable to extirpation or extinction; 4 = apparently secure; 5 = demonstrably widespread, abundant, and secure; NA = not applicable; NR = unranked; U = unrankable.

^f Data source: NatureServe (2012).

^g Data source: B.C. Ministry of Environment (2010).

^h Six-level scale: Priority 1 (highest priority) through to Priority 6 (lowest priority).

2.2 Populations and Distribution

In B.C., South Peace Northern Caribou reside in the south Peace area of the province within seven herd ranges: Graham, Moberly, Scott, Burnt Pine, Kennedy Siding, Quintette, and Narraway (Figure 1). Note that the Narraway herd in B.C. is contiguous with Caribou populations in Alberta, as individuals move across these jurisdictional boundaries. The South Peace Northern Caribou is estimated to have 1100 individuals (Thomas and Gray 2002; B.C. Ministry of Environment, *in prep.*).

Ranges are large areas that encompass habitats that allow individual caribou to express life history attributes, such as foraging, calving, migrating, and breeding, to ensure adaptive and evolutionary processes occur at the population level. The low elevation habitats consist of forests of mainly white spruce (*Picea glauca*) and subalpine fir (*Abies lasiocarpa*) along with lodgepole pine (*Pinus contorta*) and black spruce (*Picea mariana*) stands. High elevation habitats include windswept

alpine ridges and forests of Engelmann spruce (*Picea engelmannii*) and subalpine fir. The identification of these habitats is based on known historical or current use by South Peace Northern Caribou (B.C. Ministry of Environment, *in prep.*).



Figure 1. South Peace Northern Caribou herds in B.C.

2.3 Threat Assessment

Threats for the South Peace Northern Caribou herds were assessed and are available in the *Science Update for the South Peace Northern Caribou* (Rangifer tarandus caribou) in British Columbia (B.C. Ministry of Environment, *in prep.*).

3 IMPLEMENTATION ACTIONS

This implementation plan (e.g., population and distribution goals, habitat protection, threat mitigation, and other management actions) is influenced by past and current industrial activities, current resource development commitments, future socioeconomic considerations (e.g., future revenues from industrial development), and Treaty 8 First Nations right to harvest caribou.

3.1 Population and Distribution Goal

1. Increase the population of South Peace Northern Caribou to ≥ 1200 animals within 20 years across their range.

3.2 Rationale for the Population and Distribution Goal

The population of South Peace Northern Caribou in B.C. is declining, with the notable exception of the Quintette herd (Seip and Jones 2012; Wilson 2012; B.C. Ministry of Environment, *in prep.*). The mechanisms driving this decline are complex, but it is believed that extensive industrial resource development in the south Peace area has for the most part altered the abundance and/or distribution of early seral habitat to a state that would not be expected under natural processes. This change to early seral habitat indirectly influences the density of wolves by increasing the abundance of their prey (moose). It is this altered landscape and modified predator–prey relationship that can have significant implications on caribou survival and recruitment (Bergerud 1988; Seip 1992), a common pattern demonstrated in several other caribou herds in B.C.

South Peace Northern Caribou spend a significant proportion of their time in high elevation habitat that is largely predator free. Impacts or disturbance to high elevation habitat may compromise this behaviour and force caribou to seek refuge in other habitats, including low elevation forests where predation risk is much higher (Wilson 2012, Table 1; D. Seip, pers. comm., 2012). Thus a key element to managing South Peace Northern Caribou is to protect high elevation habitat, particularly lichen-bearing windswept ridges that provide refuge from predators and an accessible food source through winter.

In the south Peace area, several resource sectors have considerable investments and provide a continued revenue stream for the province of B.C. These sectors include mineral exploration and mining, petroleum and natural gas, wind energy, and forestry. These sectors are expected to continue to expand development in the south Peace area over the next 20 years, and are thus likely to impact high and low elevation habitat of South Peace Northern Caribou (Wilson 2012, Table 3). Specifically, this development is expected to increase the distribution and abundance of early seral

habitat, which increases the density of moose and wolves and subsequently increases the predation risk to caribou. The development also potentially displaces South Peace Northern caribou from preferred habitats. As a result and in the absence of intervention, the South Peace Northern Caribou are expected to continue to decline in the Graham, Narraway, and Quintette herds, and there is a possibility of the extirpation of the Burnt Pine, Moberly, and Kennedy Siding herds in the next 21 years (Figure 2).

