

Action Plan for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada

Federal Actions

Woodland Caribou, Boreal population



2017



Recommended citation:

Environment and Climate Change Canada. 2017. Action Plan for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada – Federal Actions [Proposed]. *Species at Risk Act* Action Plan Series. Environment and Climate Change Canada, Ottawa. vii + 24 pp.

For copies of the Action Plan, or for additional information on species at risk, including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Status Reports, recovery strategies, and other related recovery documents, please visit the [Species at Risk \(SAR\) Public Registry](#)¹.

This proposed document was posted on the SAR Public Registry on July 27, 2017 for a 60-day comment period ending on September 25, 2017.

Cover illustration: John A. Nagy

Également disponible en français sous le titre
«Plan d'action visant le caribou des bois (*Rangifer tarandus caribou*), population boréale, au Canada – Mesures fédérales [Proposition] »

© Her Majesty the Queen in Right of Canada, represented by the Minister of Environment and Climate Change, 2017. All rights reserved.

ISBN

Catalogue no.

Content (excluding the illustrations) may be used without permission, with appropriate credit to the source.

Note: Woodland Caribou, Boreal population is referred to as “boreal caribou” in this document.

¹ <http://sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1>

Acknowledgments

This Action Plan was developed by the Canadian Wildlife Service and the Science and Technology Branch, Environment and Climate Change Canada and with support from the Canadian Forest Service at Natural Resources Canada and the Parks Canada Agency.

Executive Summary

Boreal caribou is an iconic but threatened species in Canada and holds special significance for Indigenous peoples and other Canadians; its continued decline concerns us all. Boreal caribou is also considered by many to be an indicator of the overall state of Canada's boreal forest ecosystem. The recovery of this species requires unprecedented commitment, collaboration and cooperation among the various groups involved in the conservation of boreal caribou.

Building on the Federal Recovery Strategy for Boreal Caribou (2012), the federal government will continue to do its part to recover boreal caribou. It has developed this Action Plan to describe the federal government's contribution to the recovery efforts.

There are three key pillars in the Action Plan:

- 1) science to support recovery;
- 2) recovery and protection; and
- 3) reporting on progress.

The Action Plan is partial at this time since it does not address all of the measures, as required in the *Species at Risk Act* (SARA). Fulfillment of SARA requirements would be accomplished as provinces/territories complete their range plans or similar documents, which can be adopted over time as subsequent action plans for the species.

Science to Support Recovery

Good science is essential for making sound decisions that result in effective outcomes for species at risk, including boreal caribou. As such, the Government of Canada will lead the creation of a new National Boreal Caribou Knowledge Consortium to enable governments, Indigenous peoples, and stakeholders to address key knowledge gaps, regularly share information and lessons learned, and to undertake studies to support boreal caribou recovery. In addition, the federal government is leading several research projects in collaboration with key partners. For example, research is being undertaken to improve our understanding of the effects of different types of disturbances on populations to support planning. More scientific work will also be done to better understand the impact of a changing climate on boreal caribou survival. The goal of this science is to increase the chances of survival and recovery of the species in Canada through better knowledge about the species and its habitat.

Recovery and Protection

Provinces and territories have the primary responsibility for management of lands, natural resources and wildlife within boreal caribou ranges. The 2012 Recovery Strategy called upon provinces and territories to develop range plans within three to five years (i.e. by October 2017) to demonstrate how they will protect the species' critical habitat under their jurisdiction.

Based on these range plans and other relevant information, Environment and Climate Change Canada (ECCC) will assess whether boreal caribou and its critical habitat are effectively protected across the species' Canadian distribution. In the absence of range plans, the best available information and consultation with provinces and territories will be used to determine whether the species and its critical habitat are effectively protected. The laws and measures in place that protect the species and its critical habitat will be assessed to ensure that they remain protected over time. Conservation measures that help to protect the species and prevent critical habitat destruction or enhance the survival and recovery of boreal caribou will also be considered and monitored. ECCC will remain focused on real outcomes that result from the combined efforts occurring within a given jurisdiction to recover and protect boreal caribou.

Once range plans or similar planning documents are in place, ECCC will explore with provinces and territories and other parties as appropriate the establishment of conservation agreements under section 11 of SARA to describe the commitments each party is making to protect and recover boreal caribou. These agreements can provide a framework for substantial conservation actions toward achieving the population and distribution objectives for boreal caribou. The federal government will enter into such agreements if they provide specific, measurable, achievable, and time-bound measures for the protection and recovery of the species and its critical habitat.

If the Minister determines that any portion of critical habitat is unprotected, a report on steps being taken to protect critical habitat will be published by April 2018. If the Minister determines that the boreal caribou and/or its critical habitat are not protected, she must recommend that the Governor in Council (a committee of the federal cabinet) make an order. The Governor in Council will then decide whether to issue the order(s).

While only a small fraction of the area containing critical habitat is located on federally-administered lands, the federal government will do its part by putting in place protection under SARA. To date, the Parks Canada Agency has provided legal protection to boreal caribou critical habitat in Prince Albert National Park of Canada, Wood Buffalo National Park of Canada, and Nahanni National Park Reserve of Canada. The Parks Canada Agency will continue to work with Canadians to protect boreal caribou critical habitat in protected heritages places that they administer. ECCC will put in place protection for critical habitat on other federally-administered lands before the end of 2018. This will be done in consultation with other federal departments and agencies, provinces and territories, Indigenous peoples and Wildlife Management Boards.

ECCC will also work collaboratively with the appropriate parties to develop a path forward for protection of critical habitat on *Indian Act* lands and lands held by Indigenous peoples under land claims settlement agreements, and ensure that lands whose administration and control have been delegated to territorial governments from the federal government (i.e. devolved lands) are treated in a way that respects the intent of the devolution process.

The federal government will also propose amendments to the 2012 Recovery Strategy that includes the identification of critical habitat for the Boreal Shield range in Saskatchewan and updates to range boundaries and the self-sustainability status of local populations.

There are many species that share the same habitat as boreal caribou in the boreal forest. When planning and implementing recovery measures for boreal caribou, the federal government will continue to look for added benefits for other species in Canada's boreal forest and take those into consideration in decision-making.

Reporting on Progress

To determine whether efforts to support recovery are working, strong monitoring programs and tools are necessary. As such, the federal government commits to developing National Caribou Monitoring Standards. Monitoring standards will be developed through collaboration with provincial and territorial governments, Indigenous peoples, and stakeholders and will allow for a better understanding of progress being achieved at the range level. In addition, the Government of Canada is updating habitat disturbance levels, based on 2015 mapping, as well as population size and trend and range boundaries, based on information provided by provincial and territorial governments.

