

A Framework for Boreal Caribou Range Planning

Discussion Document



DRAFT

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1. Executive summary

The Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) is preparing a range planning framework to guide the development of five regional range plans for boreal caribou, a listed species under both the federal and territorial *Species at Risk Acts* (SARA). Range plans are needed to demonstrate compliance with the federal SARA and national recovery strategy, which involves maintaining an ongoing supply of at least 65% undisturbed habitat within the NT1 (see Figure 1) boreal caribou range. The *Recovery Strategy for Boreal Caribou in the NWT* identified the need for both an overall Northwest Territories (NWT)-Yukon (YT) and region-specific range plans, which, upon completion, will fulfill objectives related to habitat management. The NWT recovery strategy also includes measures for managing harvest, research, monitoring, and collaborative management.

Range planning in the NWT is complex. The sheer size of the range in the NWT could mean significant implications for range planning choices for development. Furthermore, the dominant role of fire in overall habitat disturbance creates challenges for planning and management. The existing co-management regime suggests the need for a regional approach to range planning to address regionally-specific values and context and provide consistency for the GNWT.

ENR Wildlife has therefore provided range planning options based on the following objectives: to promote caribou conservation, promote compliance with SARA requirements, maximize opportunity and flexibility for development, and support regional equity.

These options would enable transparency of the process, administrative efficiency, compatibility with the integrated resource management system and existing policy and legislation, and adaptability to new information and changing conditions.

This approach is based on a **tiered management framework** that provides various levels of management oversight and intensity under differing conditions. Caribou habitat is assigned to basic, enhanced and intensive management classes based on the importance of habitat for the caribou and regional range status relative to human disturbance thresholds. Areas in enhanced and intensive management classes will be subject to requirements and conditions that achieve no net loss of undisturbed habitat due to human activity over time. A menu of management actions that could apply in each class is presented. The areas in each of the three management classes will be defined spatially when the regional range plans are developed, as will the specific management actions that apply. This tiered management framework provides the ability to tailor management action to local conditions, and provides flexibility to make decisions at a regional level to balance caribou and development interests.

Management thresholds for habitat disturbance in each region will address the uneven distribution of fire and human habitat disturbance across the range. This allows range management to be tailored to local conditions, and supports equitable sharing of responsibility among regions. When regional targets are combined, they promote compliance with the 35% disturbance (human + fire) range-wide threshold.

Areas falling into the different management classes will be mapped and region-specific information on existing and proposed land protections, and potential development opportunities will delineate maps of management classes at the regional scale.

As fire is the primary disturbance factor, **fire disturbance triggers** are set based on current fire variability. If a regional fire footprint moves outside the prescribed range, an evaluation of whether to change the management response will occur. Disturbance in the range may go above the 35% threshold, but management actions will remain consistent to provide certainty for development. This approach ensures long-term disturbance levels remain below or close to the threshold.

A menu of management actions within each management class has been developed. Management actions will address both development activity and fire management. The Framework provides a menu of management actions that may be appropriate within each management class, though decisions about which management actions will be used in specific circumstances will be left to the development of regional range plans. These will help limit increases in the disturbance footprint. Implementation of these actions at the regional level will ensure they are realistic, achievable, affordable and meaningful for caribou habitat management.

Legislative and policy tools used to implement management actions will ensure alignment with the established integrated land and resource management system. The GNWT has reviewed legal instruments and other measures for implementing broad range management actions and continues to work toward a better understanding of how they can be used. Powers under the *Wildlife Act*, the *SARA (NWT)*, regulations under the *Mackenzie Valley Resource Management Act (MVRMA)* and conditions imposed by approved land use plans will provide the legal means to implement most management actions.

The draft approach outlined in this document emphasizes **monitoring and adaptive management**. The range plans will be revised every 10 years and a mid-term review will allow for adjustments or corrections in response to changing conditions.

The Framework identifies monitoring and research priorities to help understand the relationship between habitat disturbance and population status. This will better inform and position the GNWT to achieve compliance and protect caribou in the future. The Framework approach of setting targets, mapping habitat importance and defining tiered management classes will be flexible based on new findings. This element is particularly important for the NWT, given the size of the range, the role of fire in shaping disturbance, the uncertainty of climate change, and the potential for growing trade-offs between development and conservation objectives over time.

The Framework allows flexibility to balance caribou conservation, development and other interests at the regional level, with input from regional implementation partners, stakeholders and decision makers. When regional range plans are developed, they will identify important areas for caribou and the areas to be included in each management class. While the Framework sets out the broad guidelines, enough flexibility exists for adjustment at the regional scale to address the needs and values of regional stakeholders, Indigenous governments, and co-management partners.

The proposed draft Framework will be further refined and finalized with input from key caribou and land management partners and the public. This document is intended to stimulate discussion of and input on key elements of the range planning framework.

2. Purpose of this document

This document outlines a proposed approach to boreal caribou range planning for the NT1 range. Public engagement and consultation on the proposed approach will take place before the approach is finalized by the GNWT. There remain many opportunities for meaningful input. The proposed Framework is draft and will be refined and finalized with input from key caribou and land management partners as well as the broader public.

Once approved, the finalized approach will serve as the guideline for how individual range plans are developed to manage habitat disturbance at a regional level. This approach describes the considerations used to delineate which areas will receive increased management oversight and what tools will be used to protect caribou habitat in those areas.

This Framework will address the issues and recommendations raised in the *NWT Boreal Caribou Recovery Strategy*¹ regarding developing and implementing range plans for boreal caribou habitat. Other factors affecting caribou, such as harvest, are being addressed through additional implementation of the *NWT Boreal Caribou Recovery Strategy*.

3. Range planning context

3.1. Boreal Woodland Caribou

Boreal woodland caribou (*Rangifer tarandus caribou*) are a distinct population of woodland caribou that live in the boreal forest of Canada, including the forests east of the mountains in the NWT. They tend to live in small groups, prefer to stay within the forest year-round, and do not migrate. Boreal caribou females space out for calving to reduce the risk of predation, and therefore these caribou need large areas of intact habitats for these critical periods.

Habitat disturbance affects boreal caribou populations by increasing predation risk. Cleared areas, especially roads and seismic lines, make it easier for wolves and bears to travel through the forest and locate prey. In addition, disturbances like fire and timber harvest result in younger aged forests that are attractive to other prey species like moose and deer. If there is enough young forest to increase the density of other prey, wolf density may also increase, leading to more predation on boreal caribou.

¹ Conference of Management Authorities. 2017 Recovery Strategy for the Boreal Caribou (*Rangifer tarandus caribou*) in the NWT. SARA (NWT) Management Plan and Recovery Strategy Series. ENR, GNWT. 57 + x pp. www.nwt-species-at-risk.ca/sites/default/files/nwt_boreal_caribou_recovery_strategy_2017_final_0.pdf.

3.2. The National Recovery Strategy and Critical Habitat

Boreal caribou are listed as threatened under the federal *SARA*. Declines are strongly linked to habitat disturbance; the more disturbances within a range, the more likely a local population will be declining. Disturbance can be natural (fire) or human-caused (e.g. timber harvest, and linear features like roads, seismic lines, and pipelines).

The *National Recovery Strategy for Woodland Caribou, Boreal Population, in Canada* (hereafter referred to as the “*Strategy*”) was released in October 2012. Based on the population and distribution objectives identified in the *Strategy*, each jurisdiction is expected to maintain or achieve self-sustaining status² for each of its boreal caribou population(s) in order to maintain the current distribution of boreal caribou in Canada³.

The *Strategy* also identifies **critical habitat**, which is broadly defined in *SARA* as the “habitat that is necessary for the survival or recovery of a listed wildlife species.” Specific to boreal caribou, critical habitat is:

- “the area within the boundary of each boreal caribou range that provides an overall ecological condition that will allow for an ongoing recruitment and retirement cycle of habitat, which maintains a perpetual state of a minimum of 65% of the area as undisturbed habitat; and
- biophysical attributes required by boreal caribou to carry out life processes.”

Based on the modeled relationship between habitat disturbance and the likelihood of observing self-sustaining boreal caribou populations, the 65% undisturbed habitat management threshold would provide a 60% chance of observing a self-sustaining population.

Undisturbed habitat is defined as areas that have not burned within the past 40 years, and areas that are further than 500 m from human disturbance footprints (e.g. roads, seismic lines, and cut blocks) visible on 1:50,000 scale Landsat imagery.

When the *Strategy* was released, the NT1 range was assessed as having a self-sustaining local population (Figure 1) based on the fact that there was >65% undisturbed habitat. Information available as of 2017 indicates that the population continues to be self-sustaining with >65% undisturbed habitat (Figure 2). However, the amount of undisturbed habitat has decreased over the last five years and there is evidence of population decline in the southern part of the territory where the majority of NWT’s boreal caribou occur.

² a **self-sustaining local population** is defined as “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.”

³ Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. *SARA Recovery Strategy Series*. Environment Canada, Ottawa, ON. xi + 138pp. www.sararegistry.gc.ca/virtual_sara/files/plans/rs_caribou_boreal_caribou_0912_e1.pdf.

Further information on the status and trend of the NT1 population is summarized in Appendix A.