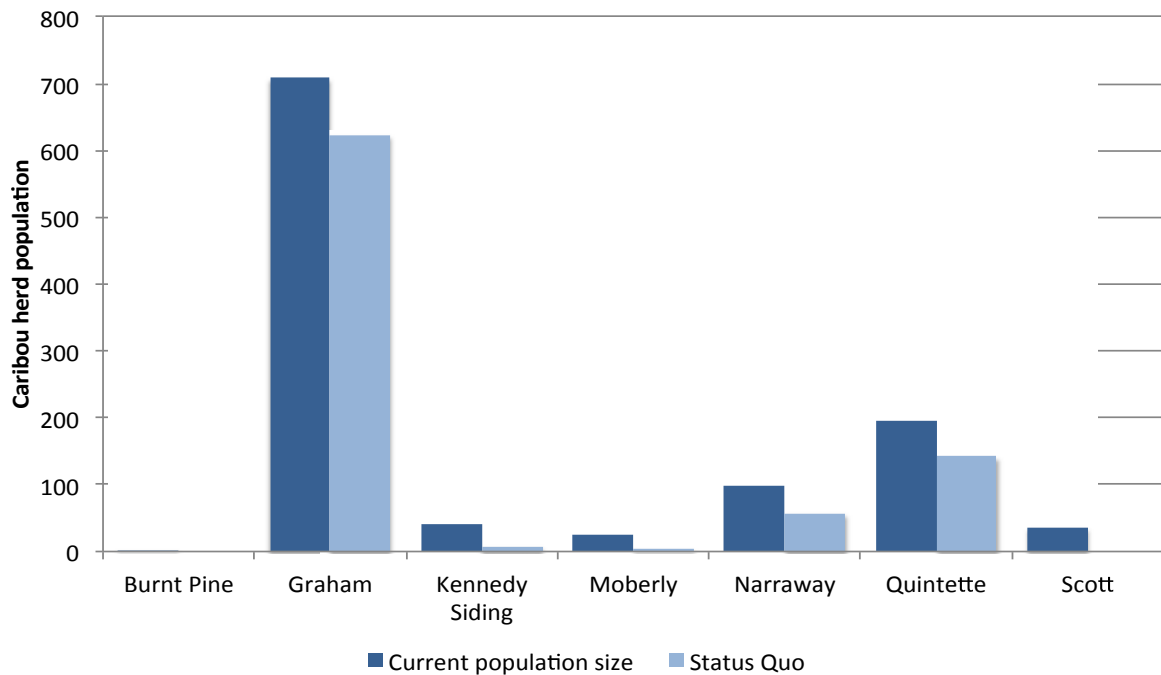


Figure 2. Current and estimated 20-year range populations in the South Peace, based on status quo management (i.e., no incremental management actions) (from [Wilson 2012](#)).

To increase the likelihood of improving the situation for the South Peace Northern Caribou, to recognize Treaty 8 First Nations right to harvest caribou, and to maintain revenue from continued resource development in the south Peace area, the B.C. government concluded that the most biologically sound and economical feasible option for managing South Peace Northern Caribou is (1) to protect 90% of identified high elevation winter habitat across the current range; (2) to implement management objectives and practices in low elevation habitat; and (3) to implement caribou population management activities in certain ranges. This direction is expected to increase the South Peace Northern Caribou population from 1100 to ≥ 1200 animals within 21 years across their range. Furthermore, this decision should ensure that South Peace Northern Caribou are not extirpated within B.C. and allows for future recovery efforts.

3.3 Implementation Objectives

The following implementation objectives provide measurable targets for action and evaluation:

1. Protect 90% of identified high elevation winter habitat across the range of South Peace Northern Caribou:
 - protect $\geq 90\%$ of identified high elevation winter habitat in the Graham, Moberly, Burnt Pine, Scott, Kennedy Siding, and Narraway herd ranges; and
 - protect $\geq 80\%$ of identified high elevation winter habitat in the Quintette herd range.
2. Conduct South Peace Northern Caribou population management to address non-habitat related threats (e.g., predation) to certain South Peace Northern Caribou herds.
3. In all ranges, manage the industrial footprint in identified high and low elevation habitats by requiring standardized industry management practices across all industry sectors to reduce or prohibit surface disturbance and habitat alteration, and support long-term sustainable caribou habitat conditions.
4. In all ranges, monitor the compliance and effectiveness of management actions and modify actions accordingly to ensure the population and distribution goal is being achieved.

3.4 Actions and Performance Measures

Identifying the management actions and associated performance measures allows government staff, First Nations, industry representatives, and the public to understand what should occur to support the management of South Peace Northern Caribou. It also identifies lead agencies and organizations responsible for ensuring that implementation activities are coordinated in an efficient manner to meet government timelines and objectives.

Table 1. Implementation actions for South Peace Northern Caribou management.

