

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

Federal Actions

Woodland Caribou, Boreal population



2018



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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](http://sararegistry.gc.ca)¹.

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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>

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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) knowledge 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.

Knowledge to Support Recovery

Credible information 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 provinces and territories, Wildlife Management Boards, 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 work will also be done to better understand the impact of a changing climate on boreal caribou survival. The goal of this work 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

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 an evaluation of provincial and territorial protection measures, range plans or other similar documents, and other relevant information available, 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. ECCC will remain focused on real outcomes that result from the combined efforts occurring within a given jurisdiction to recover and protect boreal caribou.

ECCC will continue to work with provinces and territories to ensure that robust range plans are in place across the boreal caribou distribution. However, ECCC will also explore with provinces, territories and other parties, as appropriate, the establishment of conservation agreements under SARA to formalize the commitments each party is making to protect and recover boreal caribou. Where they are established, these agreements will 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(s) to protect the species and its habitat. 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 heritage places that they administer. On all other federally-administered lands, ECCC is taking appropriate steps to put critical habitat protection in place through SARA section 58. ECCC will publish an order in the *Canada Gazette* in 2018. This will be done in consultation with other federal departments and agencies, provinces and territories, Wildlife Management Boards, and Indigenous peoples, as appropriate.

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 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, Wildlife Management Boards, 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, in collaboration with other federal departments and agencies, the provinces and territories and other partners published the first "5-Year Report on the Implementation of the Recovery Strategy. This report was made public in the fall of 2017 and represented an important opportunity to review efforts to recover the species thus far and identify areas where improvement is needed. The 5-Year Report on the Implementation of the Recovery Strategy included a summary of the recovery measures undertaken since the publication of the Recovery Strategy, such as habitat restoration protection of habitat, population and/or habitat monitoring, and population monitoring strategies. 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. The next 5-Year Report will be published in October 2022.

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 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 all 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 provinces, territories, Wildlife Management Boards, Indigenous peoples, and stakeholders

Pillar 1: Knowledge to Support Recovery

- Create National Boreal Caribou Knowledge Consortium
- Conduct research to:
 - Establish a network of designated adaptive management ranges and pilot areas
 - 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 the 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 section 58
 - Collaboratively develop a path forward for protection and recovery on *Indian Act* lands, lands held by Indigenous peoples under land claims agreements and devolved lands
 - Undertake protection assessments pursuant to sections 34, 35 and 61 of SARA
 - Explore the establishment of conservation agreements under SARA 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 being taken to protect critical habitat will be published by April 2018

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1. Context and Scope of the Action Plan

This federal Action Plan for 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. Large range areas reduce the risk of predation by allowing boreal caribou to maintain low population densities throughout the range and by allowing them to avoid areas of high predation risk.

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. Achieving the recovery goal would allow for local population levels sufficient to sustain traditional Indigenous harvesting activities, consistent with existing Aboriginal and treaty rights. 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 (figure 2 in the Recovery Strategy). 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 management actions (e.g. restoration of industrial landscape features such as roads, old seismic lines, pipelines, cut-lines, temporary roads, cleared areas; reconnection of fragmented ranges; protection of key areas for boreal caribou) and population management actions (e.g. management of predators and alternate prey as an interim measure, in conjunction with other management approaches; management of direct human-caused mortality of boreal caribou) 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 Tłı̄chǵ Government manages land and resources (including wildlife) within Tłı̄chǵ Lands, as described in the Tłı̄chǵ Agreement (a combined comprehensive land claims and self-government agreement). There are also Wildlife Management Boards that have been established under land claims agreements as the primary instrument for wildlife management in some regions of the country. Wildlife Management Boards within boreal caribou range are: Torngat Wildlife and Plants Co-management Board, Gwich'in Renewable Resources Board, Sahtu Renewable Resources Board, Wek'eezhii Renewable Resources Board, Wildlife Management Advisory Council (NWT), Yukon Fish and Wildlife Management Board, and the Hunting, Fishing and Trapping Coordinating Committee.

This federal Action Plan should be considered in addition to 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) knowledge 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. Knowledge to Support Recovery

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 a 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 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

The following narrative addresses recovery measure 1 in Table 1.