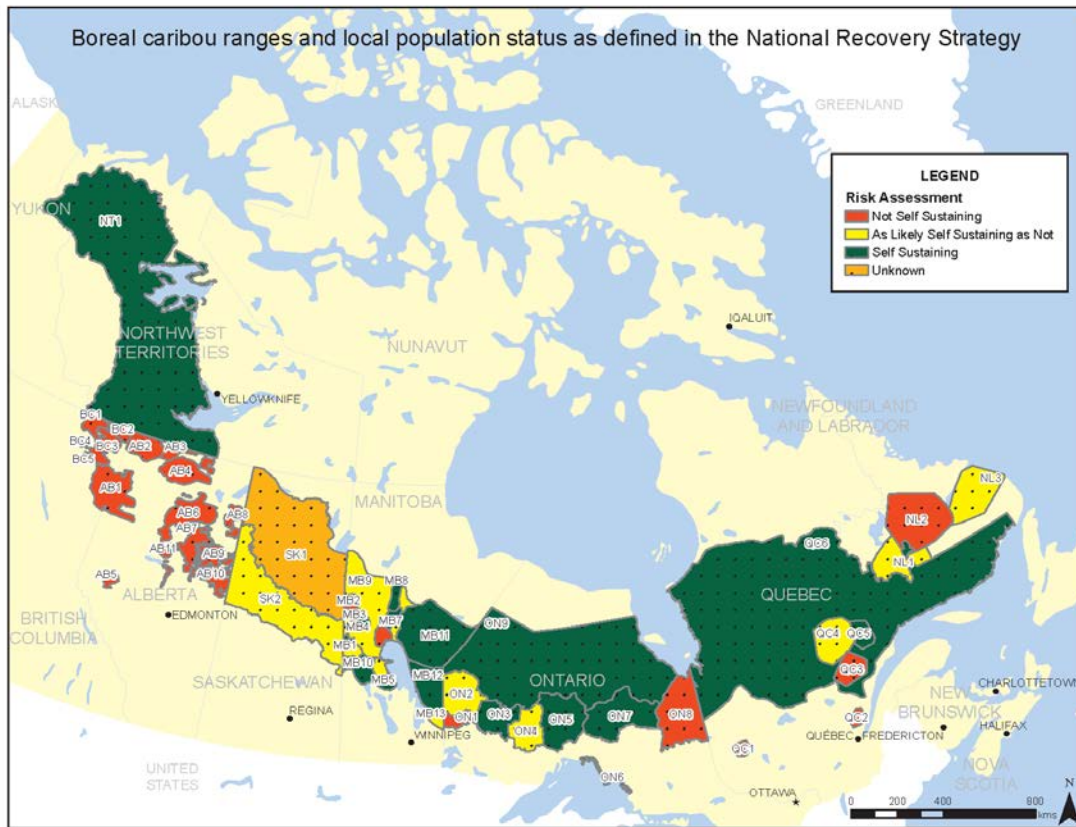


Figure 1. Capacity of boreal caribou ranges across Canada to maintain a self-sustaining local population based on an integrated risk assessment conducted by Environment Canada. Reproduced from Figure 3 in the federal *Strategy*².

3.3. Range plans as a tool for compliance

SARA requires that critical habitat be protected, and provinces and territories are expected to provide that protection on non-federal lands.

The federal *Strategy* encourages provinces and territories to develop a **range plan** for each boreal caribou range within their jurisdiction to demonstrate the measures that jurisdictions will take to manage disturbance in order to maintain a minimum of 65% of the range as undisturbed habitat. The *NWT Strategy* also recommends that range plans be developed and implemented to ensure that there is adequate habitat across the NWT range to maintain a healthy and sustainable population of boreal caribou. As defined in the national *Strategy*, a range plan is:

“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.”

The federal Minister of the Environment will use range plans developed by provinces and territories to form an opinion on whether critical habitat is effectively protected on non-federal lands. If the Minister is of the opinion that effective protection of critical habitat is not being provided on non-federal lands, the Minister is required to recommend to the Governor in Council (GiC) that a protection order be made under *SARA* (S.61(4)). The decision about whether to issue a protection order is made by GiC. Further information on effective protection of critical habitat is provided in Appendix B.

Because range plans developed under this Framework are expected to demonstrate that the GNWT will provide this level of effective protection, the range plans will be more than simply advisory documents. It is the intention of the GNWT that within the NT1 range, these regional range plans are used to guide range management decisions and identify actions to provide protection for caribou habitat. Regional range plans will need to be implemented using a variety of legal and non-legal tools (See Section 4.8 and Appendix C for further details).

3.4. Challenges to range planning in the NWT

There are several challenges with meeting the national *Strategy* requirements as they pertain to range planning in the NWT:

- The NWT has one of the largest continuous boreal caribou ranges to manage in Canada (Figure 1), with a population estimated at between 6,000-7,000 individuals. About 32% of NWT's land mass is boreal caribou range (~441,000 km²), and 65% of the boreal caribou range represents about 21% of the NWT's land mass.
- Natural disturbance (fire) accounts for most of the disturbance in the NWT. As of fall 2016, 34% of the NT1 range is disturbed, with about 27% disturbance due to fire (Figure 2).
- The distribution of fire and human-caused disturbance is uneven across the NT1 range. There is more fire and human disturbance in the southern portion of the range where caribou density is also higher (Figure 2).
- Boreal caribou and boreal caribou habitat fall under the management authority of multiple organizations. Wildlife management boards are the main instruments of wildlife management in regions with settled land claims. Boreal caribou are known to move freely across administrative borders where GNWT is not the primary land manager, such as those between territorial lands, federal lands, lands owned by Indigenous governments and organizations (IGOs), and adjacent jurisdictions (Yukon (YT), British Columbia (BC) and Alberta(AB)). Therefore, decisions for the NT1 range cannot be made in isolation.
- There are a number of government and industry development initiatives within the NT1 range that are important for the achievement of NWT economic objectives (e.g. GNWT's proposed Mackenzie Valley highway and Tłı̨cho all-season road; forest

management agreements for commercial timber harvest in the southern NWT; oil and gas exploration and production, and mining).

The Framework for range planning for the NT1 range described in Section 4 attempts to accommodate these various sources of complexity and represents multiple interests.

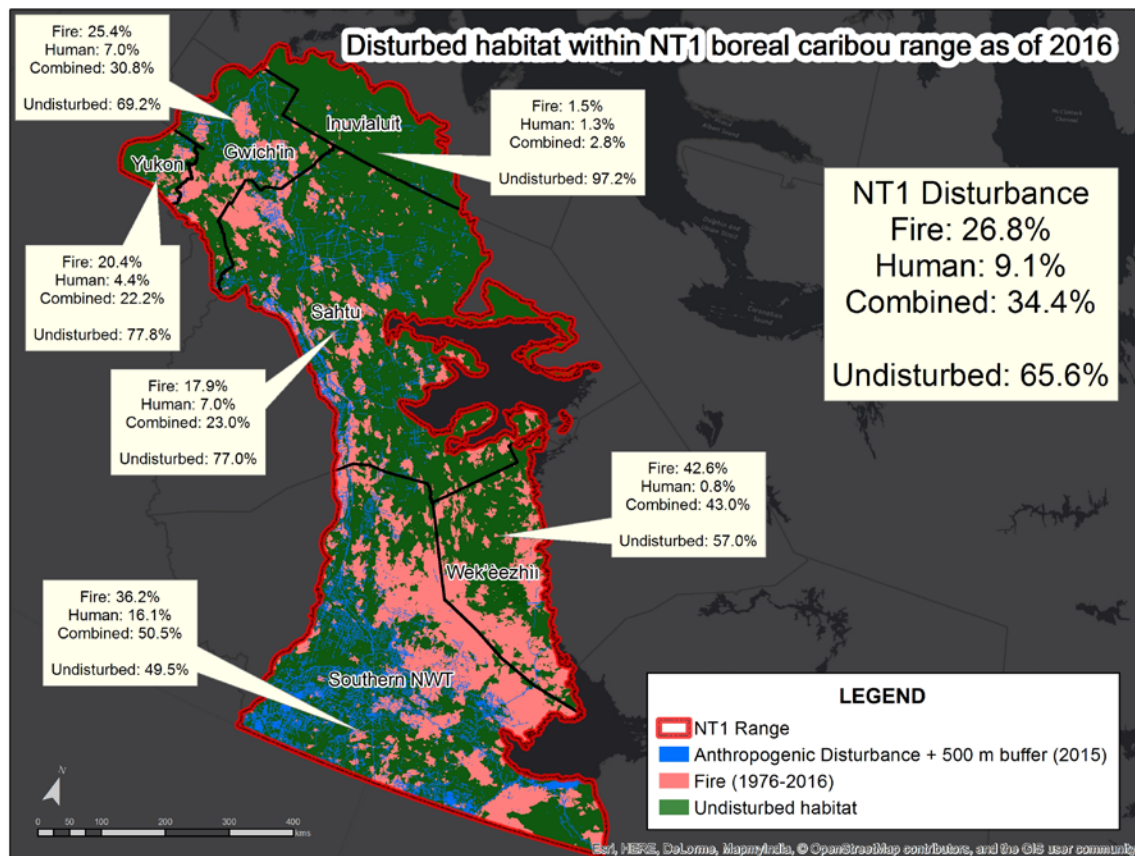


Figure 2. Disturbed habitat within the NT1 boreal caribou range as of fall 2016. Disturbance is considered fires ≤40 years old, current to fall 2016, and human disturbance is based on features visible on 1:50,000. Landsat images from 2015 plus a 500 m buffer.

