BATHURST CARIBOU
RANGE PLAN

PLAN POUR L'AIRE DE RÉPARTITION DES
CARIBOUS DE BATHURST

Le présent document contient la traduction française du résumé et le message du ministre

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The Project Team was led by Karin Clark (Government of the Northwest Territories) and included Dan Ohlson (Compass Resource Management), John Nishi (EcoBorealis Consulting), Natasha Thorpe (Trailmark Systems/Thorpe Consulting Services), Shawn Francis (FSR Consulting; to 2017) and, in the later stages, Andrea Patenaude (Government of the Northwest Territories).

Disclaimer

The Bathurst Caribou Range Plan is a living document released for the purposes of guiding and supporting land use, regulatory and wildlife management decision-making processes in support of recovery of the Bathurst caribou herd.

Traditional knowledge shared throughout this document has been integrated from publicly available reports or provided exclusively for use in the BCRP process in keeping with the terms stated by participating groups. Knowledge of Indigenous peoples is intellectual property and is protected by international intellectual property rights of Indigenous peoples such as the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP). As such, Indigenous peoples reserve the right to use and make public parts of their traditional knowledge as they deem appropriate from time to time. Use of this traditional knowledge by any other party does not infer comprehensive understanding of the knowledge, nor does it infer implicit support for activities or projects in which this knowledge is used in print, visual, electronic or other media.

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Message from the Minister

Caribou are a central part of the life and landscape of the Northwest Territories (NWT) and are fundamental to the culture, values and identity of the Indigenous people of this region. This profound and enduring relationship shapes the way we manage our caribou herds and guided the development of this range plan.

In recent years, our caribou populations have experienced significant declines. Over the last 30 years, the Bathurst herd has dropped by more than 98 per cent despite extensive efforts to support caribou conservation and promote herd recovery.

The Government of the Northwest Territories (GNWT) has a responsibility to manage and protect land and wildlife in the NWT in a way that helps ensure the persistence of healthy caribou populations for future generations of northerners. Together with our partners, we work within our established co-management and regulatory system to manage wildlife, the environment and development.

The Bathurst Caribou Range Plan will help decision-makers manage activities on the land in a way that supports the recovery of the Bathurst herd, while providing clarity on land use and access for developers, regulators and residents of the NWT. Establishing certainty with respect to land use and access is critical to achieving our conservation and development goals, and contributes to a strong and prosperous territory.

The Bathurst Caribou Range Plan reflects more than five years of collaboration and partnership with 21 governments and stakeholders that incorporates both traditional and scientific knowledge in its approach.

The factors affecting caribou are complex and varied, and protecting the Bathurst herd will require the commitment and action of all partners, including the GNWT, Indigenous governments and organizations, the Government of Canada, the Government of Nunavut, regulatory boards, industry and non-governmental organizations.

I am confident the Bathurst Caribou Range Plan provides effective tools and approaches to support caribou conservation and recovery, and I look forward to the cooperation and support of all our partners and stakeholders to ensure its successful implementation.

Through careful and collaborative management, together we can support our caribou herds through this period of low numbers and help to ensure future generations can enjoy caribou as we have.

Executive Summary

This document describes a Bathurst Caribou Range Plan (BCRP or Range Plan) for the Bathurst barren-ground caribou herd. The Range Plan is based on knowledge sources and perspectives grounded in both traditional knowledge (TK) and science. The Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) sponsored and led the development of the BCRP in response to concerns expressed by northerners as well as recommendations from the Mackenzie Valley Review Board and Wek'èezhìı Renewable Resources Board for government to take a leadership role in managing the cumulative impacts on Bathurst caribou.

The Range Plan aims to balance the diverse interests of all governments, communities and stakeholders across the range in Nunavut, Northwest Territories (NWT) and northern Saskatchewan. Detailed consideration and discussion of ecological, cultural and socio-economic values shaped all recommendations as well as the underlying approach to the Range Plan. The Range Plan is advisory and all recommendations are non-binding.

Barren-ground caribou have been designated as "Threatened" by both the Committee on the Status of Endangered Wildlife in Canada (December 2016) and the NWT Conference of Management Authorities (February 2018). A Range Plan is needed for the Bathurst caribou herd for several key reasons: population levels have declined by 96% since the 1980s, human activities have increased across the range, the climate is changing with associated effects like increased wildfires, and the relationship between people and caribou has fundamentally changed.

The BCRP primarily addresses issues related to cumulative land disturbance across the Bathurst herd annual range, which spans across approximately 390,000 km^2 of the Kitikmeot region in Nunavut, the North and South Slave regions of the NWT and northern Saskatchewan. The stated goal of the plan is to ensure the Bathurst herd annual range is in a resilient landscape condition. There are four supporting objectives:

1. Ensure the integrity of important habitats
2. Ensure connectivity between seasonal ranges
3. Ensure the amount of human-caused land disturbance is kept below certain levels
4. Ensure the development, design and use of roads is managed with consideration to caribou

The BCRP is envisioned as a contributing piece in the broader management planning process for the Bathurst caribou herd. Presently, a Bathurst Caribou Advisory Committee (BCAC) has been established to guide management of the Bathurst caribou herd. The Range Plan will be submitted to the BCAC for consideration and inclusion in an overall management plan.

The range planning process brought together a Working Group made up of representatives from federal, territorial and Indigenous governments and organizations in the NWT, Nunavut and Saskatchewan, as well as industry and non-government organizations. Working roup members represented their organizations' perspectives and interests in discussions and contributed their caribou expertise.

In order to realize the overall Range Plan goal and objectives through an integrated approach grounded in multiple ways of knowing, the BCRP contains the following major components:

1. A **Cumulative Land Disturbance Framework (CLDF)** that provides over-arching landscape-level management benchmarks that identify management tool responses based on the importance of habitat areas and the levels of habitat disturbance.
2. Seven **management tools** intended to mitigate caribou and habitat disturbance:
    1. **Community Guardianship**
    2. **Habitat Conservation**
    3. **Mobile Caribou Conservation Measures**
    4. **Road Planning and Management**
    5. **Offsetting/Compensatory Mechanisms**
    6. **Wildfire and Fuels Management**
    7. **Online Map Staking**

Some of these management tools are already being used, or have been used, to varying degrees in different parts of the Bathurst range; however, some are only applied to individual development projects through existing project review, approval and permitting processes. The Range Plan guides application of the tools in an integrated, coordinated and consistent manner across the entire range to manage disturbance in support of landscape resilience.

The tiered thresholds in the CLDF move from Desirable conditions at low levels of land disturbance through to Cautionary and High Risk conditions at increasingly higher levels of disturbance. Management responses correspondingly progress from basic through enhanced to intensive (see table below). The intention of using tiered thresholds with increasingly stringent management responses is to reduce, and ultimately reverse, the negative trend of land disturbance effects as early as possible. Consequently, in the CLDF, all seven management tools get implemented at the Desirable range status level, and two of the tools (Road Planning/Management and Offsetting/Compensatory Mechanisms) have increased requirements at the Cautionary range status level.

Amount of Disturbance	Status of Range	Management Tools and Response Level
High	**High Risk**	**INTENSIVE MANAGEMENT RESPONSE** Land activities resulting in new disturbance are advised only when active disturbances are minimized, removed or reclaimed such that total disturbance remains below the High Risk threshold.
Moderate	**Cautionary**	**ENHANCED MANAGEMENT RESPONSE (in addition to all recommendations in the BASIC level)** **Increased requirements for:** • **Road Planning and Management –** consider enhanced traffic management and design features. • **Offsetting/Compensatory Mechanisms –** habitat offsets at higher ratio and/or compensatory mechanisms (e.g. financial and in-kind contributions to science and TK research and monitoring, guardianship programs).
Low	**Desirable**	**BASIC MANAGEMENT RESPONSE** **Community Guardianship –** support Indigenous communities to watch (monitor) caribou and habitat conditions and support education regarding respectful harvest practice. **Habitat Conservation** – use legislation to protect the most important habitat areas: water crossings, land bridges, calving areas/post-calving. **Mobile Caribou Conservation Measures** – for land use activities that occur within the centre of habitation, implement Mobile Caribou Conservation Measures (i.e. restrict non-essential project activities when caribou are present) and associated monitoring, compliance and enforcement. **Road Planning and Management** – manage routing, timing of construction, design and consolidation of routes across all users. **Offsetting/Compensatory Mechanisms** – counteract, or make up for, residual impacts on caribou considering: • **Habitat Offsets** – at a minimum 1:1 ratio (restoration, enhancement, preservation), including legacy land disturbance • **Compensatory Mechanisms** – if offsets are not feasible, use financial and in-kind contributions to science and TK research and monitoring, community guardianship programs **Wildfire and Fuels Management** – identify large patches of undisturbed winter range annually for the GNWT wildfire values at risk database that is used to prioritize wildfire response. **Online Map Staking** – use online staking to reduce the potential for caribou disturbance during the early phases of mineral exploration and thus increase caribou well-being through respectful practices.

The Range Plan presents recommendations to advance implementation of the CLDF and management responses for each tool. Successful implementation of the BCRP will require a genuine commitment from governments, industry, organizations, communities and individuals. The plan highlights the opportunity for each of these parties to support implementation. The plan also describes the next steps and priority implementation actions that the GNWT will undertake in the near- and mid-term.

Range Plan recommendations are generally intended to support and influence a variety of land use, regulatory and wildlife management decision-making processes as well as guide community and industry-based initiatives. These include:

1. Land use planning
2. Community guardianship programs
3. Wildlife management recommendations and actions (governments and renewable resources boards)
4. Environmental assessment
5. Regulatory processes
6. Industry protocols and best management practices

Since the Bathurst range spans multiple jurisdictions and implementation success depends on multiple management authorities, important considerations to note include:

- The Range Plan itself is advisory and all recommendations are non-binding.
- Existing land use legal rights are to be respected.
- All management recommendations are subject to the legislated co-management processes that are in place and under development in each jurisdiction.
- While each jurisdiction has several potential legislative tools that could support implementation, the preference is to use flexible tools that support adaptive management as conditions change over time.
- Recommendations should be reviewed every five years to take into consideration the population status of the herd, changes in caribou distribution and range use, and other socio-economic and community factors.

Finally, an adaptive management framework for the Range Plan is included that provides a link between a) annual activities focused on tracking and assessing disturbance levels and range use, and b) longer term activities that occur at 5-year intervals that comprise an approach to regular assessment, review and renewal of Range Plan components.

Message du ministre

Le caribou est un élément central de la vie et du paysage des Territoires du Nord-Ouest (TNO), et joue un rôle fondamental dans la culture, les valeurs et l'identité des peuples autochtones de la région. Cette relation profonde et durable détermine la façon dont nous gérons nos hardes de caribous et a guidé le développement du plan pour l'aire de répartition du caribou.

Ces dernières années, nos populations de caribous ont connu un déclin important. Au cours des 30 dernières années, la population de la harde de Bathurst a diminué de plus de 98 %, malgré les efforts considérables déployés pour soutenir la conservation du caribou et promouvoir le rétablissement de la harde.

Le GTNO a la responsabilité de partager, d'utiliser et de protéger la terre et la faune de manière à assurer la pérennité des populations saines de caribous pour les générations futures de Ténois. En collaboration avec nos partenaires, nous travaillons dans le cadre de notre système de cogestion et de réglementation mis en place pour gérer les espèces sauvages, l'environnement et le développement.