Knowledge in the context of this Action Plan will be inclusive of both science, as practiced within a western scientific method construct, and Indigenous Knowledge. ECCC will engage with Wildlife Management Boards, Indigenous peoples, 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, and pool capacity and capability to collaboratively address key knowledge gaps to inform conservation and recovery of caribou in Canada. The process of building the National Boreal Caribou Knowledge Consortium has been initiated and will continue in 2018. Next steps will focus on

continued engagement to explore preferred approaches for collaboration and knowledge sharing, continuing discussions to establish a plan of action for the National Boreal Caribou Knowledge Consortium, and examination of ongoing research and monitoring partnerships that have the potential to inform recovery measures and contribute to our collective body of knowledge going forward. Mechanisms to ensure opportunities for participation at regional and local levels will also be investigated.

Network of Adaptive Management Ranges and Pilot Areas

The following narrative addresses recovery measure 2 in Table 1

ECCC will work with partners to explore the establishment of a network of designated adaptive management ranges and pilot areas where experimentation will be encouraged and carefully monitored, and where results will be shared broadly. ECCC will work closely with responsible jurisdictions to consider management trials and pilots based on current knowledge and expert assessments, in consideration of the specific circumstance of individual caribou ranges and local populations. The outcomes of these actions must be monitored and inform future recovery actions through an adaptive management framework.

Enhanced meta-analysis to increase our understanding of the cumulative effects of different types of disturbance on population status

The following narrative addresses recovery measure 3 in Table 1.

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 (refer to section 3 for additional information) - 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. Results will be available in the spring of 2018.

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

The following narrative addresses recovery measure 4 in Table 1.

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 strategic investment in 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 robust approaches and standards for identification of local population ranges

The following narrative addresses recovery measure 5 in Table 1.

Identification of range areas 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 range boundaries associated with a local population vary across Canada. In addition, Indigenous Knowledge and new technology (e.g. genetics) offer approaches to inform range delineation. Research is currently underway, in collaboration with provinces and territories, Indigenous peoples, and other partners to inform development of robust standards for the delineation and regular updating of range boundaries that recognize jurisdictional differences in ecological conditions and resources available for implementation.

Research to increase our understanding of climate change effects on boreal caribou habitat and local population status

The following narrative addresses recovery measure 6 in Table 1.

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 3) and the analysis to inform risk management framework **across** local populations (recovery measures 4 and 5). Climate change effects can manifest as changes in natural disturbance regimes (e.g. 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

The following narrative addresses recovery measure 7 in Table 1.

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

The following narrative addresses recovery measure 8 in Table 1.

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

The following narrative addresses recovery measure 9 in Table 1.

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, connectivity 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

The following narrative addresses recovery measure 10 in Table 1.

ECCE, in partnership with NRCan-CFS, Indigenous organizations, Wildlife Management Boards, and a diverse group of non-governmental organizations, is leading the organization of the 17th North American Caribou Workshop (NACW), which will be held in Ottawa, Ontario from October 29 – November 2, 2018. The NACW is held every two years and attracts approximately 300 experts from universities, Wildlife Management Boards, Indigenous communities and organizations, federal and provincial governments, industry (oil and gas, forestry, mining), consulting firms, and environmental non-governmental organizations. The NACW is a central event for sharing knowledge and lessons learned, reporting on caribou status, and discussing approaches to address key challenges to caribou conservation and recovery across Canada and the northwestern United States.

The theme of the 17th NACW is “Working Together”. Under this theme, the conference will serve as a forum for knowledge-sharing and learning, and will provide opportunities for the expansion of networks and the fostering of new collaborations. Conference sessions and activities will focus on how current collaborative caribou conservation, management and recovery efforts are helping to improve conservation outcomes for different caribou types. More information can be found at: <http://www.nacw2018.ca/>.

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

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
Knowledge to support recovery						
1	Engage with Wildlife Management Boards, Indigenous peoples, 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, and pool capacity and capabilities to address key knowledge gaps.	ECCC	Landscape Level Planning	High	Knowledge gaps	Launch of the Consortium is targeted for June 2018
2	Establishment of a network of designated adaptive management ranges and pilot areas where experimentation will be encouraged and carefully monitored, and where results will be shared broadly	ECCC	Landscape Level Planning	High	Knowledge gaps	Ongoing
3	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	Results will be available in spring 2018
4	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