4. Proposed approach to range planning in the NWT

4.1. Objectives

In accordance with the national *Strategy*⁴, the NWT *Strategy*⁵, and the principles articulated in the GNWT Land Use and Sustainability Framework⁶, the proposed approach to range planning is designed to seek a balance among competing land interests while achieving compliance with the federal *SARA*. The following objectives were considered in developing and comparing options for the range planning framework.

As used in this context, objectives describe fundamental concerns and interests in the development of range plans. They should articulate the underlying values of the range of affected stakeholders. These objectives are described below:

Caribou Conservation: Range plans, and the overall approach to range planning, are designed to ensure there is adequate habitat to support a self-sustaining caribou population throughout the NT1 range. Key considerations are the **proportion and arrangement of undisturbed habitat** across the range and the presence of **key biophysical attributes**. Range plans will strive to maintain 65% undisturbed habitat within the NT1 range, and achieve or maintain a perpetual supply of large (>500 km²) patches of suitable habitat within each regional portion of the NT1 range. Range plans will strive to reduce habitat disturbance in the southern portion of the range over time, to avoid range recession.

Compliance: Range plans are designed to enable GNWT to demonstrate compliance with the federal *SARA*, namely the ability of the range plans to provide **effective protection of critical habitat** for boreal caribou. A clear demonstration of compliance will minimize the risk of a federal protection order being imposed.

Development: While the primary purpose of range plans is to support caribou conservation and compliance with the federal *SARA*, the approach is designed to maximize **flexibility and certainty for development**. The key factors are the degree of restriction on development (e.g. area available and conditions applied) and the certainty provided by the regulatory regime to proponents.

Regional Equity: A key consideration in the development of the approach to range planning is the need for **equitable distribution of the responsibility for conserving boreal caribou habitat** among regions. While there is no universal definition of equity, the range plan approach is designed to avoid concentrating development constraints in any one region and to take into account region-specific opportunities and constraints (e.g. fire

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[www.registrelep-](http://www.registrelep-sararegistry.gc.ca/virtual_sara/files/plans/rs%5Fcaribou%5Fboreal%5Fcaribou%5F0912%5F01%2Epdf)

sararegistry.gc.ca/virtual_sara/files/plans/rs%5Fcaribou%5Fboreal%5Fcaribou%5F0912%5F01%2Epdf

5 www.nwtspicesatrisk.ca/sites/default/files/nwt_boreal_caribou_recovery_strategy_2017_final_0.pdf

6

www.lands.gov.nt.ca/sites/lands/files/resources/land_use_and_sustainability_framework_updated_email.pdf

history, existing levels of disturbance, development forecasts, etc.). Resource revenue sharing among regions may also help to ensure equity during times when there is unequal responsibility for caribou habitat conservation among regions.

Transparency: Range plans are designed to support informed and transparent decision making about development proposals. The key factor is to what degree plan elements provide **clear and consistent guidance** for proponents as well as stakeholders and decision makers reviewing development proposals.

Efficiency and Compatibility: The range planning approach, and the tools used for implementation, are designed to be as efficient and streamlined as possible, with **minimal administrative complexity and burden**. They are intended to work efficiently within the broader integrated resource management system, and to be as compatible as possible with existing NWT plans, policies, and legislative framework. For example, parallel initiatives such as land use planning and conservation network planning⁷ may help to achieve boreal caribou range planning objectives and vice versa.

Adaptability and Learning: The approach to range planning is designed to facilitate **learning and adaptability**, recognizing the potential for new information and changing conditions (climate, fire, etc.) over time. Range plans will contain explicit learning objectives, and will be subject to periodic review.

For Discussion:

- *Do these objectives capture the main interests that need to be considered when developing a Framework for range planning?*
- *What other interests or concerns might need to be addressed?*

4.2. Overview of the proposed approach

The proposed approach to range planning provides a framework for managing the cumulative effects of habitat disturbance on boreal caribou. Range plans will complement the broader NWT boreal caribou recovery strategy which, in addition to recommending range plans, also

The role of Traditional Knowledge (TK) in developing regional range plans.

GNWT envisions a strong role for traditional and local knowledge in the development of regional range plans. In particular, TK will be important to help identify important areas for caribou in need of more protection, monitor caribou population trends, and to help guide and implement monitoring and research priorities at the regional scale.

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www.enr.gov.nt.ca/en/files/healthy-land-healthy-people-gnwt-priorities-advancement-conservation-network-planning-2016

includes recommended actions for managing harvest, research, monitoring and collaborative management.

While developing this proposed Framework, the GNWT explored and refined creative ways to balance the need for compliance with the need to support development opportunities, and to seek equity across regions. Early options considered are briefly summarized in Appendix D.

Key elements of the proposed approach to range planning include:

- **Regional division of the range plan.** The NWT portion of the range is divided into five regional plans, plus a sixth plan for the YT portion of the range.
- **A tiered management framework.** Range plans must demonstrate the measures that will be taken to manage the interaction between human and natural disturbance to maintain an ongoing, dynamic state of a minimum of 65% of the range as undisturbed habitat. The proposed range planning approach is based on a tiered management framework, in which caribou habitat is assigned to different management classes (basic, enhanced and intensive) based on importance of habitat for caribou and range status relative to regional human disturbance thresholds. Areas falling into each of the three management classes will be defined spatially at the regional level, when range plans are developed. Areas in enhanced and intensive management classes will be subject to requirements and conditions with the intent of achieving no net loss of undisturbed habitat due to human activity over time.
- **Regional disturbance management thresholds.** Management thresholds for habitat disturbance in each region are based on region-specific fire history and allowances for human-caused disturbance. This allows range management to be tailored to local conditions, and supports equitable sharing of responsibility among regions. When regional targets are combined, they promote compliance with the 35% disturbance range-wide threshold.
- **Mapping management classes.** Important areas for caribou are identified, described, and mapped, to the extent possible, using existing information, and used alongside region-specific information on existing and proposed land protections, and existing and potential development opportunities to help delineate maps of management classes at the regional scale.
- **Management actions.** Management actions proposed in each management class will address both development activity and fire management. The Framework provides a menu of management actions that may be appropriate within each management class, though decisions about which management actions will be used in specific circumstances will be left to the development of regional range plans.
- **Implementation tools.** The tools (e.g. legal instruments and conservation measures) that will be used to implement the management actions required in each management class will be identified. Powers under the *Wildlife Act*, the *SARA (NWT)*, regulations under the *MVRMA* and conditions imposed by approved land use plans will provide the legal means to implement most management actions.

- **Monitoring and research.** Regional range plans will include a plan for monitoring population and habitat status and trend, as well as a program for addressing key learning objectives. This element is particularly important for the NWT, given the size of the range, the role of fire in shaping disturbance, the uncertainty of climate change, and the potential for growing trade-offs between development and conservation objectives over time. GNWT will be seeking to better understand the key factors driving caribou population trends in NWT, with emphasis on the relationship between habitat disturbance and population status, with a view to being better informed and positioned to develop innovative ways to achieve compliance in the future.
- **Adaptive management and review.** The Framework itself, including approaches to setting thresholds, mapping habitat importance and defining tiered management classes may be adapted in the future as we gather new information, and as conditions change. Traditional and local knowledge, new monitoring data, and ongoing research are likely to yield a better understanding of the relationship between habitat disturbance, caribou behaviour, and population status. Range plans should be responsive to that new information. To encourage this, regional range plans will be reviewed and updated on a pre-determined schedule (10 years, with a five-year midterm review), and triggers to change elements of the range plan will be built in to accommodate changing conditions.

These elements are further described below.

4.3. Regional Division of the Range Plan

The NT1 boreal caribou range extends from the southern border of the NWT into the Inuvialuit region and YT). Given the sheer size of the NT1 range and its overlap with several settled and unsettled land claim regions, GNWT proposes to divide the range plan regionally. Regional boundaries for range plans are shown in Figure 3. Separate plans will be developed for the YT, Inuvialuit, Gwich'in, Sahtú, Wek'èezhìi portions of the range, and one plan for the Southern NWT. When combined, these regional plans will help meet range-wide requirements under the national *Strategy*. This approach aims to achieve greater administrative simplicity by acknowledging that there are already established land use plans and regional land and water boards that guide land use decisions in settled land claim regions. It allows the range plans to be tailored to the needs and conditions in each region, and also manages for connectivity across the range to avoid range recession.

The portion of the range that overlaps with the Dehcho and South Slave GNWT administrative regions will be combined into one range planning region ("Southern NWT") until land claims in those regions are concluded. Because the portion of the South Slave administrative region that overlaps the NT1 range is small and mostly made up of Wood Buffalo National Park, a separate regional range plan for non-federal lands in the South Slave administrative region would be too small to be meaningful for caribou.

Regional plans can be developed in a phased approach starting with the most heavily disturbed regions. GNWT will propose a memorandum of understanding (MOU) with the YT government to address range planning in the YT portion of the range.