Le plan pour l'aire de répartition du caribou de Bathurst est le fruit de plus de cinq ans de collaboration et de partenariats avec 21 gouvernements et intervenants, qui intègre dans son approche des connaissances traditionnelles et scientifiques.

Le plan pour l'aire de répartition des caribous de Bathurst aidera les décideurs à gérer les activités sur le terrain et à soutenir le rétablissement de cette harde, tout en clarifiant les critères d'accès aux terres et leur utilisation auprès des promoteurs, des régulateurs et des résidents des TNO. Il est essentiel d'établir clairement la façon dont on pourra désormais accéder aux terres et les utiliser si nous voulons atteindre nos objectifs de conservation et de développement et contribuer à la création d'un territoire fort et prospère.

Les facteurs qui affectent le caribou sont complexes et variés et la protection de la harde de Bathurst exigera l'engagement et la participation de tous les partenaires, notamment le GTNO, les gouvernements et les organisations autochtones, le gouvernement du Canada, le gouvernement du Nunavut, les conseils de réglementation, les acteurs de l'industrie et les organisations non gouvernementales.

Je suis convaincu que le plan pour l'aire de répartition du caribou de Bathurst fournit des outils et des approches efficaces pour soutenir la conservation et le rétablissement du caribou, et je compte sur la coopération et le soutien de tous nos partenaires et des parties prenantes pour garantir la réussite de sa mise en œuvre.

Grâce à une gestion prudente et collaborative, nous pouvons soutenir nos hardes de caribous pendant cette période de déclin de leur population et faire en sorte que les générations futures puissent jouir du caribou comme nous l'avons fait.

Résumé

Le présent document décrit le Plan pour l'aire de répartition des caribous de Bathurst (PARCB ou Plan pour l'aire de répartition) visant la harde de caribous de la toundra de Bathurst. Le Plan est fondé sur des connaissances et des perspectives reposant à la fois sur le savoir traditionnel et la science. Le ministère de l'Environnement et des Ressources naturelles du gouvernement des Territoires du Nord-Ouest (GTNO) a parrainé et dirigé l'élaboration du PARCB en réponse aux préoccupations exprimées par les Ténois ainsi qu'aux recommandations formulées par l'Office d'examen des répercussions environnementales de la vallée du Mackenzie et de l'Office des ressources renouvelables du Wek'èezhìı pour que le gouvernement assume un rôle de premier plan dans la gestion des effets cumulatifs sur le caribou de Bathurst.

Le Plan pour l'aire de répartition vise à concilier les divers intérêts des paliers de gouvernements ainsi que des collectivités et des parties prenantes ayant un lien avec l'aire de répartition au Nunavut, aux Territoires du Nord-Ouest (TNO) et dans le nord de la Saskatchewan. Toutes les recommandations ont été formulées après la prise en considération et l'examen des valeurs écologiques, culturelles et socio-économiques en jeu, ainsi que de l'approche sous-jacente au Plan. Le Plan pour l'aire de répartition est consultatif et ne contient aucune recommandation contraignante.

Le caribou de la toundra a été désigné en tant qu'espèce « menacée » par le Comité sur la situation des espèces en péril au Canada (décembre 2016) et par la Conférence des autorités de gestion des Territoires du Nord-Ouest (février 2018). La harde de caribous de Bathurst a besoin d'un Plan pour l'aire de répartition pour plusieurs raisons fondamentales : la population a diminué de 96 % depuis les années 1980, l'activité humaine est plus intense dans l'aire de répartition, le climat est en train de changer et ses effets connexes, comme les feux de forêt, ont profondément modifié les relations entre les humains et le caribou.

Le PARCB aborde principalement le problème des perturbations cumulatives du territoire dans l'aire de répartition annuelle de la harde de Bathurst, qui couvre environ 390 000 km2 dans la région de Kitikmeot, au Nunavut, dans les régions du Slave Nord et Sud, aux TNO, et dans le nord de la Saskatchewan. Le but avoué du Plan est de faire en sorte que l'aire de répartition annuelle de la harde de Bathurst se trouve dans un paysage en bonne santé. Quatre objectifs ont été établis à cet égard, à savoir :

1. assurer l'intégrité des habitats importants
2. assurer la connectivité entre les aires de répartition saisonnières
3. faire en sorte que les perturbations d'origine anthropiques soient maintenues en dessous de certains niveaux
4. faire en sorte que l'aménagement, la conception et l'utilisation des routes soient gérés en tenant compte du caribou

Le PARCB est considéré comme un élément qui contribue au processus plus large de planification de la gestion de la harde de caribous de Bathurst. Le comité consultatif sur le caribou de Bathurst (CCCB) a été établi pour encadrer la gestion de la harde. Le Plan pour l'aire de répartition sera soumis au CCCB pour examen et inclusion dans un plan de gestion global.

Un groupe de travail composé de représentants des gouvernements fédéral, territoriaux et autochtones, de l'industrie ainsi que des organismes autochtones et non gouvernementaux des Territoires du Nord-Ouest, du Nunavut et de la Saskatchewan a été mis sur pied dans le cadre du processus de planification pour l'aire de

répartition. Les membres de ce groupe de travail ont fait valoir le point de vue et les intérêts de l'organisme qu'ils représentaient dans les discussions et ont apporté leur expertise sur le caribou.

L'approche intégrée choisie pour atteindre le but et les objectifs du Plan pour l'aire de répartition est fondée sur de multiples sources d'information. Elle implique qu'on dote le PARCB des éléments suivants :

1. Un **cadre de gestion des perturbations cumulatives du territoire (CGPCT)** fixant des repères généraux à l'échelle du paysage qui permettent de choisir les interventions à mettre en œuvre en fonction de l'importance de l'habitat et de son degré de perturbation.
2. Sept **outils de gestion** destinés à atténuer l'effet des perturbations sur le caribou et l'habitat :
    1. **Tutelle communautaire**
    2. **Conservation de l'habitat**
    3. **Mesures ponctuelles de conservation du caribou**
    4. **Gestion et planification des routes**
    5. **Protection et restauration, et mécanismes de compensation**
    6. **Gestion des feux de forêt et des matériaux combustibles**
    7. **Jalonnement en ligne**

Certains de ces outils de gestion sont déjà utilisés ou ont été utilisés à des degrés divers dans différentes parties de l'aire de répartition du caribou de Bathurst. Cependant, certains ne sont appliqués à des projets d'aménagement particuliers que par le biais des processus d'examen, d'approbation et d'autorisation des projets. Le Plan pour l'aire de répartition encadre l'application des outils d'une manière intégrée, coordonnée et cohérente dans l'ensemble de l'aire de répartition afin de gérer les perturbations et de favoriser la bonne santé du paysage.

Les seuils progressifs établis dans le CGPCT vont de l'état idéal avec faible degré de perturbation du territoire à l'état vulnérable, puis à l'état menacé associé à des degrés de perturbation de plus en plus élevés. Les interventions progressent en conséquence, de la plus simple à la plus intensive, en passant par les interventions améliorées (voir le tableau ci-dessous). L'utilisation de seuils progressifs impliquant des interventions de plus en plus importantes a pour but de réduire et, idéalement, d'inverser la tendance négative des effets de la perturbation du territoire le plus tôt possible. Les sept outils de gestion du CGPCT sont ainsi mis en œuvre au niveau de l'état idéal de l'aire de répartition, et deux de ces outils (gestion et planification des routes ainsi que mécanismes de compensation et d'atténuation) sont assortis d'exigences accrues à l'état de vulnérabilité.

Degré de perturbation	État de l'aire de répartition	Outils de gestion et niveau d'intervention
Élevée	**Menacée**	**INTERVENTION INTENSIVE** Les activités terrestres qui occasionnent de nouvelles perturbations ne sont conseillées que lorsque les perturbations actuelles sont réduites au minimum, éliminées ou corrigées de façon que la perturbation totale demeure inférieure au seuil de menace.
Modérée	**Vulnérable**	**INTERVENTION AMÉLIORÉE (en plus de toutes les recommandations du niveau de BASE)** **Exigences accrues pour :** • **la gestion et la planification des routes -** envisager une gestion améliorée de la circulation et des caractéristiques de conception; • **les mécanismes de compensation et d'atténuation –** atténuer la perturbation de l'habitat à un ratio supérieur ou utiliser des mécanismes compensatoires (p. ex. contributions financières et en nature à la recherche scientifique et aux savoirs traditionnels, au suivi, aux programmes de tutelle).
Faible	**Idéale**	**INTERVENTION DE BASE** **Tutelle communautaire –** aider les communautés autochtones à assurer un suivi de l'état du caribou et de l'habitat et à éduquer les gens au sujet des pratiques de chasse respectueuses. **Conservation de l'habitat** – utiliser la loi pour protéger les aires d'habitat les plus importantes : traversées de cours d'eau, ponts terrestres, aires de mise bas et d'après mise bas. **Mesures ponctuelles de conservation du caribou** – pour les activités d'utilisation du territoire qui se déroulent dans le centre de l'habitat, appliquer des mesures mobiles de conservation du caribou (c.-à-d. restreindre les activités non essentielles du projet concerné en présence de caribous) ainsi que les mesures de surveillance, d'assurance de la conformité et d'application de la loi connexes. **Gestion et planification des routes** – gérer les itinéraires, les calendriers de construction, la conception et la consolidation des routes pour tous les utilisateurs. **Mécanismes de compensation et de préservation** – contrecarrer ou compenser les répercussions résiduelles sur le caribou en tenant compte des éléments suivants : • **protection et restauration de l'habitat** – avec un ratio minimum de 1 sur 1 (restauration, mise en valeur, préservation) (inclure les perturbations du territoire héritées du passé) • **mécanismes de compensation** – s'il est impossible de compenser la perturbation de l'habitat, utiliser des contributions financières et en nature pour soutenir la recherche et la surveillance fondées sur la science et le savoir traditionnel ainsi que les programmes de tutelle communautaire **Gestion des feux de forêt et des matériaux combustibles** – recenser chaque année les grandes parcelles d'hivernage non perturbées dans la base de données des biens à protéger contre les feux de forêt du GTNO, qui est utilisée pour hiérarchiser les interventions contre les feux de forêt. **Jalonnement en ligne** – utiliser le jalonnement en ligne pour réduire le risque de perturbation du caribou pendant les premières phases de l'exploration de mines et accroître le bien-être du caribou par la mise en œuvre de pratiques respectueuses.

Le Plan pour l'aire de répartition présente des recommandations qui ont pour but de faire progresser la mise en œuvre du CGPCT et les interventions effectuées avec chaque outil. La réussite de la mise en œuvre du PARCB exige un engagement sincère de la part des gouvernements, du secteur privé, des organisations, des collectivités et de la population. Le Plan met en évidence les possibilités qui s'offrent à chacune de ces parties pour soutenir sa mise en œuvre. Le Plan décrit également les étapes à venir et les mesures prioritaires que le GTNO mettra en place à court et à moyen terme.