Note: Actions and timelines in this table may be modified based on the priorities and budgetary constraints of participatory agencies and organizations.

Threat ^a or concern addressed	Objectives	Priority ^b	Actions	Range	Performance measures ^c	Participating agencies ^d (lead agency identified in bold)	Status ^e
All	All	Necessary	Develop cross-agency management teams, boards, and/or committees with associated roles and responsibilities to implement all aspects of management for South Peace Northern Caribou.	All	Teams, boards, and/or committees with associated roles and responsibilities finalized by June 2013	MFLNRO , MoE, OGC, MEMNG	In progress
All	All	Necessary	Develop an effectiveness monitoring strategy associated with all management actions.	All	Strategy finalized by fall 2013	MFLNRO , MoE	Not initiated
Knowledge gap	1, 2	Necessary	Determine population objective ^f for each herd.	All	Fall 2013	MFLNRO , MoE	In progress
All	All	Necessary	Develop mechanisms to support financial and habitat offsetting.	All	Finalized by June 2013	MFLNRO , MoE	In progress

Threat ^a or concern addressed	Objectives	Priority ^b	Actions	Range	Performance measures ^c	Participating agencies ^d (lead agency identified in bold)	Status ^e
3.1, 3.2, 3.3, 5.3, Knowledge gap	1, 3, 4	Necessary	Revise caribou habitat and associated mapping to support herd habitat targets, monitoring and managing of future habitat conditions.	All	March 2013	MoE, MFLNRO	In progress
3.1, 3.2, 3.3, 5.3, Knowledge gap	1, 3, 4	Necessary	Review caribou habitat and associated mapping to support herd habitat targets, monitoring and managing of future habitat conditions	All	October 2017	MFLNRO	In progress
3.1, 3.2, 3.3, 5.3	1, 3, 4	Necessary	Determine high-elevation habitat targets and spatially delineate.	All	Targets finalized by June 2013	MFLNRO , MoE, MEMNG	In progress
3.1, 5.3	1, 3, 4	Essential	As required, consider reviewing and modifying existing Ungulate Winter Ranges (UWR) and Wildlife Habitat Areas (WHA) to support herd habitat protection and management objectives.	All	TBD ^g	MFLNRO , MEMNG, OGC	Not initiated
3.1	1	Essential	As required, consider the establishment of Resource Review Areas (RRAs) for oil and gas purposes in high elevation winter habitat.	All	TBD	MEMNG	Ongoing
3.2	1	Essential	As required, consider the establishment of mineral reserves, placer reserves, and coal land reserves in high	All	TBD	MEMNG	Ongoing

Threat ^a or concern addressed	Objectives	Priority ^b	Actions	Range	Performance measures ^c	Participating agencies ^d (lead agency identified in bold)	Status ^e
			elevation winter habitat under the <i>Mineral Tenure Act</i> and <i>Coal Act</i> .				
3.1, 3.2, 3.3	1	Essential	As required, consider the establishment of land reserves in high elevation winter habitat under the <i>Land Act</i> .	All	TBD	MFLNRO	In progress
3.1, 3.2, 3.3, 5.3	1, 3, 4	Essential	Develop standardized management practices (e.g., restoration, reclamation, access, forestry activities) for high and low elevation habitat.	All	Practices approved by fall 2013	MFLNRO , MoE, MEMNG, OGC	Not initiated
3.1, 3.2, 3.3	1, 3, 4	Essential	Ensure Caribou Mitigation and Monitoring Plans are developed for activities in high elevation habitat.	All	Practices approved by June 2013	MFLNRO MEMNG, OGC	In progress
3.1, 3.2, 3.3	1, 3, 4	Essential	Implement Caribou Mitigation and Monitoring Plans in high elevation habitat.	All	Practices approved by June 2013	MFLNRO , MEMNG, OGC	In progress
8.2, Knowledge gap	2	Essential	Develop an effective predator (e.g., wolf) control strategy for certain South Peace Northern Caribou herds.	TBD	Strategy complete by fall 2013.	MFLNRO , MoE	In progress
8.2, Knowledge gap	2	Essential	Implement an effective predator (e.g., wolf) control strategy.	TBD	Strategy and funding in place (fall 2013)	MFLNRO	Not initiated
8.2, Knowledge	2	Essential	Monitor alternate prey (e.g., moose) densities to	TBD	TBD	MFLNRO , MoE	Not initiated