ECCC is working closely with other federal departments and agencies, the provinces and territories and other partners in developing the first "5-Year Report on the Implementation of the Recovery Strategy. This report will be made public in the fall 2017 and represents an important opportunity to review efforts to recover the species thus far, but will also identify areas where improvement is needed. The 5-Year Report on the Implementation of the Recovery Strategy will include a summary of the recovery measures undertaken since the publication of the Recovery Strategy such as habitat restoration, science, maternal penning, and other measures. The 5-Year Report on the Implementation of the Recovery Strategy is different from the previously referred to report on steps to protect critical habitat.

As described above, if the Minister determines that any portion of critical habitat is unprotected, a report on steps being taken to protect critical habitat will be published by April 2018.

Conclusion

By providing national leadership to improve our scientific understanding of this important species and how its local populations are affected by human activities, implementation of this federal Action Plan will provide information necessary for better decision-making, and better results for boreal caribou. Through the establishment of SARA conservation agreements with other governments on non-federal lands and a national forum for dialogue between partners to share lessons learned and review science and other sources of knowledge, this Action Plan will enable the collaboration needed to help

secure the species for the benefit of future generations. Together, the measures identified in the Action Plan will result in improved decision-making and outcomes for boreal caribou that the federal government will report on in the future. As provincial and territorial governments develop range plans, ECCC will consider incorporating them as subsequent action plans for the species to fulfill the requirements laid out in SARA.

Elements of the Federal Action Plan for Boreal Caribou

OBJECTIVE: Recovery of boreal caribou and compliance with the *Species at Risk Act* via collaboration with jurisdictions, Indigenous peoples, and stakeholders

Pillar 1: Science to Support Recovery

- Create National Boreal Caribou Knowledge Consortium
- Conduct scientific research to:
 - Enhance understanding of the cumulative effects of different types of disturbance on populations
 - Inform a national risk management approach to secure recovery objectives for boreal caribou ranges in Canada
 - Develop approaches and standards for identification of range boundaries
 - Increase understanding of climate change effects on populations and habitat
 - Develop landscape-scale approaches to multi-species recovery
 - Develop approaches for monitoring and assessment of habitat using new technology
 - Optimize habitat recovery through forest landscape restoration approaches and the development of tools and practices to support restoration success at the site level
- Host 2018 North American Caribou Workshop
- Participate and provide scientific support to provincial / territorial processes

Pillar 2: Recovery and Protection

- Protection of boreal caribou and its critical habitat:
 - Protect critical habitat on federally-administered lands through a section 58 order or section 59 regulation
 - Collaboratively develop path forward for protection and recovery on *Indian Act* lands, lands held by Indigenous peoples under land claims settlement agreements and devolved lands
 - Undertake protection assessments pursuant to sections 34, 35 and 61 of SARA
 - Explore the establishment of section 11 agreements with provinces and territories to codify their measures to protect and recover boreal caribou and its critical habitat
- Identify critical habitat in northern Saskatchewan’s Boreal Shield range
- Support and undertake stewardship actions, including providing funding to support recovery actions

Pillar 3: Reporting on Progress

- Habitat and population monitoring to inform progress:
 - Develop national standards for population monitoring
 - Update disturbance mapping for ranges (5-year update)
 - Update self-sustainability status of local populations and range boundaries, using new or more refined evidence from provinces and territories
- Publish first 5-Year Report on the Implementation of the Boreal Caribou Recovery Strategy
- If the Minister determines that any portion of boreal caribou critical habitat is unprotected, a report on steps to protect critical habitat will be published by April 2018

Table of Contents

Acknowledgments	i
Executive Summary	ii
1. Context and Scope of the Action Plan.....	1
2. Three Pillars of the Action Plan.....	2
2.1 Science to Support Recovery.....	2
2.2 Recovery and Protection.....	9
2.2.1 Critical Habitat	9
2.2.2 Critical Habitat Protection	9
2.2.3 Critical Habitat Identification in Northern Saskatchewan’s Boreal Shield Range.....	11
2.2.4 Protection of Individuals.....	12
2.2.5 Stewardship.....	12
2.2.6 Multi-species Planning to Facilitate Recovery	13
2.3 Reporting on Progress	16
2.3.1 Habitat and Population Monitoring.....	16
2.3.2 5-Year Report on Recovery Strategy Implementation	16
2.3.3 Report on Steps to Protect Critical Habitat	17
3. Engagement on Measures to Be Taken.....	20
4. Evaluation of Socio-Economic Costs and of Benefits.....	21
5. Subsequent Action Plans	22
6. References.....	22
7. Glossary.....	23
Appendix A: Effects on the Environment and Other Species	24

1. Context and Scope of the Action Plan

This federal Action Plan for the Woodland Caribou, Boreal population (herein referred to as “boreal caribou”) presents the recovery measures the federal government is taking or plans to take to help achieve the recovery goal and population and distribution objectives, as identified in the Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada (hereafter referred to as “the Recovery Strategy”; Environment Canada, 2012). In addition to this Action Plan, Parks Canada Agency site-specific Action Plans that address boreal caribou conservation and recovery efforts on lands administered by the Agency can be found on the SAR Public Registry.

The Action Plan is partial at this time since it does not address all of the measures, as required in SARA. Fulfillment of SARA requirements would be accomplished as provinces/territories complete their range plans or similar documents, which can be adopted as subsequent action plans for the species (see section 5 of this Action Plan).

Boreal caribou are listed as threatened under SARA. They require large areas comprised of continuous tracts of undisturbed habitat. The 2012 Recovery Strategy identified the primary threat to most boreal caribou local populations as unnaturally high predation rates as a result of human-caused and natural habitat loss, degradation, and fragmentation.

As outlined in the Recovery Strategy, the recovery goal for boreal caribou is to achieve self-sustaining local populations in all boreal caribou ranges throughout their current distribution in Canada, to the extent possible. Ranges that are highly disturbed will take decades to recover from habitat alteration, as boreal caribou occur in mature boreal forest ecosystems that have evolved over centuries. To guide recovery efforts, the Recovery Strategy identified population and distribution objectives for boreal caribou across their distribution in Canada. They are, to the extent possible, to:

- Maintain the current status of the 14 existing self-sustaining local populations; and,
- Stabilize and achieve self-sustaining status for the 37 not self-sustaining local populations.

Recovery is achieved for the 14 self-sustaining local populations by maintaining population and range conditions that support their self-sustaining status. Recovery is achieved for the 37 not self-sustaining local populations through a combination of coordinated habitat restoration (e.g. restoration of industrial landscape features such as roads, old seismic lines, pipelines, cut-lines, temporary roads, cleared areas; reconnection of fragmented ranges) and population management actions (e.g. management of predators and alternate prey) applied over time to return a local population to a self-sustaining status.