Les recommandations figurant dans le Plan pour l'aire de répartition ont en général pour but de soutenir et d'influencer les divers processus décisionnels sur l'utilisation du territoire, la réglementation et la gestion des espèces sauvages ainsi qu'à encadrer les initiatives communautaires et industrielles. Elles impliquent les domaines suivants :

1. l'aménagement du territoire
2. les programmes de tutelle communautaire;
3. les recommandations et les mesures pour la gestion des espèces sauvages (gouvernements et offices des ressources renouvelables);
4. les évaluations environnementales;
5. les processus de réglementation;
6. les protocoles de l'industrie et les pratiques de gestion optimales.

Étant donné que l'aire de répartition du caribou de Bathurst s'étend sur plusieurs provinces et territoires et que la réussite de la mise en œuvre du Plan dépend de plusieurs entités, il convient de noter ce qui suit :

- le Plan pour l'aire de répartition lui-même est de nature consultative et ne contient aucune recommandation contraignante;
- des droits légaux d'utilisation du territoire existent et doivent être respectés;
- toutes les recommandations sur la gestion sont soumises aux processus de cogestion légalisés en place et en cours d'élaboration pour chaque palier de gouvernement;
- chaque palier de gouvernement dispose de plusieurs outils législatifs susceptibles de soutenir la mise en œuvre du plan, mais il est préférable d'utiliser des outils souples qui permettent l'exercice d'une gestion adaptative à mesure que les conditions évoluent;
- les recommandations devraient être revues tous les cinq ans afin que l'on puisse tenir compte de l'état de la harde, des changements dans la répartition du caribou et de son utilisation de l'aire de répartition ainsi que d'autres facteurs socio-économiques et communautaires.

Enfin, le cadre de gestion adaptative pour le Plan pour l'aire de répartition inclus établit un lien entre : a) les activités annuelles axées sur le suivi et l'évaluation des niveaux de perturbation et l'utilisation de l'aire de répartition; b) les activités à plus long terme qui couvrent au moins cinq ans et qui prévoient une évaluation, un examen et un renouvellement périodiques des éléments du Plan.

1 Introduction

This document describes a Bathurst Caribou Range Plan (BCRP or Range Plan) for the Bathurst barren-ground caribou herd. The Range Plan is based on knowledge sources and perspectives grounded in both traditional knowledge (TK)[1] and science. Three supporting documents released by the Working Group provide greater detail on the approach, information and methods used to develop the Range Plan. These documents include information about the people who live with the herd, the caribou herd and its range, and important land use and economic activities occurring within the range:[2]

1. Traditional Knowledge of Caribou and Caribou People
2. Caribou Range Assessment and Technical Information
3. Land Use Scenarios and Economic Considerations

The Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) sponsored and led the development of the BCRP in response to concerns expressed by northerners as well as recommendations from the Mackenzie Valley Review Board (MVRB) and Wek'èezhìı Renewable Resources Board (WRRB) for government to take a leadership role in managing the cumulative impacts on Bathurst caribou.

The Range Plan builds on an Interim Discussion Document released in December 2016[3] and a Draft Plan released January 2018,[4] and considers the many hundreds of written and verbal comments received from communities, industry, governments, Indigenous governments and organizations and other groups.[5] The Range Plan also builds on recommendations and feedback from technical and TK workshops held in June 2017.[6]

The Range Plan aims to balance the diverse interests of all governments, communities and stakeholders across the range in Nunavut, Northwest Territories (NWT) and northern Saskatchewan. Detailed consideration and discussion of ecological, cultural and socio-economic values shaped the recommendations as well as the underlying approach to the Range Plan. The Range Plan is advisory and all recommendations are non-binding.

The Range Plan and supporting documents are available from the GNWT website:
www.enr.gov.nt.ca/en/services/barren-ground-caribou/bathurst-caribou-range-plan

Section 1 introduces the context for the BCRP, describing who was involved and what was considered. Section 2 provides summary information on the Bathurst caribou range. Section 3 describes the range-scale

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[1] Throughout this document and the BCRP process, the term 'traditional knowledge' was adopted to mean what is also termed traditional ecological knowledge, Indigenous knowledge, local knowledge and more, depending on the context. For more about this nomenclature, see Agrawal (1995), Stevenson (1996, 1999) or Houde (2007). In the Range Plan, traditional knowledge or TK is understood to be a holistic term that includes ecological, environmental, social, cultural and spiritual understandings (e.g. Berkes 2008; Legat 2013).
[2] BCRP 2017a; BCRP 2017b; BCRP 2017c.
[3] BCRP 2016a.
[4] BCRP 2018a.
[5] BCRP 2017d; BCRP 2018b.
[6] BCRP 2017e; BCRP 2017f.

management tools, the framework for their application and the overall management recommendations. Adaptive management and monitoring is elaborated upon in Section 4. And finally, implementation considerations are presented in Section 5.

1.1 Background

Barren-ground caribou are defined in local languages and dialects as tuktu (Inuvialuktun, Inuinnaqtun, Inuktitut), ʔekwǫ́ (North Slavey), ʔetthëń (Denesuline) and ekwǫ (Tłı̨chǫ). Caribou are an important part of the sub-arctic ecosystem and a cultural keystone species of critical socio-economic and cultural value for Indigenous communities.[7] They are part of the social-natural landscape and recognized as sentient, intelligent and communicative animals.[8] It is through the practice of respect (following traditional laws and practices around behaviour, harvesting, knowledge accumulation and knowledge transfer) that caribou herds remain abundant and healthy and the relationship between caribou and Indigenous people is maintained.[9]

In some communities, the relationship to caribou is woven together with creation stories (e.g. people were born from the caribou hoof). Many of the oral histories that are passed from one generation to the next are grounded in place and particular kinds of histories of living with caribou. Stories of periods when the caribou did not come[10] are common through the NWT and Nunavut, as are stories about when caribou returned to the people and there was much celebration. These periods of feast/famine, particularly during the early to mid-part of the 20th century, offer lessons about how people can observe and cope with changes in caribou abundance.

[7] Garibaldi 2009; BCRP 2016b; BCRP 2017e.
[8] Legat 2008; Beaulieu 2012; Sangris 2012; Parlee et al. 2013; EMAB 2012; TCS 2014; Trailmark 2015; TRTI 2016a; DNNLC 2016; LKDFN 2016; YKDFN 2016; BCRP 2016b; BCRP 2017e; Parlee 2017.
[9] Parlee et al, 2013.
[10] Parlee and Caine 2018.

Herman Catholique, a Ni Hatni Dene watcher from Łutsel K'e explains,
"We are caribou people you know. That is what they call us."
(in discussion with N. Thorpe, June 6, 2017, BCRP TK Workshop, BCRP 2017e)

In fall time we go live with caribou. The good hunters, there are a lot of people like that. They go anywhere, and they meet caribou right away because the animal knows that this person, the way it will be treated and taking care of it, is why the animals gives itself to him. This is how the Elders were taught. This is the way my culture works in the past. (Joseph Judas, Tłı̨chǫ Elder in BCRP 2016b)

1.1.1 Where is the range planning area?

The Bathurst herd annual range extends across the Tundra and Taiga biomes of Nunavut and the eastern NWT. In previous years, its winter distribution also reached into the boreal forests of northern Saskatchewan. Scientists know the Bathurst herd as a population of migratory barren-ground caribou that traditionally calves near Bathurst Inlet in the Kitikmeot Region (i.e. central Arctic) of Nunavut.[11] While distinguishing herds by name is typically less important to Indigenous peoples, they maintain a very detailed understanding of caribou movements across the landscape, key trails and locations that are important culturally for travelling, camping and harvesting or watching overall caribou health and well-being.[12]

Traditional knowledge tells us that caribou use of the landscape has always been dynamic, at times growing larger or smaller, depending on available food, herd numbers, wildfires, winter snow conditions and the influence of caribou leaders on migratory routes.[13] For example, over the past decades, Inuit have watched the Bathurst herd calving ground shift from the east to the west side of Bathurst Inlet.[14] While recognizing the Bathurst range is always changing, a well-defined area within which the Range Plan would be implemented was required.

The Range Plan has adopted a planning boundary according to the overlapping area based on traditional knowledge as well as the annual range of the Bathurst herd derived from radio collared female caribou from 1996-2014 (as described by Nagy 2011) and modified slightly to account for recent observations (Figure 1). This boundary allows the Range Plan to accommodate herd recovery and growth relative to its current status. The areas used by Bathurst caribou since 1996 are the focus of planning efforts while the range extent, as identified from available TK, provides the context of more varied range use over a much longer time period.

The Range Plan is a living document and the range planning area may be revisited as environmental and land use conditions change.

[11] SARC 2017.
[12] Parlee et al. 2013.
[13] Hall 1989; Thorpe et al. 2001; Legat et al. 2001; Parlee et al. 2005; Wray 2011; Beaulieau 2012; Sangris 2012; Parlee et al. 2013; BCRP 2016b, 2017e; TRTI 2016a; LKDFN 2016; YKDFN 2016; Parlee 2017.
[14] Thorpe et al. 2001; Golder and KAA 2010; KIA 2012; TCS 2014.

FIGURE 1: THE BATHURST CARIBOU RANGE PLANNING AREA AND HISTORICAL RANGE EXTENT AS IDENTIFIED BY TRADITIONAL KNOWLEDGE

1.1.2 Why a range plan?

A range plan is needed for the Bathurst caribou herd for several key reasons: population levels have declined, human activities have increased across the range, the climate is changing with associated effects like increased wildfires and the relationship between people and caribou has fundamentally changed.

Caribou used to be "everywhere and anywhere": while Indigenous people know caribou to cycle in abundance, there has been a recent dramatic decrease in numbers of Bathurst caribou.[15] Community members report fewer caribou than seen in living memory, caribou in poor health and a damaged relationship between people and caribou.[16] Further, as the relationship of respect between people and caribou fundamentally changed, it further influenced caribou numbers, behaviour, movements, migrations and more.[17]

> ***I know, however, that sometimes there would be no caribou in the area. Elders understood this to be a time when the caribou had to go elsewhere to find its food. This was natural earth balance and replenishment and it is all part of Mother Earth's work. But lately the changes that [have] been happening have nothing to do the natural process. There are changes in behavior and movement of the caribou. Compared to the past the caribou has evidently changed.***
> (Denesǫłiné Né Né Land Corporation 2016: 10)

Results of photographic calving ground surveys show the Bathurst herd declined from a peak of more than 450,000 caribou in 1986 to an estimated 8,200 caribou in 2015. This amounts to a decrease of about 98% (Figure 2). This drastic population decline has triggered significant concern for all land users, and speculation as to cause and effect. The supporting Range Plan document *Caribou Range Assessment and Technical Information*[18] provides a summary description of what is known scientifically regarding the natural and human factors affecting Bathurst caribou. One important modelling study highlighted the complex and cumulative effects on herd demographics by demonstrating that the observed population decline could be explained by reduced survival and productivity, with the effect of a constant harvest rate potentially contributing to the recent accelerated decline in adult survival and the population as a whole.[19]

[15] Whaèhdǫǫ̀ Nàowoò Kǫ̀ 2001; Thorpe et al. 2001; Kendrick et al. 2005; Parlee et al. 2005 and 2013; Legat et al. 2008; Beaulieu 2012; Judas 2012; Sangris 2012; Barnaby and Simmons 2013; ACCWM 2014; Trailmark 2015; Wray and Parlee 2013: TCS 2016; Parlee 2017.
[16] Parlee et al. 2013; TCS 2014, 2016; Trailmark 2015; BCRP 2016a, 2017a; TRTI 2016a; 2016b; DNNLC 2016; LKDFN 2016; YKDFN 2016; Parlee 2017.
[17] Kendrick et al. 2005; Parlee et al. 2013; BCRP 2016b; TRTI 2016a; TCS 2016; Parlee 2017.
[18] BCRP 2017b.
[19] Boulanger et al. 2011.