Threat ^a or concern addressed	Objectives	Priority ^b	Actions	Range	Performance measures ^c	Participating agencies ^d (lead agency identified in bold)	Status ^e
gap			determine if there are increases that require the development of a harvest management strategy to support South Peace Caribou herds.				
8.2, Knowledge gap	2	Essential	Determine the need to conduct additional herd augmentation (e.g., maternity penning).	Moberly, Burnt Pine, Kennedy Siding.	Need identified by spring 2014	MFLNRO , MoE	Not initiated
8.2, Knowledge gap	2	Essential	If need identified, implement a caribou herd augmentation strategy.	Moberly, Burnt Pine, Kennedy Siding.	TBD	MFLNRO	Not initiated
5.1, Knowledge gap	2	Essential	Determine a sustainable level of First Nations caribou harvest.	All	TBD	MFLNR	Not initiated
8.2, Knowledge gap	All	Essential	Determine the contribution of Traditional Ecological Knowledge (TEK) in the management of caribou and other relevant wildlife.	All	TBD	MFLNR	Not initiated

^a Threats are based on the International Union for Conservation of Nature – Conservation Measures Partnership ([IUCN-CMP](#)) unified threats classification system (see [CMP 2010](#), B.C. Ministry of Environment, *in prep.*).

^b Essential (urgent and important); Necessary (important but not urgent); or Beneficial.

^c Performance measures for objectives and other implementation activities.

^d MoE = Ministry of Environment, MEMNG = Ministry of Energy, Mines, and Natural Gas, MFLNRO = Ministry of Forests, Lands and Natural Resource Operations, OGC = Oil and Gas Commission.

^e Status = Condition of action (e.g., Not initiated; In progress; Ongoing; Completed).

^f Population Objective Categories: (1) Status quo = no expected change in population trend and number; (2) Increase to self-sustaining status = $\lambda > 1$ and ≥ 100 animals; and (3) Maintain self-sustaining status = $\lambda \geq 1$ and > 100 animals.

^g TBD = to be determined.

3.5 Narrative to Support Action and Performance Table

This section provides additional information to support the understanding of implementation actions identified in Table 1 for South Peace Northern Caribou management. The descriptors below are based on the [B.C. Conservation Framework](#) action groups (B.C. Ministry of Environment 2010). See Section 2.1 for action groups assigned to South Peace Northern Caribou.

Increasing the population of the South Peace Northern Caribou herds in B.C. may be achieved by managing and/or mitigating the effects of industrial activity (or collectively the industrial “footprint”). Managing the industrial footprint will include actions such as protecting habitat from industrial activities, changing management practices associated with industrial activities to reduce impacts to caribou, and standardizing management and planning practices across all industrial sectors. Mitigating the effects of the industrial footprint may be achieved by reducing predators and their prey, augmenting South Peace Northern Caribou herds, and requiring industry standard management practices that reduce habitat fragmentation and support long-term sustainable caribou habitat conditions.

3.5.1 Planning

A strategic and well-coordinated plan will be necessary to ensure management actions are coordinated and implemented efficiently across all ranges. This can be achieved by developing a formal governance structure where cross-agency representation oversees the delivery of implementation activities through specific teams, committees, and boards. The planning of implementation activities will be at the range level, governed and guided by associated Terms of References or Project Charters. The delivery of these activities, however, will be site specific or at local levels within associated ranges. The Ministry of Forests, Lands and Natural Resource Operations in collaboration with other provincial agencies will oversee the planning and implementation of South Peace Northern Caribou management in B.C. However, this effort will only be successful with the support of other government agencies, First Nations, industry representatives, and the general public.

3.5.2 Habitat Protection

South Peace Northern Caribou habitat will be protected from the impacts associated with industrial resource development through existing and new habitat protections. New habitat protections would limit and/or prevent the acquisition of new tenures in certain designated areas and prohibit activities to conduct work and/or activities under investigation. New habitat protection measures may become possible through the voluntary relinquishment of tenure. Consideration for the establishment of designated areas will be on a Ministry by Ministry basis under their respective authorities. Designations will be reviewed over time to determine their effectiveness in supporting and achieving the implementation plan goals for South Peace Northern Caribou.

In addition to the establishment of legal designations, government will be implementing standardized management practices within high elevation winter habitat of South Peace Northern

Caribou range. The development of these practices is required to manage the industrial footprint to restore, reduce, or prohibit surface disturbance and reduce the potential for disturbance and displacement of South Peace Northern Caribou to lower elevation winter habitat having a relative higher predator risk. In low elevation winter habitat, management practices (e.g., restoration and road deactivation) will be standardized across sectors to minimize habitat fragmentation and supports long-term sustainable caribou habitat conditions. Management practices will be regulated for instance, under the *Mines Act*, *Forest and Range Practices Act*, and *Oil and Gas Activities Act*, and monitored to determine their effectiveness in protecting South Peace Northern Caribou and their habitat.