5	Conduct research to develop robust approaches and standards for identification of local population ranges.	ECCC	Population Monitoring	High	Knowledge gaps: Population dynamics	September 2018
6	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 adaptive strategies to support conservation and recovery.	ECCC	Landscape Level Planning Habitat Management Population Monitoring	Medium	Climate change	Ongoing
7	Conduct research to inform boreal caribou recovery in the context of multi-species conservation and recovery.	ECCC	Landscape Level Planning	Medium	None	Ongoing
8	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
9	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
10	Lead the organization of the 17 th North American Caribou Workshop as a key mechanism for sharing knowledge and lessons learned, reporting on the status of recovery activities, and discussing approaches to address key challenges to caribou conservation and recovery.	ECCC with support from NRCan	Landscape Level Planning	Medium	Knowledge gaps	Conference to be held October 29 – November 2, 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). The 2012 Recovery Strategy set a minimum 65% undisturbed habitat threshold as one component of critical habitat for the species, which provides a 60% probability that a local population will be self-sustaining. This 65% threshold was a policy decision, based on a model developed by ECCC that considered both human and natural disturbance.

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 input from partners and stakeholders, 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 will demonstrate how provinces and territories will protect the species' critical habitat under their jurisdiction. None of the provinces or territories fully met the October 5, 2017 deadline for range planning. However, most provincial and territorial governments have made some progress on the development of range plans or other similar documents and have made commitments to timelines for completing outstanding range plans (ECCC, 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 11 and 12 in Table 3.

Provinces and territories have the primary responsibility for management of lands, natural resources and wildlife within boreal caribou ranges. There are also Wildlife Management Boards that have been established under land claims agreements as the primary instrument for wildlife management in some regions of the country.

ECCC will assess whether boreal caribou critical habitat is effectively protected across the species' Canadian distribution based on an evaluation of provincial and territorial protection measures, range plans or other similar documents, and other relevant information available. In the absence of range plans, the best available information and consultation with provinces and territories will be used to determine whether critical habitat is effectively protected. The laws and measures in place that protect critical habitat will be assessed to ensure that they remain protected over time.

ECCC is seeking to establish conservation agreements under SARA between the Government of Canada and each province and territory, and other parties where appropriate, to formalize the commitments each party is making to protect and recover boreal caribou. These agreements will 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 are robust, knowledge-based and provide specific measurable, achievable, relevant, and time-bound measures for the protection and/or 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, the Minister must recommend that the Governor in Council (a committee of the federal cabinet) make an order(s) to protect the species and its habitat. The

Governor in Council will then decide whether to issue the order(s). This is a requirement under SARA.

Measures proposed to protect critical habitat on federally-administered lands

The following narrative addresses recovery measure 13 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 heritage places administered by the Agency. On all other federally-administered lands, ECCC is taking appropriate steps to put critical habitat protection in place through SARA section 58. ECCC will publish an order in the *Canada Gazette* in 2018. In doing so, ECCC will consult other affected federal and territorial ministers, Wildlife Management Boards, and Indigenous peoples, as appropriate, and will also engage provincial and territorial governments to obtain relevant information and keep them informed on progress.

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

The following narrative addresses recovery measure 14 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 the protection of critical habitat on *Indian Act* lands. To support this effort, a First Nations Advisory Committee on Species at Risk (FNAC SAR) has been established in accordance with section 9 of SARA, to work with ECCC to advance the conservation of species at risk, including through knowledge sharing and policy development. The FNAC SAR can provide a forum for dialogue, technical advice and guidance on species at risk. Indigenous Knowledge Systems will form a critical part of the FNAC SAR's advice. The FNAC SAR also seeks to support First Nations' capacity and knowledge, fostering a broader understanding and engagement on species at risk.

Lands held by Indigenous peoples under land claims agreements are considered non-federal lands under SARA. The federal government will work with Indigenous governments, Wildlife Management Boards, and provincial and territorial governments, as required under land claims agreements, 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 15 in Table 3.

In the Yukon and Northwest Territories, 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 agreements (see above). The federal government will work with the governments of the Yukon and Northwest Territories, Indigenous governments, 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. This may also include consulting with relevant integrated land and resource management entities, as set out by comprehensive land claims agreements and the *Mackenzie Valley Resource Management Act*.

2.2.3. Critical Habitat Identification in Northern Saskatchewan's Boreal Shield Range

The following narrative addresses recovery measure 16 in Table 3.