Provinces and territories have the primary responsibility for management of lands, natural resources and wildlife within boreal caribou ranges; however, this responsibility does vary in some parts of the country. For example, in the Northwest Territories, the Tłı̨ch̨ Government manages land and resources (including wildlife) within Tłı̨ch̨ Lands, as described in the Tłı̨ch̨ Agreement (a combined comprehensive land claim and self-government agreement).

This federal Action Plan should be considered along with the Recovery Strategy. The Recovery Strategy describes the strategic direction and approaches for recovery of boreal caribou, critical habitat information, and background information on the species and its threats.

2. Three Pillars of the Action Plan

The following narrative and tables describe the measures that are being or will be taken by the federal government to implement the Recovery Strategy and are structured under three pillars: 1) science to support recovery; 2) recovery and protection; and 3) reporting on progress. It includes measures that will help to achieve the population and distribution objectives for the species and address identified threats.

Measures that will be undertaken on lands administered by the Parks Canada Agency (PCA) will be described in multi-species site-specific action plans or in plans developed in collaboration with other jurisdictions, as appropriate. As an example, the Multi-species Action Plan for Pukaskwa National Park of Canada addresses threats and recovery measures for boreal caribou; it is completed and posted on the Species At Risk Public Registry.

2.1 Science to Support Recovery

The following narrative addresses recovery measures 1-9 in Table 1.

In 2011, ECCC released the *Scientific Assessment to Support the Identification of Critical Habitat for Woodland Caribou (Rangifer tarandus caribou), Boreal Population, in Canada* (Environment Canada 2011; hereafter referred to as the “2011 Scientific Assessment”), which was used to inform the Recovery Strategy.

A key component of the 2011 Scientific Assessment was a national meta-analysis that provided the basis for a model which quantified the relationship between the status of local population (using recruitment as the indicator of population status) and the amount of disturbance within a range. The model is considered to be scientifically robust ($R^2=0.69$). This model formed the scientific basis for a probabilistic risk assessment framework describing the probability of achieving a self-sustaining local population given a specified level of total disturbance. A policy decision was made to establish a minimum 60% probability for a local population to be self-sustaining. This translated to one component of the identification of critical habitat for boreal caribou as the entire area of the range for a local population with a required condition of a minimum of 65%

undisturbed habitat (refer to section 7.1 of the Recovery Strategy for the complete critical habitat identification). The critical habitat identification was based on the best available information at the time of the 2011 Scientific Assessment.

In recognition that further research is required to address areas of uncertainty within the risk assessment framework, as well as key knowledge gaps identified in the process of moving from the Recovery Strategy to range plans, this Action Plan describes federally-led science activities, underway and planned, to support boreal caribou recovery in Canada.

All groups who have indicated they may be in possession of new data and information that will support the recovery of boreal caribou are encouraged to provide this to ECCC as soon as possible so that it may be assessed and, as appropriate, considered in future analyses and programs.

National Boreal Caribou Knowledge Consortium (recovery measure 1)

Science in the context of this Action Plan is intended to encompass science as practiced within a western scientific method construct as well as Indigenous science and knowledge. ECCC will engage with Indigenous communities and organizations, other federal departments, provincial and territorial governments, academics, industry and non-government organizations to design and implement a forum for sharing knowledge. The purpose will be to share lessons learned, pool capacity and capability to collaboratively address key knowledge gaps to inform conservation and recovery of caribou in Canada. ECCC will work with partners to explore the establishment of a network of designated adaptive management ranges where experimentation will be encouraged and carefully monitored, and where results will be shared broadly. A national workshop involving key partners will be held in the fall of 2017 to design the proposed National Boreal Caribou Knowledge Consortium and discuss initiatives such as the use of pilot areas to build on the ground solutions, foster innovation and promote collaboration.

Enhanced meta-analysis to increase our understanding of the cumulative effects of different types of disturbance on population status (recovery measure 2)

This research aims to enhance our understanding of the relationship between different types of disturbance (fire, anthropogenic: polygonal, and linear), as well as amount and configuration of undisturbed habitat, and boreal caribou population response to inform range and action planning. The Recovery Strategy states that disturbance within a range needs to be managed at a level that will allow for a self-sustaining local population. There is variation in habitat and population conditions between boreal caribou local populations distributed across Canada, as well as potential variability in how boreal caribou respond to different types of disturbance. Management decisions to support self-sustaining local populations would benefit from enhanced understanding of this variation in order to support effective implementation of the Recovery Strategy.

The analysis began in 2016 and is being led by the Science and Technology Branch (ECCC), in collaboration with the Canadian Wildlife Service (ECCC) and the Canadian Forest Service of Natural Resources Canada (NRCan-CFS).

The National Boreal Caribou Technical Committee (NBCTC) - a federal, provincial, and territorial government committee - is acting as a primary review group for the project, and is the conduit for communication with provinces and territories on progress and results of the enhanced meta-analysis. In addition to the NBCTC, a Science Advisory Group of subject matter experts external to the government are providing science review for the project. The final report is expected to be completed by December 2017.

Scientific analysis to inform a national risk management approach to secure recovery outcomes for boreal caribou ranges in Canada (recovery measure 3)

The 2011 Scientific Assessment focused on the management of risk within boreal caribou ranges. Given the timelines that will be necessary to recover habitat in highly disturbed ranges and the interim intensive management measures that will need to be sustained over long periods of time, the level of risk will continue to be high over several decades for highly disturbed ranges as compared to less disturbed ranges. In recognition of the differential risk amongst ranges, ECCC has identified the need to complete additional analyses to inform risk management at a national level for boreal caribou recovery in Canada. ECCC will conduct an analysis, in collaboration with provinces and territories, to identify ranges to be targeted for an enhanced level of maintenance and recovery of habitat conditions in order to achieve an increased probability of persistence of boreal caribou in Canada, while all ranges continue to progress towards the objective of self-sustaining local populations. It is anticipated that these studies will be completed and available by December 2018.

Research to develop scientifically robust approaches and standards for identification of local population ranges (recovery measure 4)

Identification of range area associated with local populations is the key to managing the impacts of disturbance on local population trends. Local populations are defined as a group of caribou occupying a defined area distinguished spatially from areas occupied by other groups of caribou. Local population dynamics are driven primarily by local factors affecting birth and death rates, rather than immigration and emigration. Approaches to define local populations and the range boundaries associated with a local population vary across Canada. In addition, new technology (e.g. genetics) offers potential new approaches to range delineation. Research is currently underway, in collaboration with provinces and territories, to inform development of scientifically robust standards for the delineation of range boundaries.