For Discussion:

- *Is the proposed regional division for range plans an appropriate scale for range planning in NWT? Why or why not?*
- *What additional issues or options could be considered?*

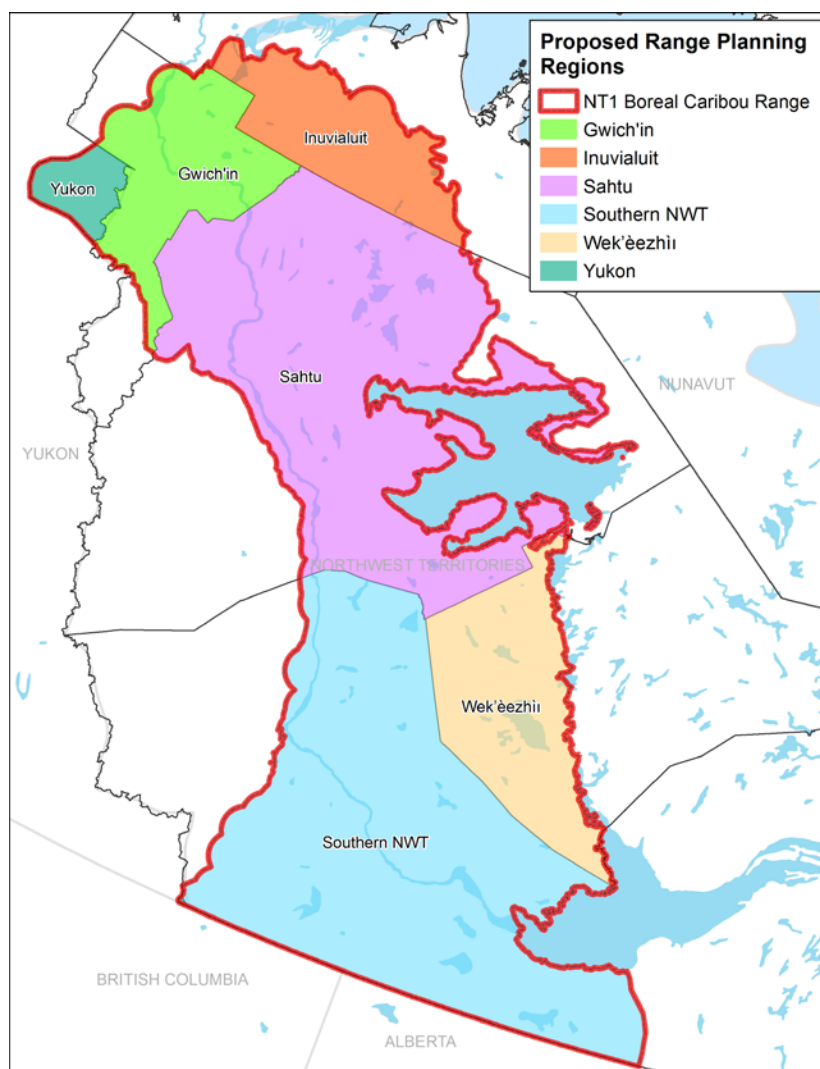


Figure 3. Proposed regional boundaries for development of range plans across the NT1 boreal caribou range.

4.4. A tiered management framework

According to Environment and Climate Change Canada (ECCC), a demonstration of how at least 65% undisturbed habitat in the range will be achieved or maintained over time on the landscape is essential to the range plan. The federal guidance on range planning recommends that range plans indicate which areas make up the 65% that is considered critical habitat. Delineating and designating areas of undisturbed habitat in regional range plans that are considered critical habitat would facilitate the federal government's assessment of whether effective protection is in place on those portions of critical habitat that fall outside federal land. However, this approach does not leave much flexibility for development during times when the range has more than 65% undisturbed habitat, as there would be an expectation that any areas classified as critical habitat in a range plan would be subject to restrictions on development activity. Furthermore, the location of undisturbed habitat will change every year due to new fires and human development, as well as the recovery of past disturbances, making it challenging to continually update and amend range plans to reflect these changes.

Instead, GNWT is proposing a more flexible tiered management framework in which caribou habitat is assigned to three management classes (basic, enhanced and intensive) based on the relative importance of habitat for caribou and range status relative to regional human disturbance thresholds. Disturbance thresholds help ensure that the range-wide 35% threshold is met, while maps of important areas guide decisions about where more stringent management actions should be applied. The processes of setting disturbance thresholds and mapping management classes are laid out in Sections 4.5 and 4.6, respectively.

All of the caribou range (disturbed and undisturbed habitat) will be mapped as high, medium or low importance to caribou, according to the approach outlined in Section 4.6. Maps of important areas and the status of each region relative to disturbance thresholds are then used to guide the delineation of areas falling within each management class, with consideration of other factors such as development interests and existing land protection. Management and development decisions are subject to different requirements and conditions in each class, with the intent that conditions required in the enhanced and intensive classes will improve range condition and achieve no net loss of undisturbed habitat due to human activity over time.

In this proposed Framework, the human disturbance thresholds define which management classes should apply to a region, as shown in Figure 4 below. For example, when a region is in the high-risk threshold for human disturbance, the basic (green), enhanced (yellow) and intensive (orange) management classes would apply. At a general level, the basic management class identifies areas where development proceeds normally, while the enhanced and intensive areas indicate areas where more stringent management actions are required (described in greater detail in Section 4.7 and Appendix C, Section 1).

Human Disturbance Thresholds	Relative Importance of an Area for Boreal Caribou		
	Low	Medium	High
High-risk	Green	Yellow	Orange
Cautionary	Green	Yellow	Yellow
Low-risk	Green	Green	Yellow

Figure 4. Illustration of how disturbance thresholds and relative habitat importance are used to determine basic (green), enhanced (yellow) and intensive (orange) management classes that apply to a given region. The colours in this table match the third map in Figure 6.

Where the management classes get delineated within a region is guided by maps of relative habitat importance for boreal caribou, and other factors such as development interests, existing land protection, etc. In general, the Intensive management classes should be applied to the areas that are of higher importance to caribou, however these other factors may result in redistributing some habitat into different management classes. It is expected that roughly 1/3 of each range planning region will fall into each of the three columns of the table in Figure 4 (low, medium and high importance). For example, for a region that is in the high-risk threshold for human disturbance, 1/3 of the landscape would be included in each of the basic, enhanced and intensive management classes, whereas for a region in the cautionary threshold, 1/3 would be in basic and 2/3 would be in enhanced.

For Discussion:

- *Do you support the idea of a tiered management framework as a means of achieving compliance while allowing flexibility to consider regional needs and priorities? Why or why not?*
- *Should the Framework be more or less prescriptive? Or is it about right? What additional issues or options should be considered?*

4.5. Regional disturbance management thresholds

The federal SARA requires a management threshold of no more than 35% disturbed habitat for the NT1 range as a whole. The two primary forms of disturbance are human development and fire. In order to remain below the 35% disturbance threshold over time, development decisions across the range need to consider both disturbance from human activity and expected net effect of fire (including new disturbance and recovery). Since decision making occurs at the regional level, regional thresholds are a means of meeting the range-wide threshold. This would involve setting disturbance thresholds in each range planning region that would collectively maximize the likelihood that the NT1 range as a whole achieves the 65% undisturbed habitat.

Because some regions would have difficulty maintaining 65% undisturbed habitat just based on fire, regional disturbance targets will vary from region to region based on region-specific conditions (e.g. varying levels of natural disturbance and opportunities for new development).

Currently, there is more undisturbed habitat and larger contiguous patches of undisturbed habitat in the northern part of the range. However, caribou are thought to occur at higher densities in the southern part of the range where there are also higher levels of human and fire disturbance (Figure 2). This means that a large proportion of the NWT boreal caribou population is found in areas where there is a lower likelihood that they can maintain their self-sustaining status due to habitat disturbance. A long-term objective of this range planning framework is to improve the condition of the southern portion of the NT1 range to increase the likelihood of observing stable or increasing population trends in that area.

The intent of the proposed approach is to be responsive to changes in both sources of disturbance while acknowledging that:

- the amount of fire disturbance varies by region, and the management regime should be responsive to those differences,
- though fire is the dominant driver of disturbance, we have much greater control over human-caused disturbance, and
- there is uncertainty about the relative impact of the two sources of disturbance on drivers of caribou population trend.

To achieve this, the GNWT has developed an approach based on three components:

- 1) **Long-term regional maximum total disturbance limits** – these are long-term limits for the maximum amount of total disturbance in each region that account for regional differences in fire history and promote compliance with the *SARA* threshold of 35% disturbance at the range level. They are used to derive the human disturbance thresholds.
- 2) **Human disturbance management thresholds** – Three threshold ranges for human disturbance (low-risk, cautionary and high-risk) are derived for each region that indicate the risk of exceeding the long-term limits. These thresholds define which management classes are used in a given region.
- 3) **Fire disturbance triggers** – If, during regular range plan reviews, a region's 40-year fire footprint is outside of its historic range, an evaluation of whether to intensify or relax the management response will be triggered. This evaluation will be made in consideration of relevant caribou monitoring and science available at the time.

Each of these components is described in detail below.