Range condition in northern Saskatchewan's Boreal Shield range (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. There was also no population size or trend data available for SK1 in 2012 and it was not possible to infer whether SK1 fit the meta-analysis model. As such, the identification of critical habitat in SK1 was deferred until more information was available. The Recovery Strategy included the schedule of studies (section 7.2) 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 summer 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 female survival and calf recruitment). The preliminary results from the 2014-2016 data collection have been released by the University of Saskatchewan in an Interim Report (McLoughlin et al. 2016). An additional year of population data has been provided by the University of Saskatchewan since publication of the Interim Report.	Completed
Update the disturbance model in the Department's	ECCC is currently updating the disturbance model by including the new population information for SK1 and	Completed

Description of activity (Environment Canada 2012)	Current status of activity	Timeline for completion of activity
Scientific Assessment (2011) by including population information for SK1 to incorporate situations of high fire and very low anthropogenic disturbance.	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.	
Identification of critical habitat in SK1.	Using the information generated from the above activities, ECCC will complete the identification of critical habitat in SK1. To the extent possible, ECCC will cooperate with the Government of Saskatchewan 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 Species at Risk Public Registry.	Proposed amendment to the Recovery Strategy in summer 2018

2.2.4. Protection of Individuals

The following narrative addresses recovery measure 17 in Table 3.

ECCC will consult and work with provinces, territories, and Wildlife Management Boards 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 Environment and Climate Change or the Parks Canada Agency in the territories.

2.2.5. Stewardship

The following narrative addresses recovery measure 18 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). From 2012-2013 through to 2017-2018, over 20 projects for which boreal caribou was a target species have been funded by HSP and over 50 projects for which boreal caribou was a target species have been funded through AFSAR.

The protection and recovery of boreal caribou and its critical habitat will continue to be a priority for HSP, AFSAR, and other funding mechanisms. 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 19 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 within 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 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 7 in Section 2.1 (Knowledge 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						
11	Undertake protection assessments of critical habitat on non-federal lands.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	2017-2018
12	Explore the establishment of conservation agreements with each province and territory, and other parties where appropriate, to formalize the commitments each party is making to protect and recover boreal caribou.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	2018-2019
13	Protect critical habitat on federally-administered lands through section 58 .	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	Publish order in <i>Canada Gazette</i> in 2018
14	Work with Indigenous governments, Wildlife Management Boards, and provincial and territorial governments, as required under land claims agreements to collaboratively develop a path forward for the protection of critical habitat on <i>Indian Act</i> lands and lands held by Indigenous peoples under land claims agreements.	ECCC	Landscape Level Planning Habitat Management	High	Critical habitat protection	2018
15	Collaboratively develop a path forward for the 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)						
16	Identify critical habitat for SK1 in a proposed amendment to the Recovery Strategy.	ECCC	Landscape Level Planning	High	Critical habitat identification	Summer 2018
Protection of individuals						
17	Consult and work with provinces and territories and Wildlife Management Boards to assess the best available information to determine whether the species is effectively protected on non-federal lands in the provinces and on lands not under the authority of the Minister of Environment and Climate Change or the Parks Canada Agency in the territories.	ECCC	Population Monitoring	High	Protection of individuals	2018
Stewardship						
18	Continue to support and undertake stewardship actions, including funding stewardship projects for boreal caribou 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						
19	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.	ECCC	Landscape Level Planning Habitat Management	Medium	None	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 20-22 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 to assess monitoring approaches and to inform the development of standardized monitoring protocols (Rettie, 2017). The role for the federal government in population monitoring will be to continue to develop standardized monitoring protocols in collaboration with provincial and territorial governments, Wildlife Management Boards, Indigenous peoples, and stakeholders. ECCC will also examine the need for and approaches to monitoring alternate prey and predator densities as part of the monitoring standards. Monitoring standards will consider the variation across Canada in caribou local population status, ecological conditions and resources available for implementation.

ECCC completed the disturbance mapping across all ranges for the year 2010 and for 2015 as a five year update . This provides 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 8).

ECCC will update range boundaries and the status of self-sustainability for all 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 23 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 published the first 5-Year Report on the Implementation of the Recovery Strategy for boreal caribou on October 31, 2017. This report is publically available on the Species at Risk Public Registry.