Research to increase our understanding of climate change effects on boreal caribou habitat and local population status (recovery measure 5)

Climate change effects will be considered by ECCC in both the enhanced analysis to improve our understanding of cumulative effects **within** the range of a local population (recovery measure 2) and the analysis to inform risk management framework **across** local populations (recovery measures 3 and 4). Climate change effects can manifest as changes in natural disturbance regimes (fire, insects), northward extension of ranges of prey and predator species, changes in forage phenology impacting the nutritional status of individuals, as well as introduction of new diseases. Research on climate change impacts will inform the development of adaptation strategies for the conservation and recovery of boreal caribou. NRCan-CFS work on forest area-specific risk-based analysis of cumulative effects as well as regionally-based assessments of forest-related climate change impacts will greatly contribute to this understanding.

Research to inform boreal caribou recovery in the context of multi-species conservation and recovery (recovery measure 6)

The federal government continues to develop landscape-scale approaches to species at risk recovery and biodiversity conservation. This will provide benefits for multiple species and provide a framework for reconciling recovery measures for multiple species that inhabit the same landscape. As a focal species, boreal caribou will serve as the catalyst for research and analysis to inform approaches for conservation and recovery of multiple species across the boreal forest in Canada.

Research on approaches for monitoring and assessment of habitat with a focus on integration of new technology (recovery measure 7)

ECCC will undertake research to develop space based earth observation approaches to map high quality habitat areas within the distribution of boreal caribou and to monitor habitat recovery over time. The research will build on existing collaborations between NRCan-CFS, ECCC, and various partners aimed at assessing opportunities for boreal landscape restoration of different types of disturbance.

Research to optimize habitat recovery through forest landscape restoration approaches and the development of tools and practices to support restoration success at the site level (recovery measure 8)

The successful implementation of boreal caribou recovery measures relies upon the availability of a broad suite of habitat restoration tools and practices both at the site and landscape level. ECCC will work in conjunction with NRCan-CFS and its partners to conduct research that aims at maximizing habitat recovery and resiliency. Using forest landscape restoration approaches, pilot studies will allow for the development and testing of a suite of tools and practices to support the restoration of habitats. These studies will enable land managers to prioritize management actions for rapid habitat

recovery and to implement successful restoration practices through an adaptive management approach.

North American Caribou Workshop (recovery measure 9)

ECCC, in partnership with NRCan-CFS, is leading the organization of the North American Caribou Workshop which will be held in October of 2018. It is held every two years and attracts approximately 300 experts from universities, Indigenous communities and organizations, federal and provincial governments, industry (oil and gas, forestry, mining) and environmental non-governmental organizations. It is a central event for sharing knowledge, science and lessons learned, reporting on caribou status and discussing approaches to address key challenges to caribou conservation and recovery.

Table 1. Implementation Schedule for Pillar 1, Science to Support Recovery

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
Science to Support Recovery						
1	Engage with Indigenous organizations and communities, other federal departments, provincial and territorial governments, academics, industry and environmental non-governmental organizations to design and establish a National Boreal Caribou Knowledge Consortium to share lessons learned, pool capacity and capabilities to address key knowledge gaps. A workshop to design the new body will be held in the fall of 2017.	ECCC	Landscape Level Planning	High	Knowledge gaps	Consortium established by January 2018
2	Conduct research to enhance understanding of the relationship between disturbance and boreal caribou population response to inform range and action planning.	ECCC NRCan	Landscape Level Planning Population Monitoring	High	Habitat alteration as a result of human land-use activities and natural processes Knowledge gaps: Population dynamics	Final report completed December 2017
3	Conduct scientific analysis to inform a national risk management approach to secure recovery outcomes for boreal caribou ranges in Canada.	ECCC	Landscape Level Planning Population Monitoring	High	Knowledge gaps	December 2018
4	Conduct research to develop scientifically robust approaches and standards for identification of local population ranges.	ECCC	Population Monitoring	High	Knowledge gaps: Population dynamics	September 2018
5	Conduct research to increase our understanding of the current and predicted impacts of climate change on boreal caribou critical habitat and population status. Assess implications of projected impacts and identify	ECCC	Landscape Level Planning Habitat	Medium	Climate change	Ongoing

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
	adaptive strategies to support conservation and recovery.		Management Population Monitoring			
6	Conduct research to inform boreal caribou recovery in the context of multi-species conservation and recovery.	ECCC	Landscape Level Planning	Medium	x	Ongoing
7	Conduct strategic research on space based earth observation technology and approaches to improve efficiency and accuracy of mapping and monitoring natural and anthropogenic disturbance, habitat quality of undisturbed areas and habitat recovery.	ECCC	Habitat Management	High	Habitat alteration as a result of human land-use activities and natural processes Knowledge gaps: Habitat monitoring	Ongoing
8	Conduct research to optimize habitat recovery through forest landscape restoration approaches and the development of tools and practices to support restoration success at the site level.	ECCC NRCan	Habitat management	High	Knowledge gaps	Ongoing
9	Lead the organization of the 2018 North American Caribou Workshop as a key mechanism for sharing knowledge and lessons learned, sharing information on the status of recovery activities, and collectively addressing working on key caribou conservation challenges.	ECCC with support from NRCan	Landscape Level Planning	Medium	Knowledge gaps	Conference held October 2018

^a “Priority” reflects the degree to which the measure contributes directly to the recovery of the species or is an essential precursor to a measure that contributes to the recovery of the species. High priority measures are considered those most likely to have an immediate and/or direct influence on attaining the population and distribution objectives for the species. Medium priority measures may have a less immediate or less direct influence on reaching the population and distribution objectives, but are still important for the recovery of the population. Low priority recovery measures will likely have an indirect or gradual influence on reaching the population and distribution objectives, but are considered important contributions to the knowledge base and/or public involvement and acceptance of the species.

2.2 Recovery and Protection

2.2.1 Critical Habitat

Habitat alteration (i.e. habitat loss, degradation, and fragmentation) from both anthropogenic and natural sources, and increased predation as a result of habitat alteration have led to local population declines throughout the boreal caribou distribution (Environment Canada, 2012, and references within).

Critical habitat is identified in the Recovery Strategy (section 7) for all boreal caribou ranges, except for northern Saskatchewan's Boreal Shield range (SK1), as additional information described in the schedule of studies was required (see Section 2.2.3 and Table 2 in this Action Plan). The Recovery Strategy provides details about the critical habitat including its location, amount, biophysical attributes (section 7.1 of the Recovery Strategy) and activities likely to result in the destruction of critical habitat (section 7.3 of the Recovery Strategy).