Long-term Regional Maximum Total Disturbance Limits

Long-term regional limits for total disturbance allow for regional variation in fire footprint and simultaneously promote compliance with the SARA 35% disturbance threshold at the range level. These limits are based on the regional fire history, but also include an allowance for human disturbance. This allowance is based on the difference between the sum of regional amounts of expected fire disturbance (based on each region's median 40-year fire footprint) and the 35% range-wide maximum total disturbance threshold that defines critical habitat. The allowance is divided among regions in proportion to their sizes, and is added to each region's median 40-year fire disturbance footprint. This results in roughly 10% additional room for human disturbance in each region, over and above expected fire disturbance (detailed calculations are provided in Appendix C). It produces a maximum long-term limit of 35% total disturbance across the NT1 range, but some regions have limits that are lower than 35%, and others greater than 35% (Table 1).

Box 2. Legacy disturbance in the Southern NWT.

The proposed approach to calculating regional thresholds for human-caused disturbance leads to the Southern NWT region being classified in the "high-risk" category. However, much of the existing human-caused disturbance is due to legacy seismic exploration. There are many open questions about whether all of these linear features still function as disturbance for caribou, and there are opportunities to accelerate regeneration through active restoration. In addition, a high level of existing and proposed land protection in the region indicates that fewer new areas will need protection than might initially be indicated.

The GNWT is committed to supporting an equitable distribution of development opportunities among regions, and to working with regional implementation partners and stakeholders to ensure that these questions are examined. This includes looking at creative opportunities to accelerate habitat recovery and ensuring that the best possible balance between caribou conservation and economic opportunity is achieved in each region.

Some regions are currently above their long-term total disturbance limit and will need to try and meet it in the next 50 years, other regions are already below the limit and will need to try and remain there over the next 50 years.

Human Disturbance Thresholds to Define Management Tiers

Regional thresholds for human disturbance are set based on the risk of a region exceeding its long-term total disturbance limit, taking into account the expected amount of fire disturbance. Although the annual fire footprint is difficult to control and predict, it is possible to set thresholds for human disturbances that account for the expected range of variation in the 40-year fire disturbance footprints.

To do this, the minimum and maximum 40-year fire footprints (i.e., the total area affected by fires less than 40 years ago) observed in each region is subtracted from each regional long-term total disturbance limit. The difference between the two defines the upper and lower bounds of a "cautionary" range of human disturbance. If human disturbance in each region is maintained within these bounds and fire stays within the same range of variation as observed in the past, the NT1 range as a whole should stay within ~5% of the 35% total disturbance threshold, and there would be a 50% chance that we would meet the long-

term regional targets in any given year. A “low-risk” level for human disturbance is defined as anything below the lower bound of the “cautionary” range, and the “high-risk” threshold is anything above the upper bound of the “cautionary” range.

These thresholds define “high-risk”, “cautionary” and “low-risk” levels of human disturbance that relate to the risk of not meeting the long-term regional limits, and of being out of compliance with the range-wide 35% disturbance threshold. Together with habitat importance (described below), these thresholds define management classes that specify increasingly stringent management oversight.

Fire Disturbance Triggers

The human disturbance thresholds are based on the historical variation in the 40-year fire footprint in each region observed from 1965-2015. But if fire disturbance in a region moves outside this range of variation in the future, a region could be in the low-risk or cautionary range for human disturbance while the total disturbance footprint increases over time because of increased fire disturbance. Therefore, even if human disturbance remained within acceptable levels, there could be an unacceptable risk to the long-term likelihood of regional self-sustainability of boreal caribou.

Table 1. Calculation of upper and lower bounds defining the “cautionary” human disturbance threshold for each region.

Region	Current Total Disturbance (% 2016)	Long-term Maximum Total Disturbance Limits (%)	40-year Fire Footprint %		Human Disturbance - Cautionary Range %		Current Human Disturbance (%)
			Min	Max	Lower (LT Target – Max.)	Upper (LT Target – Min.)	
Inuvialuit	2.8	12	1	3	9	11	1.3
Gwich'in	30.8	36	26	30	6	11	6.9
Sahtú	23.0	30	19	22	8	11	6.9
Southern NWT	50.5	41	30	38	3	11	16.1
Wek'èezhii	43.0	45	33	45	3*	12	0.8
YT	22.2	36	21	26	10	15	4.4
NT1	34.4	35	24	28	7	11	9.1

* Because the range of 40-year fire footprints in the Wek'èezhii region is highly skewed (the median is quite close to the minimum value) there would be little room for human disturbance when the fire footprint is at its maximum, which results in the lower end of the cautionary range works being close to zero. As there will always be some permanent human disturbance footprint within the Wek'èezhii portion of the range, and there is likely a desire for further development, the lower end of the cautionary range for the Wek'èezhii region was set to 3%, to be consistent with the Southern NWT region in Table 1.

If, after the first five years of implementation of a regional range plan, regional fire disturbance is observed to fall outside of the historical range of variation, this would trigger a decision point where regional land and caribou managers evaluate whether to intensify management response in consideration of recent caribou trend data, regional-scale risk to caribou, and projected habitat recovery, and recent research. In this way, the management framework is intended to reflect an adaptive management approach to understanding the

role that fire plays in caribou habitat use. Based on what is learned between range plan cycles, the approach to responding to fire can be adjusted over time.

If, after the first 10 years of the implementation of a regional range plan, regional fire disturbance falls outside of the historical range of variation, the regional long-term targets and thresholds for human disturbance will be re-evaluated and adjusted if necessary. If there is evidence that fire disturbance is increasing across all regions after the first 10-year range planning periods are completed, then the range planning framework, the long-term targets, and the human disturbance thresholds may need to be re-evaluated and adjusted, or increased fire management may need to be contemplated to compensate for further human disturbance.

For Discussion:

- *Are there other important considerations for promoting an equitable distribution of development opportunity and responsibility for caribou conservation across regions?*
- *Do you support the proposed concept of defining regional disturbance thresholds for human activities that account for fire? Why or why not? If not, what other issues or options for achieving compliance with the 65% undisturbed habitat management threshold should be considered?*
- *Do you think the approach should be more or less conservative with respect to managing habitat disturbance? Or is it about right? Why? What other issues or options should be considered?*
- *Do you support the approach to dealing with fire? Why or why not? Are there other issues or options that should be considered?*

4.6. Mapping management classes

The regional human disturbance status compared to regional disturbance thresholds determines which management classes are needed in a region, and how much of the landscape should be in each class (Figure 4). The next step is to spatially define the areas falling into each of the management classes, which will be done during the development of regional range plans, in consideration of regional opportunities, constraints, and values. Areas that are important to caribou will be integrated with regional-scale information on existing land protections and development potential (Figure 5).

At the regional scale, traditional and local knowledge will be a key input to helping to delineate management classes that recognize ecologically important areas in need of more stringent management to ensure the persistence of caribou.

Classifying Important Areas for Caribou

The relative importance of all areas in the range for boreal caribou (disturbed and undisturbed) will be identified, described, and mapped for each regional range plan. These maps will be based on both local and traditional knowledge (TK) gathered at community meetings throughout each region, and on approaches based on western science. Higher importance areas should reflect those areas that currently provide the biophysical

attributes required by caribou, or which will provide them in the future. Two approaches to mapping important areas are being evaluated, and are described in greater detail in Appendix C, Section 2.

The first approach combines multiple lines of evidence using a subjective scoring system to rank different areas of the range as high, medium or low importance. It attempts to integrate information from local and TK and western science-based information into a single map depicting relative habitat importance, based on the following factors:

1. Areas identified as being important based on community input.
2. Undisturbed patch size, because boreal caribou do better when they have access to large (e.g. >500 km²) patches of undisturbed habitat⁸.
3. Known use based on information from collared female boreal caribou.
4. Seasonal selections of land cover types, to address the biophysical features required by boreal caribou to carry out life processes.

The second approach would use separate but complementary maps of habitat importance based on local/TK and western science. Maps of relative habitat importance would be produced based on resource selection function (RSF) models that use collar data from monitoring programs to estimate the likelihood boreal caribou will select different areas of the range based on a combination of habitat attributes such as land cover type, time since fire, human disturbance footprint and other topographic variables. Maps of important areas based on community input will be used as a separate and distinct line of evidence.

Regional-scale Factors

The delineation of management classes will also take into account regional scale information including existing and proposed land protection, resource rights and land tenure, permitted or proposed development activities, and future development potential (Figure 5).

Figure 6 provides an illustration of how human disturbance thresholds and relative habitat importance maps could translate into a map of management class areas, using the Southern NWT planning region as an example. The proposed Framework lays out expectations about the proportion of the landscape that is assigned to each management class for each disturbance level. In this example, one third of the Southern NWT planning region would be included in each of the basic, enhanced and intensive management classes. The delineation of specific areas assigned to different classes, however, will be based on both technical judgments and value-based trade-offs reflective of regional conditions and input from regional stakeholders. Making these choices will require careful consideration of the trade-offs between development opportunity and compliance with *SARA* and caribou conservation.

⁸ Nagy, J.A.S. 2011. Use of space by caribou in northern Canada. Ph.D. dissertation, University of Alberta, Edmonton, AB, Canada. 184pp.