In cases where development will occur within high elevation winter habitat, proponents will develop detailed reclamation programs and Caribou Mitigation and Monitoring Plans, which will become conditions of the authorization if approved. Where there are significant residual impacts after efforts have been exhausted to avoid, mitigate, and restore impacts to South Peace Northern Caribou and their habitat, financial and habitat offsetting will be used as management prescriptions.

3.5.3 Species and Population Management

To increase the population of South Peace Northern Caribou across the current range, it is essential that species and population management occur in certain herd areas. Species and population management activities will include improving knowledge of South Peace Northern Caribou population estimates and trends, improving knowledge of adult and calf survival, increasing adult and calf survival, augmenting herds (e.g., maternal penning, transplants), determining First Nations harvest of certain herds, and determining population estimates of predators (e.g., wolves) and alternate prey of predators (e.g., moose) to manage these populations accordingly.

4 MONITORING

Monitoring associated with this implementation plan will focus on the effectiveness of management actions in achieving population and distribution goal and implementation objectives. This approach is expected to be structured through an adaptive management strategy to learn from the outcome of management actions.

5 EFFECTS ON OTHER SPECIES

Actions taken to protect and manage South Peace Northern Caribou and their habitat from identified threats may have positive benefits for the protection of other species and their habitats within South Peace Northern Caribou ranges. If it is determined that the actions taken to protect and manage South Peace Northern Caribou are having adverse effects on other species and their habitats for which there may be a conservation concern (i.e., species is listed or has the potential to be listed by the Conservation Data Centre as a conservation concern), these actions may be modified to address this concern.

6 REFERENCES

- Bergerud, A.T. 1988. Caribou, wolves, and man. *Trends Ecol. Evol.* 3:68–72.
- B.C. Conservation Data Centre. 2013. BC Species and Ecosystems Explorer. B.C. Min. Environ., Victoria, BC. <<http://a100.gov.bc.ca/pub/eswp/>> [Accessed December 17, 2012]
- B.C. Ministry of Environment. *in prep.* Science update for the South Peace Northern Caribou (*Rangifer tarandus caribou*) in British Columbia. Victoria, BC. <<http://www.env.gov.bc.ca/wld/recoveryplans/rcvry1.htm>> [Accessed January 17, 2013]
- B.C. Ministry of Environment. 2010. Conservation framework. Victoria, BC. <<http://www.env.gov.bc.ca/conservationframework/index.html>> [Accessed July 12, 2010]
- Conservation Measures Partnership. 2010. Threats taxonomy. <<http://www.conservationmeasures.org/initiatives/threats-actions-taxonomies/threats-taxonomy>> [Accessed December 17, 2012]
- NatureServe. 2012. NatureServe explorer: an online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. <<http://www.natureserve.org/explorer>> [Accessed December 17, 2012]
- Province of British Columbia. 1982. Wildlife Act [RSBC 1996] c. 488. Queen's Printer, Victoria, BC. <http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96488_01> [Accessed December 17, 2012]
- Province of British Columbia. 2002. Forest and Range Practices Act [RSBC 2002] c. 69. Queen's Printer, Victoria, BC. <http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_02069_01> [Accessed December 17, 2012]
- Province of British Columbia. 2004. Identified wildlife management strategy. B.C. Min. Environ., Victoria, BC. <<http://www.env.gov.bc.ca/wld/frpa/iwms/index.html>> [Accessed December 17, 2012]
- Province of British Columbia. 2008. Oil and Gas Activities Act [SBC 2008] c. 36. Queen's Printer, Victoria, BC. <http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_08036_01> [Accessed December 17, 2012]
- Seip, D.R. 1992. Factors limiting woodland caribou populations and their interrelationship with wolves and moose in southeastern British Columbia. *Can. J. Zool.* 70(8):1494–1503.
- Seip, D.R. and E. Jones. 2012. Population status of caribou herds in the Central Mountain Designatable Unit within British Columbia. Prepared for B.C. Ministry of Environment, Victoria, BC.
- Thomas, D.C. and D.R. Gray. 2002. Update COSEWIC status report on the Woodland Caribou *Rangifer tarandus caribou* in Canada. Page 92 in COSEWIC assessment and update status report on the Woodland Caribou *Rangifer tarandus caribou* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa, ON.
- Wilson, S.F. 2012. South Peace Northern Caribou Management Model. Prepared for B.C. Ministry of Environment, Victoria, BC.

Personal Communications

Dale Seip, Ecologist, B.C. Ministry of Environment, Prince George, BC