2.2.2 Critical Habitat Protection

Critical habitat for boreal caribou is located in seven provinces and two territories. The vast majority of boreal caribou critical habitat is located on non-federal land. The Minister of Environment and Climate Change has different obligations under SARA, based on whether the critical habitat is located on federal or non-federal lands. The Minister responsible for the Parks Canada Agency is responsible for protection of critical habitat on federal lands and waters administered by the Agency.

Range plans

In light of provincial and territorial responsibilities for land and natural resource management, the Recovery Strategy, developed with multi-stakeholder input, called for range plans to be completed by provinces and territories within three to five years of the posting of the final Recovery Strategy (i.e. by October 2017).

Range plans may be stand-alone documents, or part of other planning documents including provincial and territorial action plans and other similar documents. The federal government is working with provinces and territories in their efforts to develop range plans or other similar documents.

The main purpose of a range plan is to outline how range-specific land and/or resource activities will be managed over space and time to ensure that critical habitat for boreal caribou is protected from destruction.

ECCC has published guidance to assist provinces and territories with their efforts to develop range plans (ECCC 2016). Where appropriate, range plans can be adopted or incorporated into the Action Plan for this species (see section 5 of this Action Plan).

Measures proposed to protect critical habitat on non-federal lands

The following narrative addresses recovery measures 10 and 11 in Table 3.

Provinces and territories have the primary responsibility for management of lands, natural resources and wildlife within boreal caribou ranges.

Based on range plans and other relevant information, ECCC will assess whether boreal caribou critical habitat is effectively protected across the species' Canadian distribution. In the absence of range plans, the best available information and consultation with provinces and territories will be used to determine whether the species and its critical habitat are effectively protected. The laws and measures in place that protect the species and its critical habitat will be assessed to ensure that they remain protected over time. Conservation measures that help to protect the species and prevent critical habitat destruction or enhance the survival and recovery of boreal caribou will also be considered and monitored.

Once range plans or similar planning documents are in place, ECCC will explore with provinces and territories and other parties as appropriate the establishment of conservation agreements under section 11 of SARA to describe the commitments each party is making to protect and recover boreal caribou. These agreements can provide a framework for substantial conservation actions toward achieving the population and distribution objectives for boreal caribou. The federal government will enter into such agreements if they provide specific measurable, achievable, and time-bound measures for the protection and recovery of the species and its critical habitat.

If the Minister determines that any portion of critical habitat is unprotected, a report on steps being taken to protect critical habitat will be prepared by April 2018.

If the Minister determines that the boreal caribou and/or its critical habitat are not protected, the Minister must recommend that the Governor in Council (a committee of the federal cabinet) make an order. The Governor in Council will then decide whether to issue the order(s).

Measures proposed to protect critical habitat on federally-administered lands

The following narrative addresses recovery measure 12 in Table 3.

Federally-administered lands are directly managed by federal government departments and agencies, and comprise a small fraction of the area containing critical habitat. To date, the Parks Canada Agency has provided legal protection to boreal caribou critical habitat in Prince Albert National Park of Canada, Wood Buffalo National Park of Canada, and Nahanni National Park Reserve of Canada. The Parks Canada Agency will continue to work with Canadians to protect boreal caribou critical habitat in protected heritages places administered by the Agency. On all other federally-administered lands, ECCC is taking appropriate steps to put critical habitat protection in place through a SARA section 58 order or section 59 regulation before the end of 2018. In doing so, ECCC will consult other affected federal and territorial ministers, Wildlife

Management Boards, and Indigenous peoples, and will also engage provincial and territorial governments to obtain relevant information and keep them informed on our progress.

Measures proposed to protect critical habitat on *Indian Act* lands and lands held by Indigenous peoples under land claims settlement agreements

The following narrative addresses recovery measure 13 in Table 3.

Lands set apart for the use and benefit of a band under the *Indian Act* (i.e. *Indian Act* lands), such as reserves, are included in the definition of federal lands under SARA section 2. The federal government will work with Indigenous peoples to collaboratively develop a path forward for protection of critical habitat on *Indian Act* lands. To support this effort, a First Nations Advisory Committee on Species at Risk has been established.

Lands held by Indigenous peoples under land claims settlement agreements are considered non-federal lands under SARA. The federal government will work with Indigenous authorities to collaboratively develop a path forward for protection on these lands.

Measures proposed to protect critical habitat on devolved lands

The following narrative addresses recovery measure 14 in Table 3.

Within the single range of the Yukon and Northwest Territories (known as the “Northwest Territories” range or “NT1”), devolution agreements have given administration and management of large portions of land to the Yukon and Northwest Territories governments. Devolved lands do not include privately-owned lands and lands held by Indigenous peoples under land claims settlement agreements (see above). The federal government will work with the governments of the Yukon and Northwest Territories, the Tłı̨ch̨ Government and northern Wildlife Management Boards to develop a path forward for protection of critical habitat on devolved lands in a manner that respects the intent of devolution.

2.2.3 Critical Habitat Identification in Northern Saskatchewan’s Boreal Shield Range

The following narrative addresses recovery measure 15 in Table 3.

Range condition in northern Saskatchewan’s Boreal Shield (SK1) is characterized by high fire and very low anthropogenic disturbance, a unique situation that was not well represented in the data available for the meta-analysis in the 2011 Scientific Assessment (Environment Canada, 2011) that was the basis for the identification of critical habitat in the other ranges. As such, the identification of critical habitat in SK1 was deferred until more information was available. The Recovery Strategy included a schedule of studies (section 7.2) that described the studies required to complete the critical habitat identification for SK1. These studies are progressing and critical habitat

for SK1 will be identified in a proposed amendment to the Recovery Strategy in spring 2018 (Table 2).

Table 2. Current status of the activities included in the schedule of studies and the timeline for their completion

Description of activity (Environment Canada 2012)	Current status of activity	Timeline for completion of activity
Collect population information (size, trend, etc.) for a minimum of 2 years in SK1 where population condition is unknown.	The University of Saskatchewan led the collection of population information (size, trend, adult survival and calf recruitment) from 2014-2016. These preliminary results have been released by the University of Saskatchewan in an Interim Report (McLoughlin et al. 2016).	Completed
Update disturbance model in the Department's Scientific Assessment (2011) by including population information for SK1 to incorporate situations of high fire and very low anthropogenic disturbance.	ECCC is currently updating the disturbance model by including the new population information for SK1 and additional data from several study areas with high fire and low anthropogenic disturbance. This analysis will place the SK1 data into a broader national context.	September 2017
Identification of critical habitat in SK1.	Using the information generated from the above activities, ECCC will complete the identification of critical habitat in SK1. ECCC will cooperate with the province and northern Saskatchewan's Indigenous communities and consult with directly affected stakeholders on the candidate critical habitat for SK1 prior to posting a proposed amendment to the Recovery Strategy on the SAR Public Registry.	Post proposed amendment spring 2018

2.2.4 Protection of Individuals

The following narrative addresses recovery measure 16 in Table 3.