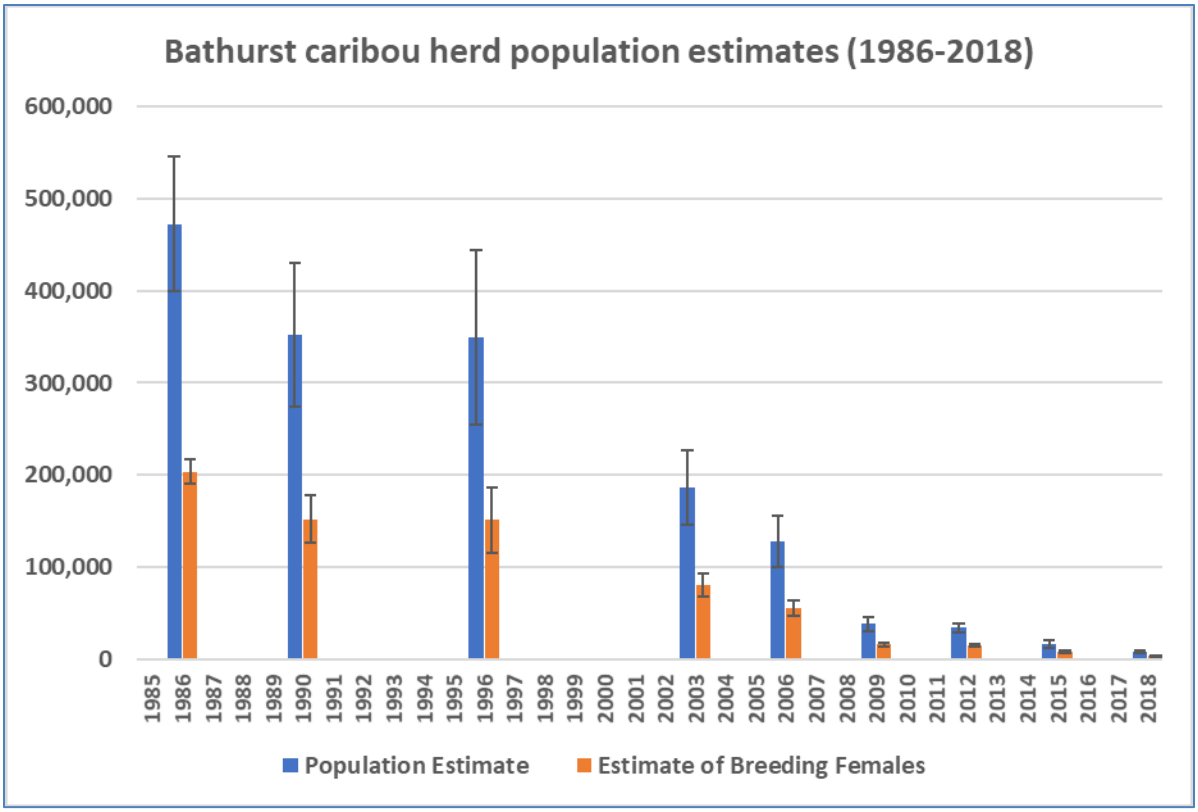


FIGURE 2: ESTIMATES OF BATHURST CARIBOU POPULATION SIZE AND NUMBER OF BREEDING FEMALES FROM 1986 - 2018

As a result of the rapid decline in Bathurst caribou numbers, commercial guide outfitting and resident harvesting in the NWT have been closed since winter 2009. At that time, some Indigenous communities voluntarily reduced harvest, while others participated in a limited harvest despite concerns that halting harvest may harm the relationship between people and caribou as well as overall community well-being.[20] Indigenous hunting on the Bathurst herd has been substantially reduced in recent years and has been effectively closed since winter 2015. A total allowable harvest (TAH) of zero (0) for the Bathurst herd was recommended by the WRRB and accepted by GNWT in spring 2016. Other recommendations included the consideration of predator management.[21] In May 2017, based on the Nunavut Wildlife Management Board decision, the Government of Nunavut (GN) Minister of Environment implemented a TAH of 30 caribou (male only) for the Bathurst herd and supported the development of a community-based management plan referred to as the "Integrated Community Caribou Management Plan."

In light of the decline in the Bathurst and other herds, barren-ground caribou have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (Dec 2016) and the NWT Species at

[20] As Elder Madelaine Drybones explains, Elders have been known to slip into depression and lose their health without caribou, not only because they lack caribou meat in their diet, but also because they miss being with them (BCRP 2016b).
[21] WRRB 2016a.

Risk Committee (SARC) (April 2017) as "Threatened". In February 2018, the NWT Conference of Management Authorities reached consensus on adding barren-ground caribou to the NWT List of Species at Risk. Habitat changes due to climate, predation, industrial development and wildfire were identified as contributing cumulatively to impacts on barren-ground caribou according to both science and traditional knowledge.[22] If accepted for listing under federal legislation (which is expected) there will be legal requirements to develop a recovery strategy and identify and protect critical habitat.

This Range Plan will complement community protocols (based on traditional laws and practices) and combine with current actions, concerns and considerations around harvest restrictions, predator management and habitat disturbance. Further, it will contribute to any future required herd recovery strategies and habitat designations.

1.1.3 What does the Range Plan address?

The purpose of the Range Plan is to manage human-caused and natural (wildfire) disturbance in the Bathurst range and the effects on caribou and caribou habitat. Many factors influence caribou and caribou habitat, including the practice of respect, the status of the relationship between people and caribou, climate change, environmental conditions (and their effect on insects, parasites, wildfire, etc.), predators, harvest and land use (Figure 3).[23] While it is understood that these factors interact in many complex and cumulative ways, analysis undertaken as part of the Range Plan process suggests the incremental effects of land disturbance are important, especially when caribou population levels are low and showing a declining trend such as in recent years.[24]

The Range Plan **primarily addresses issues related to cumulative human land disturbance**. It complements ongoing processes on the management and understanding of cumulative impacts on the herd. Management actions related to harvest are currently in place and actions related to predators are currently being considered through co-management processes with Indigenous governments, and are therefore not addressed in this plan.

[22] SARC 2017.
[23] See supporting documents for further discussion and assessment of the relative importance of these factors that influence the Bathurst herd: BCRP 2017a and BCRP 2017b.
[24] BCRP 2017b.

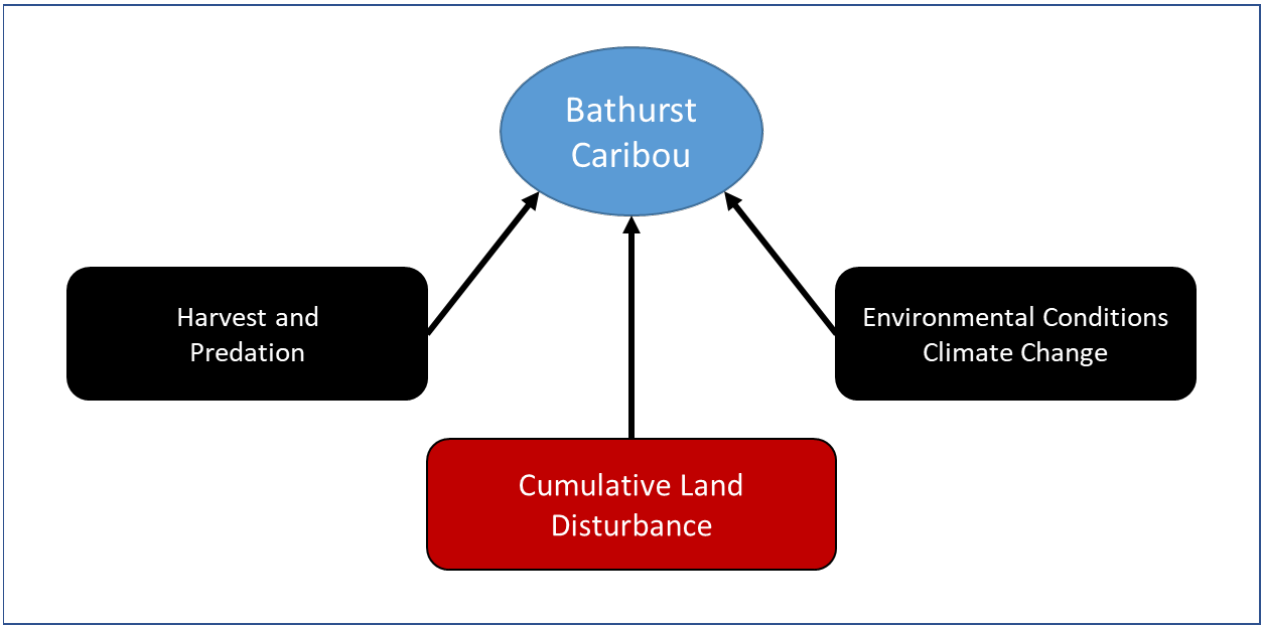


FIGURE 3: THE FOCUS OF THE BATHURST CARIBOU RANGE PLAN (IN RED)

Recognizing the complexities and scope of multiple factors affecting Bathurst caribou and habitat, the recommendations in this document are intended to provide guidance to communities, development proponents and the many land and resource management authorities, including land use planning boards, environmental impact review boards, land and water boards, renewable resources boards and land administrators. The Range Plan aims to provide greater clarity for land use decision-making across the range and to contribute to the maintenance and strengthening of the relationship between people and caribou.

In addition, the recently established Bathurst Caribou Advisory Committee (BCAC), a body set up in partial fulfillment of S.12.11.2 of the Tłı̨chǫ Agreement, will oversee the management of the Bathurst caribou herd. One of its priority actions is to develop a Bathurst caribou management plan, which will address and reconcile all the factors affecting the herd, including harvest, predation, environmental conditions and land disturbance. The Range Plan will be submitted to the BCAC for consideration and inclusion in the overall Management Plan (see Text Box 1 for more).

Finally, the Range Plan provides the context with which to assess cumulative impacts to Bathurst caribou during the project specific review process.[25] Range-scale effects and management strategies are addressed in the Range Plan while project-scale operating practices are dealt with through regulatory review.

[25] ENR 2015.

Text Box 1

How the Range Plan fits into overall Bathurst caribou herd management

The goal of the Bathurst Caribou Range Plan (BCRP) is to maintain the annual range in a resilient landscape condition, which will provide the migratory herd with adequate space and habitat throughout its long-term (i.e. multi-decadal) cyclic pattern of herd size dynamics. In contrast to harvest management actions that may be triggered by observed changes in population size and trend (see Figure 4), range management strategies are not tied to population changes and focus instead on addressing issues tied to cumulative land disturbance and long-term habitat needs of migratory caribou. Therefore, range management strategies should be developed and implemented consistently throughout the entire long-term pattern of caribou population changes (Figure 5).