ECCC worked 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. This report focused primarily on actions taken by the federal, provincial, and territorial governments and reflected the best available information at the time of publication. However, it also recognized the important work being done by Wildlife Management Boards, Indigenous peoples, stakeholders, academia, and citizens to recover boreal caribou across the country.

The 5-Year Report on Implementation of the Recovery Strategy provides 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 Progress Report found that no province or territory fully met the October 5, 2017 deadline for the development of range plans. While some progress has been made, boreal caribou populations continue to decline and habitat disturbance levels are increasing.

2.3.3. Report on Steps to Protect Critical Habitat

The following narrative addresses recovery measure 24 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						
20	Complete 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 2019 with annual review
21	Monitor and assess habitat disturbance and recovery across 51 ranges by completing the 5-year update to the 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	Completed for 30 metre March 2018 for 15 metre
22	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						
23	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	Not applicable	None	Completed

#	Recovery measures	Lead federal department(s)	Broad strategy for recovery	Priority ^a	Threats or objectives addressed	Timeline
			Monitoring			
Reports on steps to protect critical habitat						
24	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 governments, Wildlife Management Boards, Indigenous peoples, municipal governments, and stakeholders on the federal actions described in this Action Plan is important. ECCC will conduct this engagement in a meaningful way that respects existing mechanisms and timelines for inputs to be developed and provided.

A key element of the engagement on the knowledge 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 and knowledge across the country, will be part of the broader collaborative network. ECCC will engage with Wildlife Management Boards, Indigenous peoples, other federal departments, provinces, territories, industry, non-governmental groups, and academics on the National Boreal Caribou Knowledge Consortium.

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 has been 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 may establish sub working groups that in addition to committee members, may include persons and representatives of organizations with interests in the conservation, recovery and protection of boreal caribou in Canada, which may include, among others, representatives from Wildlife Management Boards, Indigenous organizations, industry associations, non-governmental organizations, and academia.

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 NBCTC will continue to be supported.

Indigenous peoples and Wildlife Management Boards

During the development of the 2012 Recovery Strategy, knowledge was shared by Indigenous 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 Wildlife Management Boards and Indigenous peoples on boreal caribou recovery, including when undertaking actions in this Action Plan. The federal government will recognize capacity issues and existing frameworks for collaboration when undertaking engagement on boreal caribou recovery.

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 and municipal governments

The federal government will continue to engage stakeholders (e.g. industry and environmental non-governmental organizations) and municipal governments 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 s.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 will be undertaken at a future date, and when completed, will be posted on the Species at Risk Public Registry. Implementation of this Action Plan is subject to appropriations, priorities and budgetary constraints of the participating jurisdictions and organizations.

When making orders under SARA, Environment and Climate Change Canada, as required by the Cabinet Directive on Regulatory Management, must include socio-economic analyses in the Regulatory Impact Analysis Statement (see applicable recovery measures under section 2.2 of this Action Plan). These socio-economic analyses are conducted in accordance with guidance established by the Treasury Board Secretariat and would include all incremental costs associated with an order, including any increased costs for different activity sectors, forgone economic opportunities, and potential impacts on small businesses and traditional uses. It will also include the benefits to Canadians associated with the species protection. Wildlife Management Boards, provinces, territories, other relevant orders of government, Indigenous communities, potentially affected businesses, and the public will be consulted as required during the development of the analyses. Any proposed or final orders and associated Regulatory Impact Analysis Statements for boreal caribou will be posted on the Species at Risk Public Registry.

Provinces and territories producing a range plan, or other similar documents, are best-placed to evaluate the costs and benefits of the measures they propose in these plans. Provinces and territories have a better understanding of how their measures will be designed and implemented, and also generally have more information on their own regional economic activities. To assist with this, in November 2017, ECCC launched a working group with provinces, territories, and the federal government to share information and promote consistency in how to undertake socio-economic analyses of the costs and benefits of plans developed by provinces and territories. The public and decision-makers are best informed by socio-economic analyses that adhere to best-practices, as set out in guidance established by the Treasury Board Secretariat and other sources in the field of cost-benefit/cost-effectiveness analysis. In particular, it is important in this context to properly account for any new economic activity that could replace activities that would be limited due to measures within a range plan. Distributional impacts, such as impacts on local employment, need to be properly accounted for as well. The benefits of actions to protect the species must also be accounted for and can be both national and local in scope.

5. Subsequent Action Plans

The Minister of 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 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

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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