ECCC will consult and work with provinces and territories to assess the best available information to determine whether the species is effectively protected on non-federal land in the provinces and on lands not under the authority of the Minister of the Environment and Climate Change or the Parks Canada Agency in the territories.

2.2.5 Stewardship

The following narrative addresses recovery measure 17 in Table 3.

"Stewardship" refers to the wide range of actions that Canadians take to care for the environment, ranging from conserving wild species and their habitats directly, to improving the quality of habitat by mitigating human impact. ECCC and PCA will continue to support and undertake stewardship actions for boreal caribou and its habitat

through a variety of mechanisms, including through specific recovery measures and committees identified in this document, outreach and funding programs.

For example, the federal government funds stewardship projects through the Habitat Stewardship Program (HSP) and the Aboriginal Fund for Species at Risk Program (AFSAR). In 2014-15 and 2015-16, the HSP Species at Risk Stream funded a total of 8 projects valued at \$398,420 for which boreal caribou was a target species. In 2016-17, HSP and AFSAR Species at Risk Stream funded a total of 10 projects for which boreal caribou was a target species valued at \$1,304,890 (over three years).

In 2017-2018, boreal caribou is a regional priority species for all ECCC regions under the AFSAR Species at Risk Stream and for most ECCC regions under the HSP Species at Risk Stream. In this fiscal year, AFSAR Species at Risk Stream is funding a total of 6 projects for which boreal caribou is a target species and HSP Species at Risk Stream is funding 4 projects for which boreal caribou is a target species.

Boreal caribou will continue to be a priority for HSP and AFSAR in 2018-19 and years beyond. ECCC will work with existing and new committees, including the National Boreal Caribou Knowledge Consortium, to identify priority projects for funding.

2.2.6 Multi-species Planning to Facilitate Recovery

The following narrative addresses recovery measure 18 in Table 3.

To achieve outcomes, conservation initiatives must engage partners in the places – the communities – where they live and work. This approach to conservation planning recognizes ecosystems and the socio-economic systems with which they interact. This integration better enables multi-species conservation action planning to respond to systemic challenges to wildlife and habitat at appropriate spatial scales. It will also enable partners to focus and concentrate their investments of time and resources in priority areas to achieve more meaningful conservation outcomes.

In the boreal forest there is an opportunity to build upon the ongoing efforts to recover boreal caribou and secure this globally important ecosystem for dozens of migratory birds and other species. Therefore, when planning and implementing recovery measures for boreal caribou, the federal government will continue to look for associated benefits and to minimize any potential adverse impacts to other species and take those into consideration. See also recovery measure 6 in Section 2.1 (Science to Support Recovery) of this document.

Table 3. Implementation Schedule for Pillar 2, Recovery and Protection

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
Critical habitat protection						
10	Undertake protection assessments of critical habitat on non-federal lands.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	2017-2018
11	Explore the establishment of conservation agreements with provinces and territories to codify provincial and territorial measures to protect and recover caribou.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	Following receipt of range plans
12	Protect critical habitat on federally-administered lands through a section 58 order or section 59 regulation.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	2018
13	Work with Indigenous authorities to collaboratively develop path forward for protection of critical habitat on <i>Indian Act</i> lands and lands held by Indigenous peoples under land claims settlement agreements.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	2018
14	Collaboratively develop path forward for protection of critical habitat on devolved lands.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	2018
Critical habitat identification in northern Saskatchewan's Boreal Shield range (SK1)						
15	Identify critical habitat for SK1 in a proposed amendment to the Recovery Strategy.	ECCC	Landscape Level Planning	High	Critical habitat identification	Spring 2018

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
Protection of individuals						
16	Consult and work with provinces and territories to assess the best available information to determine whether the species is effectively protected on non-federal land in the provinces and on lands not under the authority of the Minister of the Environment and Climate Change or the Parks Canada Agency in the territories.	ECCC	Population Monitoring	High	Protection of individuals	2018
Stewardship						
17	Continue to support and undertake stewardship actions, including funding stewardship projects for boreal caribou under existing funding programs that are strategic in nature and have the potential to advance recovery.	ECCC	Landscape Level Planning Habitat Management	High	Habitat alteration as a result of human land-use activities and natural processes	Ongoing
Multi-species planning to facilitate recovery						
18	When planning and implementing recovery measures for boreal caribou, the federal government will continue to look for associated benefits to other species and take those into consideration.	ECCC	Landscape Level Planning Habitat Management	x	x	Ongoing

^a "Priority" reflects the degree to which the measure contributes directly to the recovery of the species or is an essential precursor to a measure that contributes to the recovery of the species. High priority measures are considered those most likely to have an immediate and/or direct influence on attaining the population and distribution objectives for the species. Medium priority measures may have a less immediate or less direct influence on reaching the population and distribution objectives, but are still important for the recovery of the population. Low priority recovery measures will likely have an indirect or gradual influence on reaching the population and distribution objectives, but are considered important contributions to the knowledge base and/or public involvement and acceptance of the species.

2.3 Reporting on Progress

The performance indicators presented in the Recovery Strategy provide a way to define and measure progress toward achieving the population and distribution objectives.

2.3.1 Habitat and Population Monitoring

The following narrative addresses recovery measures 19-21 in Table 4.

Boreal caribou population monitoring is conducted primarily by the provinces and territories with some monitoring by industry. Caribou monitoring approaches and level of monitoring varies across ranges. On behalf of the NBCTC, ECCC commissioned a study (March 2017) to assess monitoring approaches and to inform the development of standardized monitoring protocols. The role for the federal government in population monitoring will be to continue to develop standardized monitoring protocols in collaboration with the provinces and territories. ECCC will also examine the need for and approaches to monitoring alternate prey and predator densities as part of the monitoring standards.

ECCC completed the disturbance mapping across all ranges for the year 2010 and is now in the process of repeating this mapping for 2015 as a five year update. This will provide the amount and location of undisturbed habitat within each range, which is an important component of habitat; however, mapping of habitat quality in undisturbed areas will also be a key element (see recovery measure 7).

ECCC will update range boundaries and status of self-sustainability of local populations (i.e. integrated risk assessment, based on three lines of evidence: amount of total disturbance, local population trend and local population size) based on new or more refined evidence provided by the provincial and territorial jurisdictions, as well as the results of ECCC's updated disturbance mapping. This updated information will be included in a proposed amendment to the Recovery Strategy at a future date.