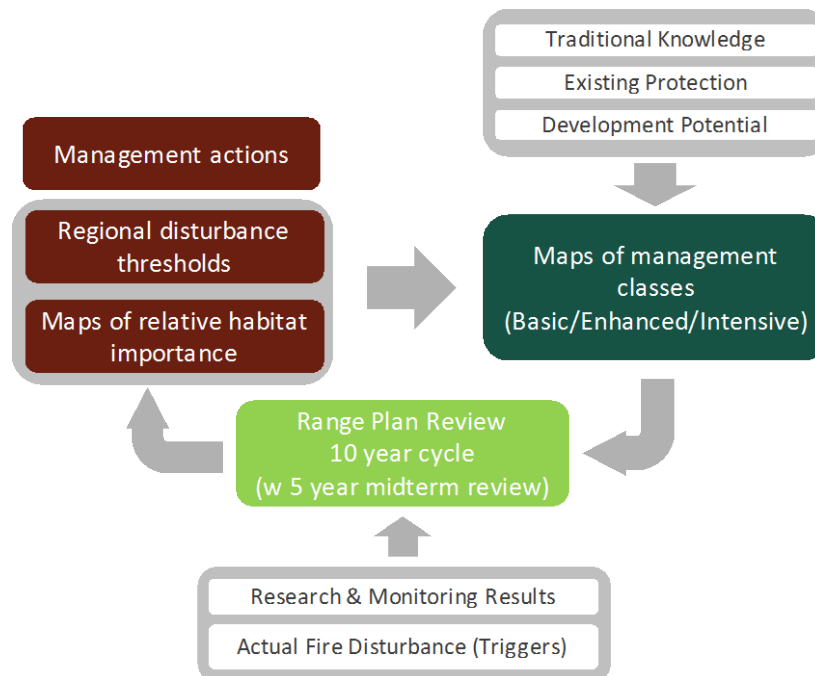
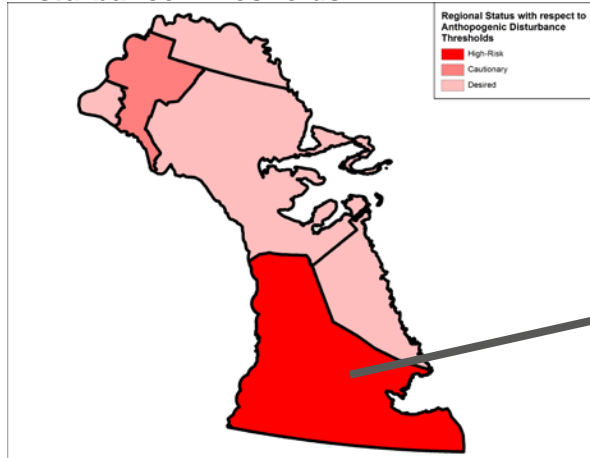


Figure 5. Maps of management classes will be informed by disturbance thresholds and habitat importance, as well as land protection and development interests; results from research and monitoring will be used to update range plans periodically, and actual fire disturbance may trigger changes in management action.

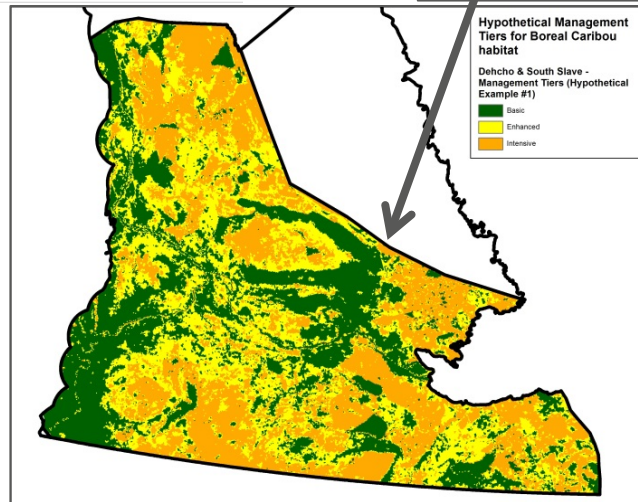
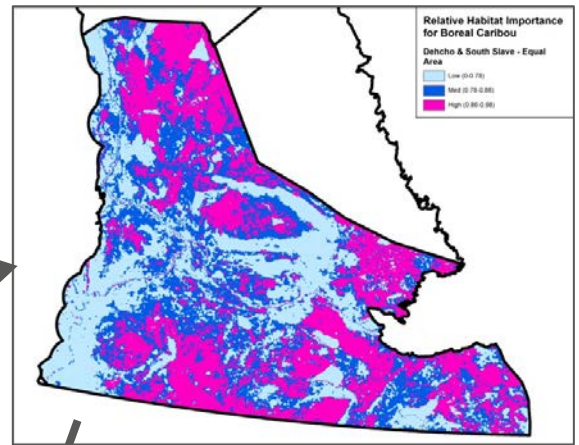
For Discussion:

- *Are there other considerations for delineating management classes that should be considered?*
- *What considerations or controls could help to ensure a broadly supported balance between protecting caribou and supporting regional development interests?*
- *What are the important considerations for accountability and transparency?*

Regional Status with Respect to Disturbance Thresholds



Hypothetical Map of Relative Habitat Importance



Hypothetical Map of Management Class Areas
(to be refined in consideration of locally-relevant data)

Figure 6. Illustration of how regional human disturbance thresholds and maps of relative habitat importance could be used to define management class areas under a tiered management framework. The map of management class areas would be revised based on regional-scale maps of existing protection and development potential. This example uses the Southern NWT portion of the range, which would fall into the high-risk human disturbance threshold. The hypothetical map of relative habitat importance matches the example explained in Appendix C.2 (Figure C11). The colours on the third map match with Table 2.

4.7. Management Actions

Management actions proposed in each management class can apply to both disturbed and undisturbed habitat, and will address both development activity and fire management. **Table 2** outlines high-level tools and approaches, and greater detail is provided in Appendix C, Section 3. Though Table 2 and Appendix C provide a menu of management actions that may be appropriate within each management class, decisions about which actions would be used in any particular region and any particular location will be left until the development of specific regional range plans.

Table 2. Examples of general management actions within each management class.

Tier	Management Actions
Basic	Development can proceed subject to normal conditions: <ul style="list-style-type: none"> • Encourage use of best practices and guidelines • Fire management as per current GNWT Policy⁹
Enhanced	Ensure no net loss of undisturbed habitat through: <ul style="list-style-type: none"> • Demonstrating that new habitat disturbance is balanced by recovery • Re-use of existing disturbance • Enhanced restoration practices • Offsets for permanent disturbance • Required use of best practices and guidelines • Designate habitat patches as values at risk for fire management; use fuel management treatments
Intensive	Same as enhanced, <u>plus</u> : <ul style="list-style-type: none"> • Higher offsetting ratios • Stricter requirements for re-use of existing disturbance and habitat restoration • Mandatory best practices • Avoid creating new disturbance or, if creating new disturbance cannot be completely avoided, demonstrate that the disturbance footprint is minimized • Increased emphasis on designating habitat patches as values at risk for fire management and using fuel management treatments

In the *Basic* management class, highlighted in **green**, development can proceed subject to **normal conditions**, and developers are encouraged to follow **best practices** to minimize impacts to caribou habitat. Guidelines detailing these best practices will be updated or developed based on current understanding of caribou habitat use and needs. No additional requirements (beyond those currently specified in typical authorizations) will apply to developments. Fire management in this class would follow the existing NWT Forest Fire Management Policy.

In the *Enhanced* class, highlighted in **yellow**, development could proceed under specified conditions to ensure **no net loss** of undisturbed habitat over time, after accounting for

⁹ www.enr.gov.nt.ca/sites/enr/files/documents/53_04_forest_fire_management_policy.pdf

areas recovering from disturbance. This could include requiring the use of currently disturbed areas, demonstration that new habitat disturbance is balanced by natural recovery, enhanced restoration, offsets for new disturbance, and/or making implementation of best practices and guidelines for boreal caribou enforceable. Fire management could include identifying specific areas as values at risk and fuels management.

In the *Intensive* management class, highlighted in **orange**, development could also proceed under specified conditions to ensure **no net loss** of undisturbed habitat over time, after accounting for areas recovering from disturbance, but requirements for the use of existing disturbance feature and, habitat restoration would be stricter, offsetting ratios would be higher, and mandatory best practices. Creating new disturbance should be avoided or, if it cannot be completely avoided, it should be demonstrated that the disturbance footprint is minimized and that new disturbance is balanced by recovery. Fire management actions could be similar to the enhanced management class but more intensive.

Given limited experience with implementing functional and ecological restoration of boreal caribou habitat in the NWT, and the lack of current policy and guidance for requiring, implementing, and monitoring offsets for disturbance, it is proposed that offsetting and restoration measures will be phased in gradually over time. In the initial phase, developers could be required to contribute directly or indirectly to research and development of functional and ecological restoration practices for boreal caribou habitat. Appropriate offsetting ratios will be determined through further research and the development of policies and guidelines related to offsetting.