In this context, the BCRP is envisioned as a contributing piece to the broader management planning process for the Bathurst caribou herd. Presently, a Bathurst Caribou Advisory Committee (BCAC) has been established to prepare a comprehensive proposal for the management of the Bathurst caribou herd. In accordance with the Tłı̨chǫ Agreement, representatives of Indigenous peoples who traditionally hunt Bathurst caribou are participants in BCAC, along with representatives from the Tłı̨chǫ Government and the governments of Canada, Nunavut and the NWT, as well as the WRRB. Due to the current critical status of the herd, the total allowable harvest (TAH) for Bathurst caribou is zero in the NWT and 30 in Nunavut (bulls only). Nevertheless, a key issue for the BCAC is to develop a longer-term rationale for implementing harvest management strategies, such as that described by the UPCART (2017) and illustrated in Figure 4. Given the critical status of the herd and the need to implement a full suite of recovery strategies, predator reduction may also be incorporated into a Bathurst caribou management plan.

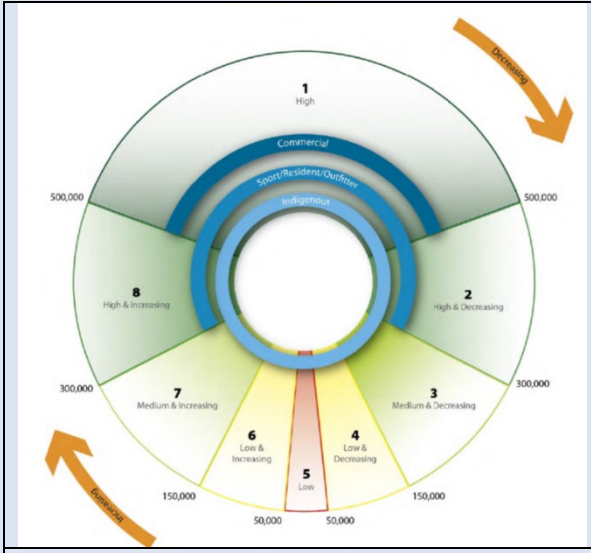


FIGURE 4: CARIBOU WHEEL OF ABUNDANCE SHOWING HERD SIZE DYNAMICS WITH RELATIVE ABUNDANCE, TREND AND THRESHOLDS FOR HARVEST MANAGEMENT (UPCART 2017)

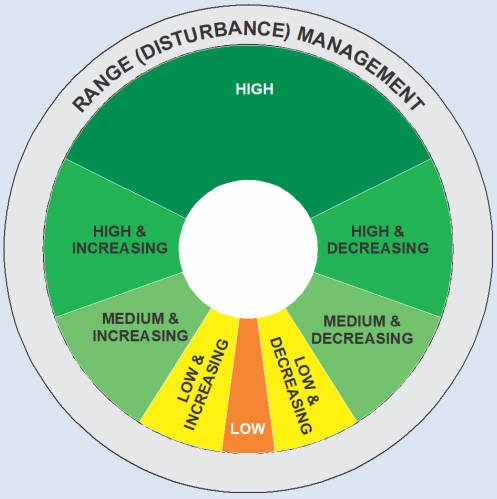


FIGURE 5: CARIBOU RANGE MANAGEMENT STRATEGIES APPLY THROUGHOUT THE LONG-TERM CYCLIC PATTERN OF HERD SIZE DYNAMICS (ADAPTED FROM UPCART 2017)

1.1.4 Who was involved?

Indigenous northerners feel substantial responsibility in their role as caribou guardians, stewards, managers, monitors and more. The range planning process brought together a Bathurst Caribou Range Plan Working Group made up of representatives from federal, territorial and Indigenous governments and organizations in the NWT, Nunavut and Saskatchewan, as well as industry and non-government organizations.[26] Working Group members represented their organizations' perspectives and interests in discussions. However, their participation did not imply their organizations' acceptance of all Range Plan recommendations. Working Group members also contributed their experience and, in most cases, their caribou expertise. Table 1 lists groups that participated in the Working Group and in the development of the Range Plan. The Working Group was supported by a project team of consultants and ENR staff.

In addition, task groups and workshops also contributed to the range planning process. A Minerals Task Group was established to inform the evaluation of management implications to the mineral exploration and development industry. Traditional knowledge holders convened for two separate workshops to provide their expertise and feedback at various stages of the planning process and a technical workshop was held in June 2017 to follow-up on issues identified during the public engagement phase.

TABLE 1: PARTICIPATING MEMBERS OF THE BCRP WORKING GROUP

1. Wek'èezhìı Renewable Resources Board	12. NWT and Nunavut Chamber of Mines – Industry
2. Tłı̨chǫ Government	13. NWT and Nunavut Chamber of Mines – Exploration
3. Łutsel K'e Dene First Nation	14. Government of Nunavut – Environment
4. Yellowknives Dene First Nation	15. GNWT – Department of Lands
5. NWT Métis Nation	16. GNWT – Department of Industry, Tourism and Investment
6. North Slave Métis Alliance	17. GNWT – Department of Environment and Natural Resources
7. Athabasca Denesuline	18. Indigenous and Northern Affairs Canada – Nunavut
8. Kitikmeot Regional Wildlife Board	19. NWT Wildlife Federation
9. Kugluktuk Hunters and Trappers Organization	20. Barren-ground Caribou Outfitters Association
10. Kitikmeot Inuit Association	21. Canadian Parks and Wilderness Society
11. Nunavut Tunngavik Incorporated	

[26] A broader steering committee comprised of governments, Indigenous leaders and industry representatives endorsed and initiated the range planning process in 2014 and provided guidance and input at key points in the process.

1.1.5 How was it developed?

The general approach taken by the BCRP Working Group and Project Team to develop the Range Plan involved four basic steps:

1. Gather information to understand the range (people, land use and caribou)

- Information was gathered on Bathurst caribou and caribou habitat, people and land use through literature reviews, input of Working Group members and other experts, TK submissions from Indigenous governments and organizations, and through TK and caribou science workshops. Indigenous perspectives on caribou were mapped out to inform the BCRP framework and considered together with scientific information (wee Text Box 2 below).
- The amount of current and potential future human-caused land disturbance was estimated by creating a range-wide human development map and future development scenarios.
- Range assessment areas were created to better understand the different parts of the range and to support development of a Cumulative Land Disturbance Framework (see Section 3 below).

2. Understand the major factors affecting caribou

- Traditional knowledge and scientific perspectives on factors affecting caribou were considered and compared. Both similarities and differences in understandings were considered, drawing from each unique perspective.
- A caribou computer model was used to explore how different natural and human factors may affect biophysical elements of caribou populations (i.e. numbers and health). Model simulations focused on the effects of habitat disturbance, but also explored mortality (i.e. predation and harvest) and climate effects. The model did not take into consideration how natural and human factors may affect socio-cultural elements of caribou populations.

3. Identify key issues and management concerns

- Based on the above, key issues were prioritized within the scope of the Range Plan. Some of these were grounded solely in science or TK, whereas others evolved from combining multiple ways of knowing.

4. Explore management options to address those concerns

- The Working Group followed elements of a structured decision-making approach to explore and evaluate management options.[27] The approach involved facilitated discussions and explicit consideration of the sometimes-competing values surrounding caribou, culture, economics, and environment. While sometimes uncomfortable, these conversations were necessary in order to move beyond blame, impatience and frustration and towards a tangible plan forward to address concerns about Bathurst caribou.

[27] See Gregory et al. 2012.

Traditional Knowledge is living, it's today, it's not something that you can pull out of a drawer like scientific knowledge where there is data written down. Traditional knowledge is alive, it's at the moment and every single species is different.
(Arthur Beck in BCRP TK Workshop, March 30, 2016 in BCRP 2016b)

Text Box 2

Traditional knowledge in the BCRP

The BCRP and process that created it set out to equally value both traditional knowledge and western science so they would come from a place of seeing with two eyes[28] and having the strength of two people.[29] Traditional knowledge is a cumulative body of knowledge about ecosystems and peoples' relationships within those ecosystems. We use the term "traditional knowledge" although each Indigenous community and culture-language group may refer to their own knowledge in different ways (e.g. Dene knowledge, knowledge about our way of life, what has always been known, Inuit Qaujimauqtuqangit).[30] Although all best efforts were made, the fact that traditional knowledge is grounded in oral tradition means it is challenging to respectfully represent it in the written format required of the BCRP.

Traditional knowledge derived from a literature review, workshops, meetings, reports and community-based map data – as well as from Working Group members – formed the basis for developing key principles and processes to guide the Range Plan. The Project Team and Working Group used five main pathways to gather traditional knowledge for the plan:

- Working Group meetings
- Literature review;
- Community reports;
- Traditional land use information (e.g. spatial data); and
- Traditional knowledge workshops.

The supporting report entitled *Traditional Knowledge of Caribou and Caribou People* (BCRP 2017a) further details ways in which traditional knowledge has been woven into the Range Plan.

[28] Two-eyed seeing was proposed by Mi'kmaw Elder Albert Marshall in 2004 based on the concept that we are all stronger by using one eye to see Indigenous knowledge and the other eye to see western science. Using each eye independently and then together will ultimately lead to integration. For more on this concept, see: www.integrativescience.ca/Principles/TwoEyedSeeing.
[29] In 1936, the words of Tłı̨chǫ Chief Jimmy Bruneau were famously translated to mean "strong as two people," highlighting the importance of learning both from Tłı̨chǫ culture and traditions as well as the "whiteman" [sic] worldview to thrive in a changing world.
[30] For more about this nomenclature debate, see Agrawal (1995), Stevenson (1996, 1999) or Houde (2007). In the Range Plan, traditional knowledge or TK is understood to be a holistic term that includes ecological, environmental, social, cultural and spiritual understandings (e.g. Berkes 2008; Legat 2013).

1.2 Range of perspectives

It is important to highlight that this plan is a product of the varied perspectives that emerged through the discussions of Working Group members, written comments received through two rounds of public engagement and voices heard at numerous community meetings across the range. Producing this plan was not easy and concessions were made by all participants during its development. In the interest of transparency, Figure 6 presents and summarizes the spectrum of differing perspectives voiced during the planning process.