2.3.2 5-Year Report on Recovery Strategy Implementation

The following narrative addresses recovery measure 22 in Table 4.

The Minister of Environment and Climate Change must report every five years on the implementation of the recovery strategy, and the progress toward meeting its objectives (under section 46 of SARA). As such, ECCC plans to publish the first 5-Year Report on the Implementation of the Recovery Strategy for boreal caribou in fall 2017. The report will be posted on the Species at Risk Public Registry.

ECCC is working collaboratively with the provinces and territories, the Parks Canada Agency and others who have undertaken measures to implement the Recovery Strategy, to ensure that their efforts and recovery actions are reflected in this report in order to provide a national view of Recovery Strategy implementation. ECCC will continue engaging all provinces and territories, with management responsibility for boreal caribou, multilaterally through national committees, and bilaterally, as needed, to ensure all information is accurately reported.

The 5-Year Report on Implementation of the Recovery Strategy will provide information on conservation and recovery measures implemented or underway in each province or territory (e.g. habitat restoration for disturbed areas, protection of habitat, use of stewardship programs, population and/or habitat monitoring, population management strategies, etc.), the status of provincial/territorial recovery planning documents (e.g. range plans, action plans), and the change in habitat and population condition in each range. The report will assess the overall progress made in the last five years towards reaching the goal of achieving self-sustaining local populations in all boreal caribou ranges, but will also identify areas where improvement is needed.

2.3.3 Report on Steps to Protect Critical Habitat

The following narrative addresses recovery measure 23 in Table 4.

As described in section 2.2.2 of this Action Plan, if the Minister determines that any portion of boreal caribou critical habitat is unprotected, a report on steps being taken to protect critical habitat will be published by April 2018.

Table 4. Implementation Schedule for Pillar 3, Reporting on Progress

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
Habitat and Population Monitoring						
19	Complete science assessment to inform collaborative development of national caribou monitoring standards building on the NBCTC report on caribou monitoring methods and integrating new technology.	ECCC	Population Monitoring	Medium	Knowledge gaps: Population dynamics	January 2018
20	Monitor and assess habitat disturbance and recovery across 51 ranges by completing the 5 year update to 2010 disturbance mapping using 2015 Landsat imagery at both 30 metre and 15 metre resolutions.	ECCC	Habitat Management	High	Habitat alteration as a result of human land-use activities and natural processes	May 2017 for 30 metre March 2018 for 15 metre
21	Update range boundaries and status of self-sustainability of local populations, based on new or more refined evidence provided by the provincial and territorial jurisdictions, as well as the results of ECCC's updated disturbance mapping, in a proposed amendment to the Recovery Strategy.	ECCC	Habitat Management Population Monitoring	High	Knowledge gaps: Population dynamics and habitat alteration	To be determined
5-Year Report on the Implementation of the Recovery Strategy						
22	Publish the first 5-Year Report on the Implementation of the Recovery Strategy for boreal caribou.	ECCC	Landscape level planning Habitat Management Mortality and Population Management Population Monitoring	x	x	Fall 2017

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
Reports on Steps to Protect Critical Habitat						
23	If the Minister determines that any portion of critical habitat is unprotected, prepare a report on steps being taken to protect critical habitat.	ECCC	Landscape Level Planning Habitat Management	High	Habitat alteration as a result of human land-use activities	April 2018

^a "Priority" reflects the degree to which the measure contributes directly to the recovery of the species or is an essential precursor to a measure that contributes to the recovery of the species. High priority measures are considered those most likely to have an immediate and/or direct influence on attaining the population and distribution objectives for the species. Medium priority measures may have a less immediate or less direct influence on reaching the population and distribution objectives, but are still important for the recovery of the population. Low priority recovery measures will likely have an indirect or gradual influence on reaching the population and distribution objectives, but are considered important contributions to the knowledge base and/or public involvement and acceptance of the species.

3. Engagement on Measures to Be Taken

Engaging other federal departments and agencies, provincial and territorial jurisdictions, Wildlife Management Boards, Indigenous peoples, and stakeholders on the federal actions described in this Action Plan is important. A key element of the engagement on the science to support boreal caribou recovery will be the National Boreal Caribou Knowledge Consortium. As indicated in section 2.1 of this Action Plan, the National Boreal Caribou Knowledge Consortium, which is aimed at improving the sharing of lessons learned, science and research across the country, will be part of the broader collaborative network. It will involve partners such as Indigenous peoples, provinces, territories, industry and non-governmental groups, experts and academics.

Provinces and Territories

The federal government will continue to engage with provinces and territories both bilaterally and multilaterally through national committees on boreal caribou recovery, including when undertaking actions in this Action Plan.

In addition to the National Boreal Caribou Knowledge Consortium, communication will continue to be facilitated among provincial, territorial, and federal governments through a new executive-level Federal-Provincial/Territorial Coordinating Committee on Caribou and the ongoing efforts of the NBCTC.

The new Coordinating Committee is being established to ensure that governments can better coordinate their various recovery and protection activities related to boreal caribou and regularly share information and discuss priorities. This non-technical committee will be broadened to engage other key players as needed (e.g. Indigenous peoples, industry, environmental non-governmental organizations).

The NBCTC is a federal, provincial, and territorial government committee established in 2013 to identify and resolve key technical questions amongst jurisdictions that will help lead to the stabilization and recovery of boreal caribou local populations across Canada, and facilitate the implementation of the Recovery Strategy. The efforts of the Committee will continue to be supported.

Indigenous peoples

During the development of the 2012 Recovery Strategy, knowledge was shared by Indigenous Traditional Knowledge holders and Indigenous communities on boreal caribou life history, habitat use, population status, threats facing the species and conservation measures, and this information was used in the development of the Recovery Strategy. Indigenous peoples consistently indicated that the conservation of boreal caribou is essential, as this species is integral to the culture, identity and survival of their communities. Achieving the recovery goal for boreal caribou would allow for local population levels sufficient to sustain traditional Indigenous harvesting activities.

The federal government will continue to engage with Indigenous communities directly through ECCC's regional offices and through Indigenous governments, national and regional Indigenous organizations and Wildlife Management Boards on boreal caribou recovery, including when undertaking actions in this Action Plan.

The federal government will ensure that Aboriginal and treaty rights are respected when undertaking actions related to boreal caribou, including federal actions presented in this Action Plan.

Stakeholders

The federal government will continue to engage stakeholders (e.g. industry and environmental non-governmental organizations) on boreal caribou recovery, including when undertaking the actions in this Action Plan, through national and regional committees or groups and individually, as appropriate.