For Discussion:

- *The Framework proposes a menu of management actions, with specific actions selected/defined at the regional range planning stage (Appendix C, Section 3). Does this strike a good balance between protection and flexibility? Should it be more/less prescriptive? Why?*
- *What other management actions might be appropriate in each class?*
- *The proposed intent is to improve range condition and achieve no net loss of undisturbed habitat in Enhanced and Intensive management classes. Do you support that as a target?*
- *What are the opportunities and challenges for the use of offsets to achieve the goal of no net loss of undisturbed habitat?*

4.8. Implementation Options

4.8.1 Opportunities to Influence Decision Making in the Integrated System

Any instruments proposed for the implementation of range plans will need to work within the existing land and resource co-management system, particularly land claims and the *Mackenzie Valley Resource Management Act (MVRMA)*. Effective implementation of range plans will require policies, guidelines and regulations that can influence land use plans, the issuance of rights, environmental assessment (EA) processes, issuance of authorizations, permits and licences, and other regulatory processes. This can be accomplished in part by utilizing authority for wildlife and habitat management provided under the *Wildlife Act* and *SARA (NWT)*.

Figure 7 shows how range plan implementation will occur through multiple decision-making pathways. Some instruments and pathways will have more influence on land and resource decision-making than others and some will be easier to implement and/or more efficient, but no one instrument alone will be sufficient for full implementation. A multifaceted approach will be required for range plan implementation to ensure clarity, consistency and efficiency for government and industry. Ultimately, many elements of the range plans could be integrated into existing and proposed land use plans to avoid the need for having more than one plan governing land use in each region. Implementation of proposed management actions using the *Wildlife Act* and *SARA (NWT)* could be viewed as an interim solution until integration of range plans with land use plans occurs.

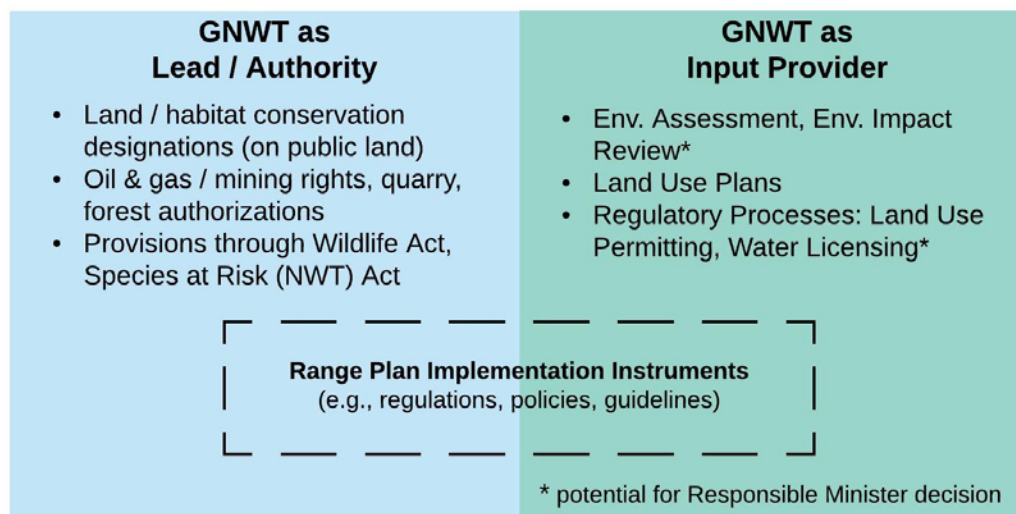


Figure 7: There are a variety of pathways for range plans to influence decisions within the integrated land and resource management system, spanning situations where GNWT is an authority, and where GNWT provides input to multi-party decisions.

4.8.2 Short-listed Instruments for Range Plan Implementation

A total of 18 legislative and policy instruments were assessed against four criteria: effectiveness, ease of implementation, adaptability and clarity. The “effectiveness” criteria

considered whether the instrument would meet the criteria for providing “effective protection” of critical habitat¹⁰. The top ranked options included:

- a GNWT range plan policy to consider range plans in departmental decision making,
- habitat protection, conservation areas, and Wildlife Management and Monitoring Plans under the *Wildlife Act*,
- habitat designations and habitat conservation under the *SARA (NWT)*,
- considering range plans at different entry points into the issuance of oil and gas rights,
- considering protection of important areas under the Forest Fire Management Policy, and under the Forest Management Act,
- Integrating range plans in the development and amendment of Land Use Plans, and
- Federal direction to Land and Water Boards and the Review Board under the *MVRMA*.

It should be noted that federal ministerial policy direction to the land and water boards and the review board under the *MVRMA* would provide direction on how land and water boards and the review board would consider range plans in their decision making processes. Pursuing this instrument would need to be a collaborative initiative with the federal government given that the *MVRMA* is federal legislation.

As no one instrument consistently ranked high against all four criteria, full implementation of range plans can be expected to require a combination of instruments and approaches.

A detailed review of individual tools is documented separately (see Appendix C, Section 4). GNWT continues to work toward a better understanding of specific details of how these policy instruments will be used to implement the management actions broadly outlined in **Table 2**.

For Discussion:

- ***Do you have any input on which legislative or policy instruments are most appropriate? Why?***
- ***What considerations will be important for effective implementation?***

¹⁰ ECCC. 2016. Policy on Critical Habitat Protection on Non-federal Lands [Proposed]. *SARA: Policies and Guidelines Series*. ECCC, Ottawa, ON. 9pp.
www.sararegistry.gc.ca/virtual_sara/files/policies/CH_Protection_NFL_EN.pdf

5. Monitoring, Adaptive Management and Review

Each regional range plan will include a plan for monitoring population and habitat status and trend, as well as a program for addressing key learning objectives. This element is particularly important for the NWT, given the size of the range, the role of fire in shaping disturbance, the uncertainty of climate change, and the potential for growing trade-offs between development and conservation objectives over time. GNWT will be seeking to better understand the key factors driving caribou population trends in the NWT, with emphasis on the relationship between habitat disturbance and population status, with a view to being better informed and positioned to develop innovative ways to achieve compliance and protect caribou in the future. The range planning Framework, including approaches to setting thresholds, mapping habitat importance and defining tiered management classes may also need to be reviewed and adapted in the future as we gather this new information.

A broad list of research and monitoring needs for Boreal Caribou in the NWT have been articulated previously in the NWT Recovery Strategy. Building on these, through the development of this Framework, several high-level questions pertinent to the decisions embedded in this Framework were identified that merit inclusion as priorities for research and adaptive management. Other questions may emerge during engagement and consultation on the Framework and the development of regional range plans. A sample of these questions, together with their relevance to the Framework is given in Table 3.

In addition to identifying important questions to improve the Framework and Range Plans over time, the regional range plans will also identify specific management responses to changes in conditions. Responses to changes to the fire regime were discussed above in Section 4.6, but other triggers such as indicators of population trend may be built into the regional range plans with input from key stakeholders to respond to changes observed through monitoring. Regional range plans may also identify specific circumstances under which exceptions to management actions required in each management class may be contemplated, or that might require amendments to the delineation of management classes in advance of the 10-year review cycle. To facilitate consideration of these triggers, a five-year mid-term review is included to allow for adjustment of the plan or management actions if any thresholds or triggers are exceeded.

For Discussion:

- *How can we ensure that range plans are responsive to changes observed through monitoring? Is the proposed timeframe for range plan review and update appropriate?*
- *Are there other factors that should trigger an earlier review or amendment of a regional range plan?*
- *How can we ensure effective use of TK in monitoring and adaptive management?*
- *Are there other key questions that should be included in an adaptive management plan?*

Table 1. High priority research questions and their relevance to the range planning framework.

High Level Questions	Sub-components	Relevance to Range Planning Framework
How does fire disturbance affect boreal caribou habitat use, alternate prey abundance and predation risk, and population trend habitat over time?	<ul style="list-style-type: none"> • Are human disturbance and fire disturbance used/avoided equally? • How long does it take for biophysical attributes of boreal caribou habitat to recover following fire? • Do boreal caribou use unburned residuals within fire perimeters? Do they use low-severity burns? • How does succession affect alternate prey abundance, predator abundance, and predation risk for boreal caribou in the NWT? • Evaluate the use of fuel treatments to reduce fire risk and severity. • Develop a more detailed understanding of fire regimes across the NT1 boreal caribou range. 	<ul style="list-style-type: none"> • Setting of regional disturbance thresholds • How fire disturbance is mapped and measured • Management of fire disturbance
How does human-caused habitat disturbance affect boreal caribou habitat use, predation risk and population trend?	<ul style="list-style-type: none"> • Does the degree of use or avoidance of human-caused disturbance depend on the type of disturbance? • What factors determine the rate of vegetation regeneration on linear features, and what criteria should be used to determine when they are considered restored? • What is the status of regeneration on existing seismic lines within the NWT? • How does these height, density, and composition of vegetation on regenerating seismic lines affect predator movements alternate prey abundance, predator abundance, and predation risk for boreal caribou in the NWT? • How long does it take for biophysical attributes of boreal caribou habitat to recover following other types of disturbance (i.e., from other types of activity than seismic exploration)? • What types of habitat restoration treatments could be applied in the north, how much do they cost, and how effective are they? • How should restoration offsetting ratios be determined? What are 	<ul style="list-style-type: none"> • Development of criteria to determine which types of development contribute to the human disturbance footprint. • Development of criteria to determine when human disturbance can be considered functionally or ecologically restored • Identification of existing disturbance features that can be considered restored • Development of management actions to achieve no net loss or improvement of caribou habitat • Development of an approach to tracking human disturbance within the boreal caribou range • How human disturbance is measured (e.g. different buffer zones for different disturbance types)