These differing perspectives emerged during the development of the Range Plan as community input, traditional knowledge and scientific analyses were all brought together. In many cases, information sources were well-aligned and synergistic. In other cases, they were at odds or difficult to fully reconcile. There are different perspectives regarding the status of the range and the influences most affecting Bathurst caribou well-being (Section 2). Although there is broad support in principal for most of the proposed BCRP components and recommendations (Section 3), there is a range of perspectives regarding specific implementation. Detailed input and feedback from participating organizations and external public comments can be reviewed in the "What We Heard" documents.[31]

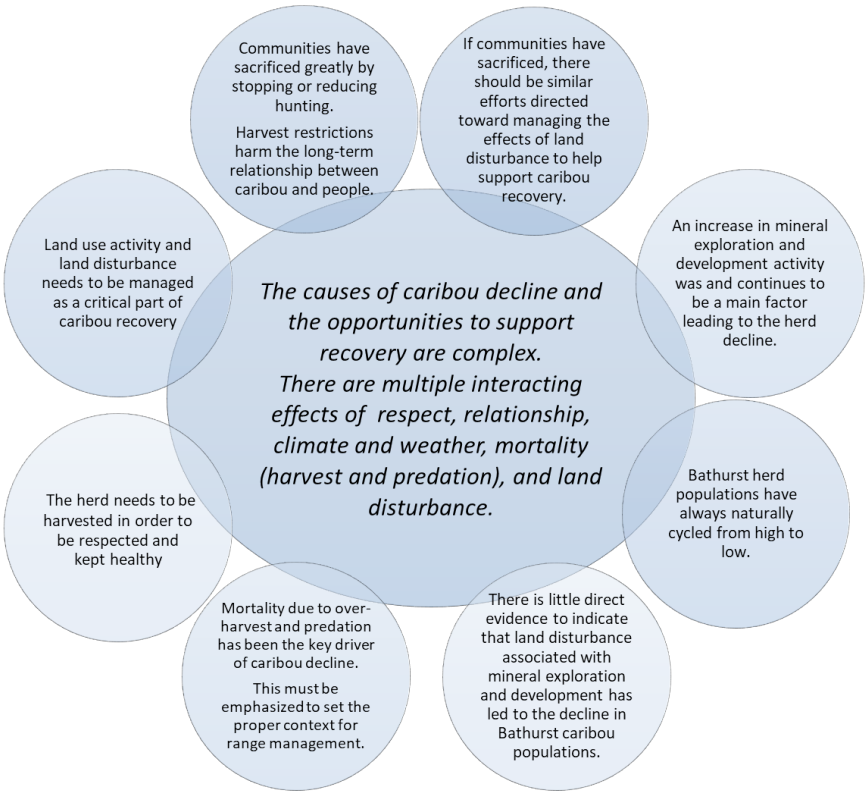


FIGURE 6: RANGE OF PERSPECTIVES ON CARIBOU POPULATION, IMPACTS AND RECOVERY ACTIONS

[31] BCRP 2017d; BCRP 2018b.

1.3 Principles, goals and objectives

1.3.1 What is guiding the Range Plan?

Four main principles guided development of the Range Plan:

1. **Respect caribou**.
   Recognize the intrinsic value and importance of caribou as inseparable from land, water, air and every other part of the northern ecological, cultural and socio-economic system. Acknowledge respect as the basis for a sustainable relationship that connects people and caribou in the past, present, and future, and recognize the role of Indigenous people in educating non-Indigenous people in the complex, textured and foundational relationship between people and caribou.
2. **Bring together traditional, local and scientific knowledge**.
   Bring together and consider equally the multiple sources of knowledge that inform our collective understanding of and decisions regarding caribou, caribou habitat as well as the various factors affecting caribou, other wildlife and the land. As directed by Elders and other community members, we must work together.[32]
3. **Practice guardianship, stewardship and management to care for caribou**.
   Regardless of whether one understands their role or relationship with caribou as one of guardianship, stewardship or management, we must work together for the well-being of caribou. It is critical to actively engage youth in guardianship activities and establish learning opportunities with Elders.[33]
4. **Achieve balance**.
   Consider and respect ecological (caribou), cultural, social and economic values in decision-making about range use. Acknowledge that achieving sustainable development across the range includes the recognition of multiple interests and uses of the range and will require tough choices about ecological, cultural and economic values to achieve balanced outcomes.

> ***The animals have depended on the land for thousands of years and it is up to us to maintain this land for them, to protect them. We must also protect animals because we, the Weledeh, depend on them for survival.***
> (Fedirchuk and Penner 1997 in YKDFN 2016: 17)

[32] Bayha 2012; Beaulieau 2012; Sangris 2012; Parlee et al. 2013; TCS 2014, 2016; BCRP 2016b, 2017e.
[33] BCRP 2016b, 2017e; TCS 2016.

1.3.2 What is the Range Plan trying to do?

The Range Plan is focused on managing disturbance to caribou and habitat to support recovery of the Bathurst herd. To achieve this, the land must be maintained in a condition such that it will continue to support caribou, with consideration of the amount and location of human activity.

BCRP MANAGEMENT GOAL:

Ensure the Bathurst caribou herd annual range is in a resilient landscape condition

Landscape resilience is understood in the Range Plan as the ability of the annual range to sustain and provide migratory barren-ground caribou with adequate space and resources to meet their biological needs (i.e. food and nutrition, insect relief, predator avoidance, etc.) under changing socio-cultural and environmental conditions, disturbance regimes, multiple stressors and uncertainties, including human land use.[34] We know from traditional knowledge that respecting caribou means habitat disturbance must be managed to improve the well-being of Bathurst caribou. For many people, this also means maintaining caribou habitat to ensure the ability of the Bathurst herd to recover to over 400,000 and rebuilding a healthy spiritual relationship between people and caribou.[35] Indigenous northerners feel substantial responsibility in their role as caribou guardians, stewards, managers, monitors and more.

To assist in achieving this goal, the plan includes four specific management objectives.

OBJECTIVE 1: Ensure the integrity of important habitats

Habitat integrity is the condition and function of habitats such that the natural processes within them are respected and unaffected by negative influences of human activities. Habitat is understood to include caribou, land, air and water, as well as the connections in between.[36]

Maintaining and respecting the integrity of important habitats will allow for continued use of these areas by caribou and for these habitats to continue to provide necessary energetic, security or similar requirements to support a recovering Bathurst caribou population.

OBJECTIVE 2: Ensure connectivity between seasonal ranges

The Bathurst caribou's use of space across its extensive annual range is a key adaptive behaviour that ensures the herd persists into the future. Community members have observed this cyclic use of space since time immemorial and understand the importance of linking caribou lands throughout the year. Respect for caribou means ensuring they can move freely along ancient and well-worn migration trails, allowing the herd to access important habitats or shift range use in response to changing environmental conditions including wildfire and predation.

[34] Sensu Holling 1973. And see Standish et al. 2014.
[35] Legat 2008, 2013; Wray and Parlee 2013; BCRP 2016b, 2017e; TCS 2016.
[36] BCRP 2017e.

OBJECTIVE 3: Ensure the amount of human-caused land disturbance is kept below certain levels

While some traditional knowledge holders suggest caribou can adapt to or get used to some levels and types of disturbance (especially when they are born into it), most share conclusions with scientists that suggest human-caused disturbance has a negative incremental cumulative effect on caribou populations.[37]

Despite the challenge of the task,[38] establishing cumulative land disturbance thresholds that are informed by caribou science and TK, and reducing overall human disturbance below those limits, provides a key step towards maintaining landscape resilience.

OBJECTIVE 4: Ensure the development, design and use of roads is managed with consideration to caribou

Roads facilitate the construction and operation of mines and all for transportation of goods and services to communities. The construction and use of winter and/or all-season roads and trails on the Bathurst caribou range is therefore fundamentally important for the economic and social development of the region.

However, newly constructed roads and trails into previously remote areas can also have unintended consequences, including noise, dust, barriers to movement and increased wildlife harvesting opportunities. For caribou, these factors can have significant and lasting impacts, particularly when traditional laws and other respectful practices are not followed.[39]

Effective siting, design and management of the human use of roads through inception to post-closure is therefore an important objective that requires consultation and collaboration among appropriate governments, boards, agencies, organizations, companies, communities and users.

[37] Parlee et al. 2005; EMAB 2012; Parlee et al. 2013; TCS 2014, 2016; TRTI 2016a; LKDFN 2016; YKDFN 2016.
[38] Johnson 2013.
[39] Thorpe et al. 2001; BHP 2007; Legat 2008; Golder and KAA 2010; Wray and Parlee 2013; Parlee et al. 2013; Trailmark 2015; BCRP 2016b, 2017e; TRTI 2016a, 2016b.

2 All about the land of the Bathurst caribou

2.1 Land management

The Bathurst herd annual range spans across approximately 390,000 km^2 of the Kitikmeot region in NU and the North and South Slave regions of NWT within which several land use management and planning regimes either exist or are ongoing.[40] This range crosses the traditional and asserted territories of at least seven Indigenous groups.

In Nunavut, the Nunavut Land Claim Agreement (NLCA) establishes the land and wildlife management co-management system. The territory-wide Draft Nunavut Land Use Plan, released in 2016 proposed new protected areas for caribou calving and post-calving areas and identified freshwater crossings based on best available science and Inuit Qaujimajatuqangit (Figure 7). The Nunavut Planning Commission (NPC) is revising the Draft Plan so it is uncertain what kind of protection will overlap the Bathurst range as the NPC further develops the plan in the coming years.

There are a number of land use planning processes underway or being initiated in the NWT that overlap portions of the Bathurst range. A land use plan is in place for the Tłı̨chǫ Private Lands in Wek'èezhìı. The GNWT, Canada and the Tłı̨chǫ Government are working collaboratively to initiate planning for the public lands in Wek'èezhìı pursuant to the Tłı̨chǫ Agreement. The GNWT is leading efforts to initiate planning in the southeastern part of the NWT. Some Indigenous governments and organizations (IGOs) are also initiating planning processes for their traditional territories. In support of land claim negotiations with the Akaitcho Dene, Athabasca Denesuline and NWT Métis Nation, interim land withdrawals have been established within which mineral staking is not currently permitted. A large conservation area, Thaidene Nëné, is also proposed around the East Arm of Great Slave Lake and Artillery Lake, presently monitored through the guardianship program Ni Hat'ni Dene Program (Figure 7).

The Tłı̨chǫ Agreement and the Tłı̨chǫ and Sahtu Land Use Plans identify protected areas and conservation areas on the range of the Bathurst herd. They have variable activity exclusions, some excluding all development and some allowing transportation and utility corridors. Together, the land use protection zones in the Tłı̨chǫ Land Use Plan encompass more than 23,000 km^2 of winter range area and contribute significantly towards maintaining habitat integrity in those areas (Figure 7).

2.2 Human land use

Currently, almost all permanent human development is within the southern part of the range, centred around the City of Yellowknife and communities north of Great Slave Lake. For many community members, caribou has long been their most valuable "resource" or "commodity."[41]

Much of the Bathurst range is within the Slave Geological Province, which has a long history of mineral exploration and development. Gold was historically the most important commodity, but the pursuit of diamonds in the Lac de Gras region in the early-1990s transformed the NWT economy. Concern has been

[40] The Nunavut portion of the Bathurst annual range accounts for approximately 75,000 km^2 (20%) of the total BCRP planning area.
[41] BCRP 2016b, BCRP 2017e

expressed by the mineral development sector that the extensive area of protected/conservation and interim land withdrawal areas has triggered a significant decline in prospecting and exploration across the range.

The caribou habitat area disturbed by direct human development footprint in the Bathurst range – including communities, roads and industrial developments –is 0.05% of the total range planning area. Taking into consideration the 'Zone of Influence' (see Text Box 4 below), the total human-caused disturbance covers 5.6% of the Bathurst range (see Table 5 below for a summary across the range).