Where documents are posted on the Species at Risk Public Registry for public consultation, all Canadians are encouraged to provide comments.

4. Evaluation of Socio-Economic Costs and of Benefits

SARA requires that an action plan include an evaluation of the socio-economic costs of the action plan and the benefits to be derived from its implementation (SARA 49(1) (e), 2002).

The protection and recovery of species at risk can result in both benefits and costs. The Act recognizes that "*wildlife, in all its forms, has value in and of itself and is valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons*" (SARA 2002). Self-sustaining and healthy ecosystems with their various elements in place, including species at risk, contribute positively to the livelihoods and the quality of life of all Canadians. A review of the literature confirms that Canadians value the preservation and conservation of species in and of themselves. Actions taken to preserve a species, such as habitat protection and restoration, are also valued. In addition, the more an action contributes to the recovery of a species, the higher the value the public places on such actions (Loomis and White, 1996; DFO, 2008).

A socio-economic analysis of the direct costs of implementing only those actions outlined in this Action Plan has not been undertaken at this time. However, it is recognized that the full costs of protection and recovery of boreal caribou across Canada will likely be significant and will require the commitment and cooperation of many different constituencies and will not be achieved by Environment and Climate Change Canada or any other jurisdiction alone. In addition, boreal caribou critical habitat intersects with regional economic activities in sectors such as forestry, energy and mining. Protection measures could increase the costs of these activities.

Economic and socio-economic analyses to inform Ministerial or Governor in Council decisions regarding the making of orders or regulations to protect critical habitat under SARA will be conducted in the regulatory impact analysis statement as required by the Cabinet Directive on Regulatory Management and other policies and processes established by the Government of Canada. This will include direct costs associated with making orders or regulations, as well as indirect impacts such as increased costs for different activity sectors and forgone economic opportunities. Provinces and territories, Wildlife Management Boards and Indigenous communities will be consulted as required during the development of the analyses.

Any other evaluation of socio-economic costs and benefits will be completed, as is appropriate, with the incorporation or adoption of other documents (see section 5 of this Action Plan).

5. Subsequent Action Plans

The Minister of the Environment and Climate Change may adopt or incorporate parts of a range plan, an existing provincial or territorial plan, or other relevant planning documents that meet, or help meet, the requirements of SARA for an action plan. Over time, as provincial and territorial governments develop such documents for boreal caribou, ECCC will consider their adoption or incorporation into subsequent action plans for the species. The evaluation of socio-economic costs and benefits at the range scale is more appropriate and will provide better information on such costs and benefits. The Parks Canada Agency will address the recovery needs of boreal caribou in any relevant multi-species site-specific action plans for lands administered by the Agency.

6. References

Department of Fisheries and Oceans Canada (DFO). 2008. Estimation of the Economic Benefits of Marine Mammal Recovery in the St. Lawrence Estuary. Policy and Economics Regional Branch, Quebec.

Environment Canada. 2011. Scientific Assessment to Support the Identification of Critical Habitat for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. Ottawa, ON. 115 pp. plus Appendices.

Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. xi + 138 pp.

Environment and Climate Change Canada. 2016. Range Plan Guidance for Woodland Caribou, Boreal Population. *Species at Risk Act: Policies and Guidelines* Series. Environment and Climate Change Canada, Ottawa. 26 p. Available at: http://registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=2993.

Loomis, J.B. and D.S. White. 1996. Economic Benefits of Rare and Endangered Species: Summary and Meta-analysis. *Ecological Economics*, 18: 197-206. (en anglais seulement)

McLoughlin, P., K. Stewart, C. Superbie, T. Perry, P. Tomchuk, R. Greuel, K. Singh, A. Truchon-Savard, J. Henkelman, and J. F. Johnstone. 2016. Population dynamics and critical habitat of woodland caribou in the Saskatchewan Boreal Shield. Interim Project Report, 2013–2016. Department of Biology, University of Saskatchewan, Saskatoon. 162 pp.

Species at Risk Act (SARA) (S.C. 2002, c. 29) <http://laws-lois.justice.gc.ca/eng/acts/s-15.3/FullText.html>.

7. Glossary

Local population: a group of boreal caribou occupying a defined area distinguished spatially from areas occupied by other groups of boreal caribou. Local population dynamics are driven primarily by local factors affecting birth and death rates, rather than immigration or emigration among groups.

In this Action Plan, “local population” refers to a group of boreal caribou occupying any of the three types of boreal caribou ranges (i.e. conservation unit, improved conservation unit, local population unit). See also range.

Not self-sustaining local population: in the population and distribution objectives “not self-sustaining local population” includes both the local populations assessed as “as likely as not self-sustaining” and those assessed as “not self-sustaining”.

Range: the geographic area occupied by a group of individuals that are subject to similar factors affecting their demography and used to satisfy their life history processes (e.g. calving, rutting, wintering) over a defined time frame. Environment Canada (2011) identified three types of boreal caribou ranges categorized based on the degree of certainty in the delineated range boundaries (i.e. conservation unit, improved conservation unit, local population unit).

Range plan: a document that demonstrates how the habitat condition within a given range will be managed over time and space to ensure that critical habitat for boreal caribou is protected from destruction and therein, that each local population will either continue to be self-sustaining or become self-sustaining over time.

Self-sustaining local population: a local population of boreal caribou that on average demonstrates stable or positive population growth over the short-term (≤ 20 years), and is large enough to withstand stochastic events and persist over the long-term (≥ 50 years), without the need for ongoing active management intervention.

Appendix A: Effects on the Environment and Other Species

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the [Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals](#)². The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making and to evaluate whether the outcomes of a recovery planning document could affect any component of the environment or any of the [Federal Sustainable Development Strategy](#)'s³ (FSDS) goals and targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that implementation of Action Plans may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the Action Plan itself, but are also summarized below in this statement.

Boreal caribou are an umbrella species for the older-growth boreal forest at large. There are many species that share the same habitat requirements as boreal caribou and will benefit from the recovery measures outlined in this Action Plan. This Action Plan will benefit the environment and biodiversity as a whole by promoting the recovery of boreal caribou and by protecting and enhancing habitat.

This Action Plan will contribute to the achievement of the goals and targets of the Federal Sustainable Development Strategy for Canada. In particular, the strategy directly contributes to the Government of Canada's commitment to restore populations of wildlife to healthy levels, protect natural spaces and wildlife, and protect the natural heritage of our country.

² www.ceaa.gc.ca/default.asp?lang=En&n=B3186435-1

³ www.ec.gc.ca/dd-sd/default.asp?lang=En&n=F93CD795-1