	<p>the barriers to implementing offsets?</p> <ul style="list-style-type: none"> • How will maps of human disturbance be tracked and updated? 	
What is the sub-population structure of boreal caribou within the NT1 range?	<ul style="list-style-type: none"> • Should the NT1 range be considered as one continuous population or is there evidence of smaller relatively distinct location populations within the range? • What are the major barriers to dispersal and gene flow? 	<ul style="list-style-type: none"> • Adapting regional range planning boundaries based on sub-population structure
How will climate change impact boreal caribou habitat?	<ul style="list-style-type: none"> • How will permafrost degradation affect boreal caribou habitat and to what extent? • How will fire regimes (extent, severity and return interval) change under climate change? 	<ul style="list-style-type: none"> • Forecasting future disturbance levels • Setting regional disturbance thresholds and management triggers

Regional range plans will be reviewed and updated every 10 years with a five-year midterm review (as discussed above), which will provide an opportunity to incorporate new information about these relationships as it is developed. Each regional range plan will include:

- Plans for monitoring the status and trend of caribou population and habitat. It should be noted that some regions do not currently have ongoing boreal caribou population monitoring programs;
- A plan for monitoring the effectiveness of policy/management actions: Are management actions being implemented and are they effective? Are the thresholds triggering increased management oversight appropriately?
- Plans for addressing “big questions” that will be important for refining range plans over time (e.g. about the relationship between disturbance and population trajectory) along with specific research questions (e.g. about caribou use of burned areas).
- A process for periodic range plan review, and identification of events or conditions that would trigger for earlier review.

6. Developing regional range plans

While the Framework lies out the structure for what regional range plans will consider, the process of developing the range plans themselves will require input from co-management partners, key stakeholders, and affected Indigenous governments. TK will be a key source of information for developing these plans, as they will rely on local context and local information to a large degree, particularly in developing maps of management classes.

To document this local context and provide a clear and transparent rationale for range plan decisions at the regional scale, each regional range plan will include the following sections¹¹:

- Local Population Status
- Current Habitat Condition
- Important Areas
- Regional Thresholds
- Management Framework
- Management Classes
- Specific Management Actions
- Implementation Instruments
- Forecasts of Future Habitat
- Monitoring, Adaptive Management and Review

The GNWT currently envisions engaging on the draft Framework through spring, and summer of 2018, and finalizing the Framework in fall 2018. Engagement for the development of regional range plans will start in winter 2019 in the most heavily disturbed regions to address where caribou are at greatest risks of declines first. Although the timelines to complete all regional range plans are long, GNWT believes there is currently little risk to caribou in the northern portion of the range and that extensive new disturbance from development activity in the regions in the near future is unlikely (Figure 7).

Steps	2018	2019	2020	2021	2022
Range Planning Framework Engagement and Finalization					
Southern NWT Range Plan					
Wek'èezhii Range Plan					
Sahtú Range Plan					
Gwich'in Range Plan					
Inuvialuit Range Plan					
YT Range Plan		Timeline TBD by the YT government			

¹¹ Adapted from: ECCC. 2016. Range Plan Guidance for Woodland Caribou, Boreal Population. www.sararegistry.gc.ca/document/default_e.cfm?documentID=2993

Figure 7. Timeline for the Boreal Caribou range planning framework and regional range plans.

<i>For Discussion:</i>
<ul style="list-style-type: none">• <i>What input do you have on the proposed sequencing of regional range plans as proposed? Is it appropriate to start in those areas where caribou are assumed to be most at risk?</i>

7. Approach to engagement and consultation

Engagement on this draft range planning Framework will occur prior to engagement on regional range plans, and will involve affected parties in all regions (Figure 8). The GNWT currently envisions three streams of engagement and consultation, each with different goals, as described below. Feedback on the draft Framework will be collated into a “What We Heard” document which will be used to inform the final Framework. Separate engagement strategies will be developed for the individual range plans, which will be focused on region-specific issues and parties.

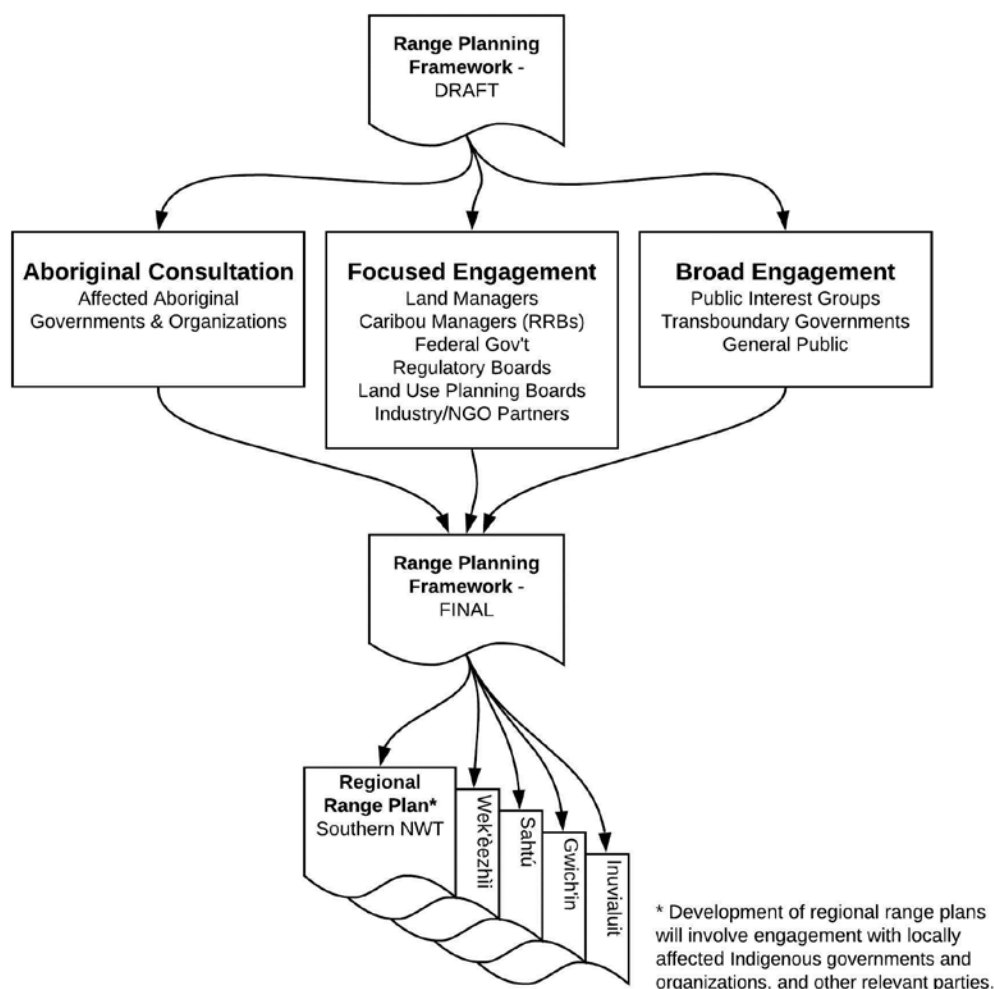


Figure 8. Engagement and consultation on the range planning framework.

7.1. Focused engagement

This engagement stream is for those parties that need to support and/or implement the Framework and regional range plans for them to be successful; they have decision making authority, must approve the range plans or are otherwise essential to success. Accordingly, this stream involves the establishment of multi-party working group that will meet three times, with the goal of seeking consensus on a recommended approach. Membership of this working group is expected to include affected land and caribou management authorities (Tłıcho Government, Gwich'in Tribal Council, Sahtú Secretariat Incorporated, Inuvialuit Regional Corporation, GNWT, Kátł'odeeche First Nation, Indigenous and Northern Affairs Canada, Parks Canada, ECCC, Gwich'in Renewable Resources Board (RRB), Sahtú RRB, Wek'èezhìi RRB, Wildlife Management Advisory Council (NWT)), regulatory and land use planning boards, and the proposed Dehcho/South Slave Boreal Caribou Working Group. In addition, key industry and non-governmental organizations (e.g. Chamber of Mines, Canadian Association of Petroleum Producers, Canadian Parks and Wilderness Society – NWT chapter) may be invited to participate.

7.2. Broad engagement

This stream addresses the need for broader public input, and involves presenting the proposed approach in a range of forums (e.g. open houses, stakeholder or industry group meetings, board meetings, etc.), posting the Framework document online, inviting public comment and soliciting input. The goal for these meetings is not consensus but meaningful and informed input. This stream includes public and industry interest groups, and transboundary governments (e.g. YT, AB and BC).

7.3. Consultation

Where a boreal caribou management action could potentially infringe on an asserted or existing Aboriginal or treaty right, the GNWT has an obligation to consult under Section 35 of the *Constitution Act*. GNWT will consult with the applicable parties according to established protocols. This consultation will be narrowly focused on issues related to potential adverse effects on rights resulting from implementation of the Framework.