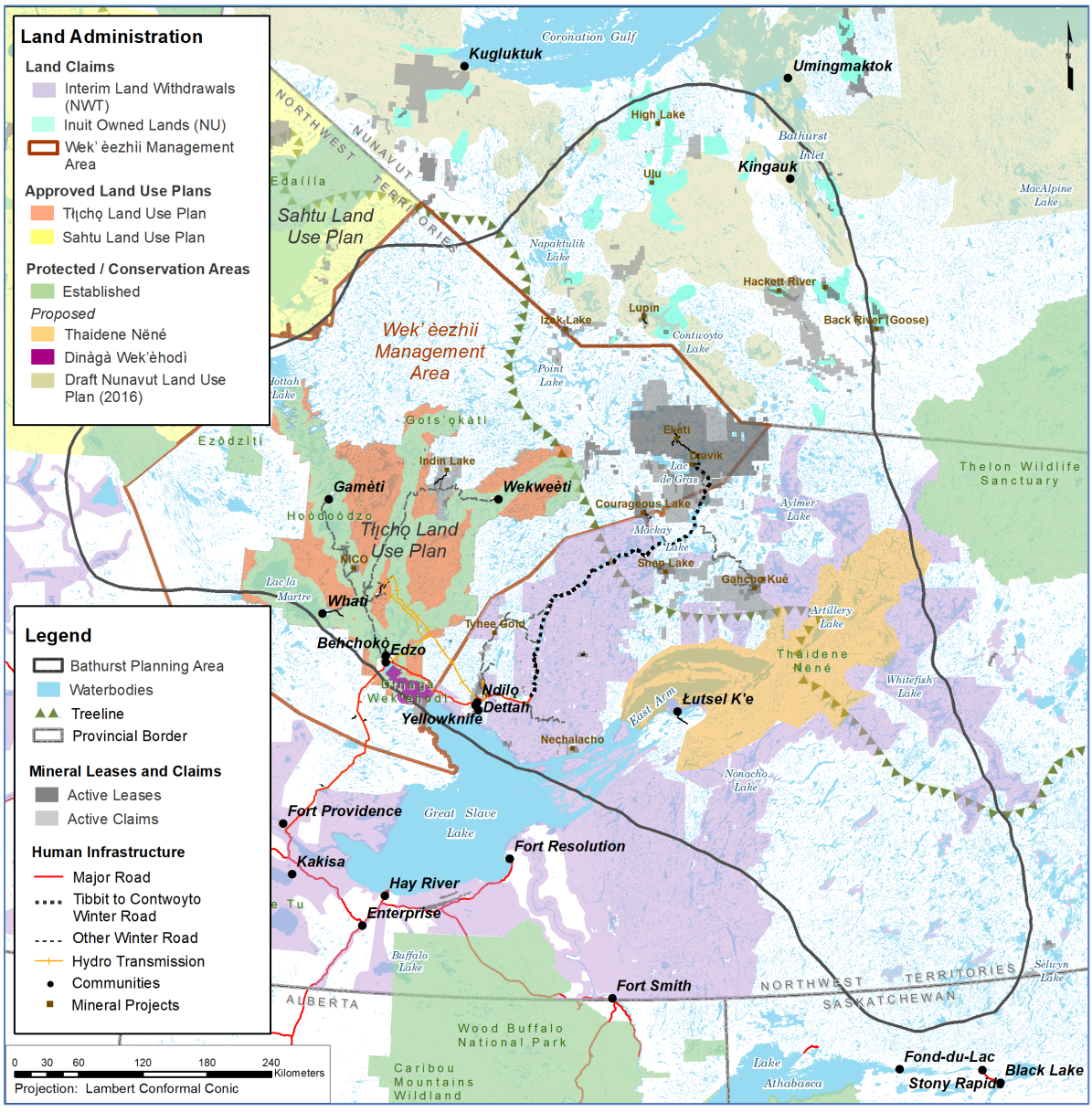


FIGURE 7: LAND ADMINISTRATION AND LAND USE DESIGNATIONS ACROSS THE BATHURST RANGE PLAN AREA

Several future mineral development and transportation concepts are being advanced, including new all-season road corridors in both Nunavut and NWT (including the Grays Bay Road and Port, Tłı̨chǫ All-Season Road and Slave Geological Province corridor; see Figure 8). Most roads in the NWT – even those built for industrial purposes – are public. Increased and uncontrolled access, along with challenges around compliance and enforcement, are concerns to community members, particularly when trying to exercise guardianship responsibilities. However, limiting access on roads raises concerns over Aboriginal rights to access caribou and other species for traditional use. Due to road and trail access across the winter range, the Bathurst herd is considered to be one of the most accessible herds of barren-ground caribou in the NWT. Concerns around habitat fragmentation and dust have also been raised.

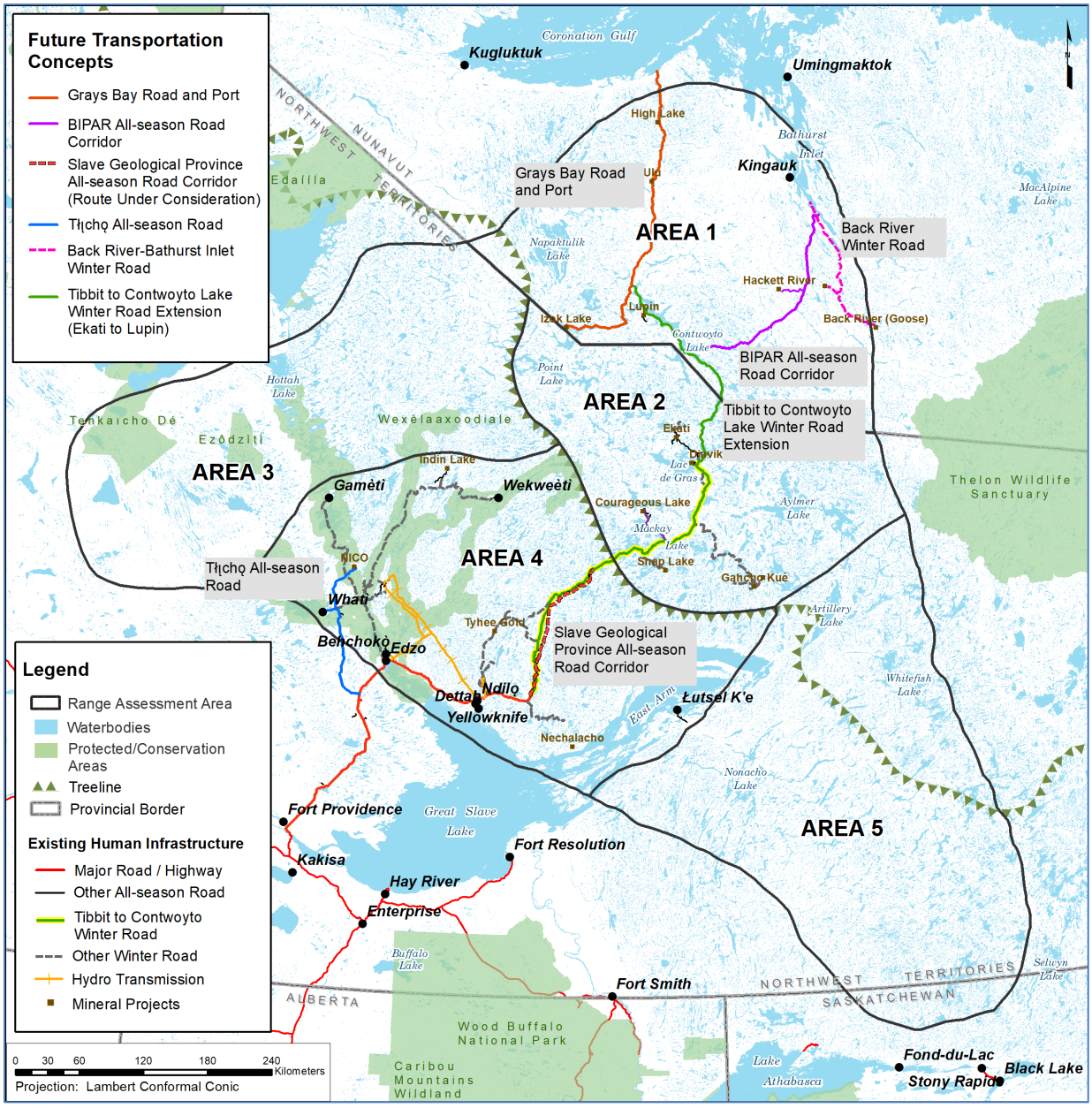


FIGURE 8: FUTURE TRANSPORTATION CONCEPTS BEING CONSIDERED IN THE BATHURST RANGE

2.3 Caribou habitat and range use

The Bathurst range is characterized by extensive networks of hunting routes and lifeways of Caribou People, migration trails that are carved into the rugged, rocky Canadian Shield landscape with its numerous lakes. The Nunavut and central NWT portion of the range occurs north of the treeline and is within the Tundra vegetation zone of the Southern Arctic ecozone (Figure 9). Tundra habitats include a variety of vegetation communities, including sedge meadows, wet and dry low shrub communities, dry lichen areas and sparsely vegetated rocky outcrops. The southern and western parts of the NWT range are within the Taiga (boreal forest) vegetation zone of the Taiga Shield ecozone. The Taiga is characterized by open canopy spruce and jack pine forests with lichen groundcover and sparsely vegetated rocky outcrops.

Many of the recommendations in the Bathurst Caribou Range Plan are organized around the Tundra and Taiga biomes.[42] However, these biomes should not be considered separate from caribou, in that caribou are a key component of both the environmental and social elements of these two biomes.

2.3.1 Wildfire on the Bathurst range

The Bathurst winter range is mainly within the Taiga Shield ecozone, a broad region spanning the northern forested portion of the Canadian Shield, both to the west and east of Hudson Bay. Natural wildfire regimes in northern Canada are stochastic and variable. Based on fire records for the period from 1960 to 2000, estimated fire cycles for the Taiga Shield west of Hudson Bay range from approximately 110 to 130 years; these fire cycles equal an average annual area burned of 0.91% to 0.77%.

Caribou are adapted to the cycles of wildfire and regrowth as both processes are important parts of the natural cycle of renewal. Scientists and community members explain that wildfires do not burn uniformly across the landscape. Unburned patches and corridors often remain inside of large fires, and these unburned remnants can still provide foraging areas for caribou as they move through burned areas. However, both TK and science explain that caribou are generally known to use recently burned areas (i.e. forests less than 50-80 years old) less frequently than mature forests. Since it takes many decades for lichen forage to return, extensive burned areas may cause shifts in migration routes or winter range use (see Figure 9 for wildfire extent on the range). A large amount of recently burned area may therefore reduce the carrying capacity of a winter range and shift the distribution of caribou away from historically used areas. However, as TK tells us, wildfire is a major factor influencing the age and composition of Taiga forests and the availability of "caribou food."[43] As spruce forests age and become over-mature (130+ years), the abundance of lichens, the primary winter food source for caribou, can decrease as a result of understory shading.[44] Wildfire in older forest patches is therefore necessary for the renewal of lichen growth.

[42] These biomes were selected, in part, to keep the focus on the BCRP on the land and how the land is used by caribou. Some community members suggested the area should be divided along political boundaries. However, given the over-lap between asserted Indigenous territories, it was not possible to divide the range in this manner.
[43] TRTI 2016a; DNNLC 2016; LKDFN 2016; YKDFN 2016.
[44] Maikawa and Kershaw 1976.

In the Bathurst range planning area, GNWT wildfire mapping indicates approximately 84,516 km^2 has been affected by wildfire since 1967[45] (Figure 9). The area disturbed by wildfire represents 22% of the total range planning area, or approximately 36% of the forested portion of the winter range.[46] This rate of burning over the past 50 years suggests an approximate 120- to 140-year fire cycle for the forested portion of the winter range, which is within the range of values previously reported for the western Taiga Shield.

Consultations held during the development of this plan highlighted community concerns about the amount and severity of recent wildfires in the Bathurst winter range and the perceived lack of fire suppression efforts by governments (see Text Box 3). Community members have spoken of the amount of recent wildfire in the Bathurst winter range, particularly resulting from the 2014 fire season.[47] While wildfire has occurred before, for many residents, 2014 was the most extreme fire season in recent memory. Compounded with human activities, direct mortality from hunting and predators and a changing climate, communities are concerned the high level of recent wildfire activity has resulted in inadequate winter range habitat to support a recovering Bathurst caribou population.

> ***Forest fires are more severe now than in the past. In the past there would be so many caribou, but now there are not as many because of the forest fires. Forest fires also kill a lot of the wildlife like insects, birds and small furbearing animals. A lot of things have gone. There were not as many forest fires in the past.***
> (ML 2000 in Kendrick et al. 2005: 181)

[45] 84,516 km^2 represents the total extent of area affected by wildfire; the total area burned calculated from individual fire years is 90,432 km^2, as some recent fire extents overlap with older re-generating burns.
[46] Approximately 24% (23,277 km^2) of RAA5 in the vicinity of Artillery and Whitefish Lakes occurs north of treeline and has experienced limited wildfire since 1967. If this area north of treeline is not considered winter range, the percentage of forested winter range affected by wildfire over the past 50 years increases to approximately 36%. Correspondingly, wildfire disturbance represents 40% of the total area of RAA5, but increases to 53% when it is compared only to the forested area.
[47] AD 2016; NWTMN 2016.

FIGURE 9: TUNDRA AND TAIGA VEGETATION ZONES (BIOMES) WITHIN THE BATHURST RANGE AND RECENT WILDFIRE ACTIVITY

Text Box 3

Traditional knowledge insights into wildfire effects on caribou

Traditional knowledge provides important insight into the effects of wildfire on caribou and caribou habitat. According to some Elders, when the land burns it is a way for the Creator to cleanse the land and make it new again. However, other Elders are concerned about the frequency and larger size of recent wildfires and believe they may be contributing to population declines experienced by the Bathurst caribou herd. Traditional knowledge suggests it can take at least 30 years for caribou to return to a burned area:

> *There will be no caribou if there is nothing for them to eat. Moss takes about 30 to 40 years to grow back [from fires] and the trees will grow back in about 25 years, but they don't eat the trees the grass will grow back but their main source of food is moss.* (Denesuline Né Né Land Corporation, 2016: 5)

Caribou migration is strongly affected by wildfire and resulting burned areas. Knowledge holders report that even after fire-damaged areas along their migration route have recovered and the lichen has regenerated, caribou do not always return. (ACFN 2003)

> *Lichen takes 50 years to mature before the caribou stomach can digest that. Now in the 2000s and late nineties this whole area burned in north slave. Caribou moved away because all that food is burnt.* (6A in BCRP 2016)

> *A lot of the caribou range is burnt, but there are green strips here and there. And the caribou are following those narrow strips. Some of the strips go along ways near Manchester Lake.* (6B in BCRP 2016)

As knowledge holders observe, the Bathurst caribou herd shifts its distribution in the winter range in response to burns and the ability of caribou to move across the landscape to select unburned areas is an important adaptive strategy. It is uncertain how a change in wildfire frequency, duration and area burned might affect the Bathurst herd in the future.

In the Bathurst range, two fire years – 1994 and 2014 – account for approximately 35% (31,364 km^2) of the total area burned during the 50-year wildfire record (Figure 10). There is scientific evidence that corroborates local and TK knowledge suggesting the area burned in northern Canada is increasing in response to a warming climate and the frequency of large fire years, such as the 2014 fire season, is projected to increase.[48]

[48] Flannigan et al. 2005.

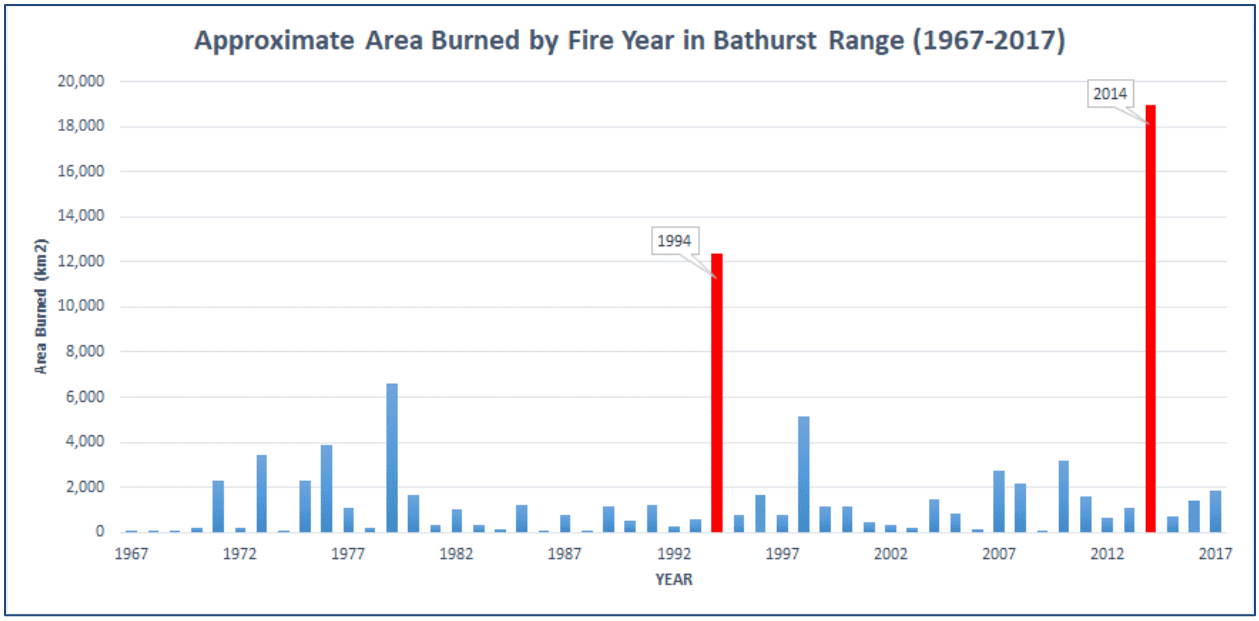


FIGURE 10: AREA BURNED BY FIRE YEAR IN THE BATHURST RANGE PLANNING AREA (1967-2017)

2.3.2 Seasonal ranges and migration routes

Indigenous people have typically divided the year into seasons based on weather, moon phases, wildlife activity and other environmental factors. Accordingly, the BCRP divides the year into five general seasons of the Bathurst herd annual life cycle. Bathurst caribou live on the Tundra primarily during the calving, post-calving and summer periods, while the forested Taiga has historically been their main home for the winter. The fall and spring seasons are generally migratory times, when caribou move between the calving, post-calving, summer and winter ranges (Figure 11).

Caribou People have long explained how Bathurst caribou migrate annually between calving areas in Nunavut and wintering areas in the NWT. Figure 12 shows the general migration routes of Bathurst caribou as documented from TK research conducted by Dedats'eetsaa (Tłı̨chǫ Research and Training Institute), Yellowknives Dene First Nation and the Kitikmeot Inuit.[49]

[49] These spatial data were provided directly to ENR for the purposes of the BCRP through data sharing agreements.

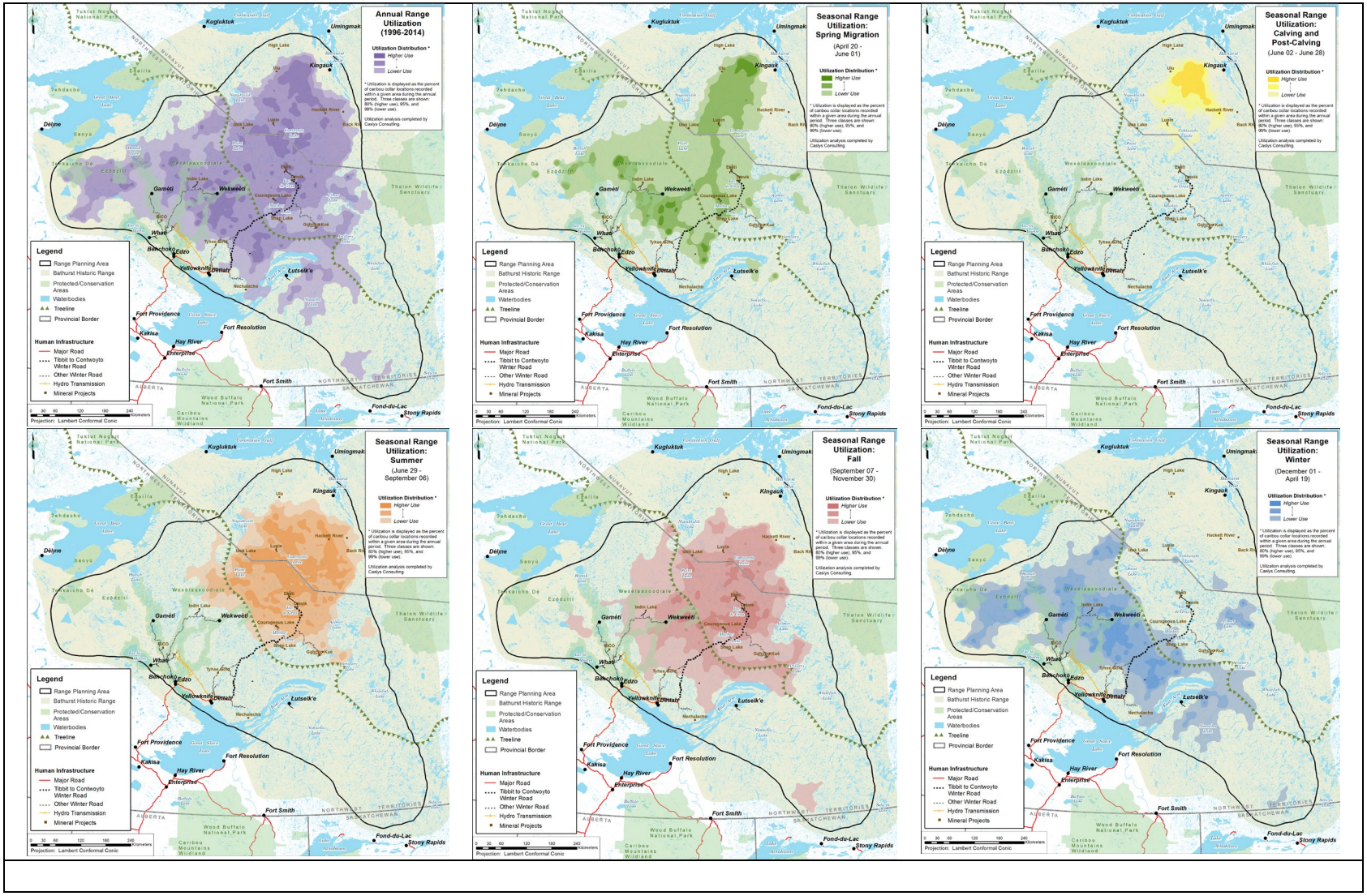


FIGURE 11: ANNUAL AND SEASONAL RANGES OF THE BATHURST CARIBOU HERD AS DEFINED BY SATELLITE TELEMETRY DATA FROM 1996 TO 2014

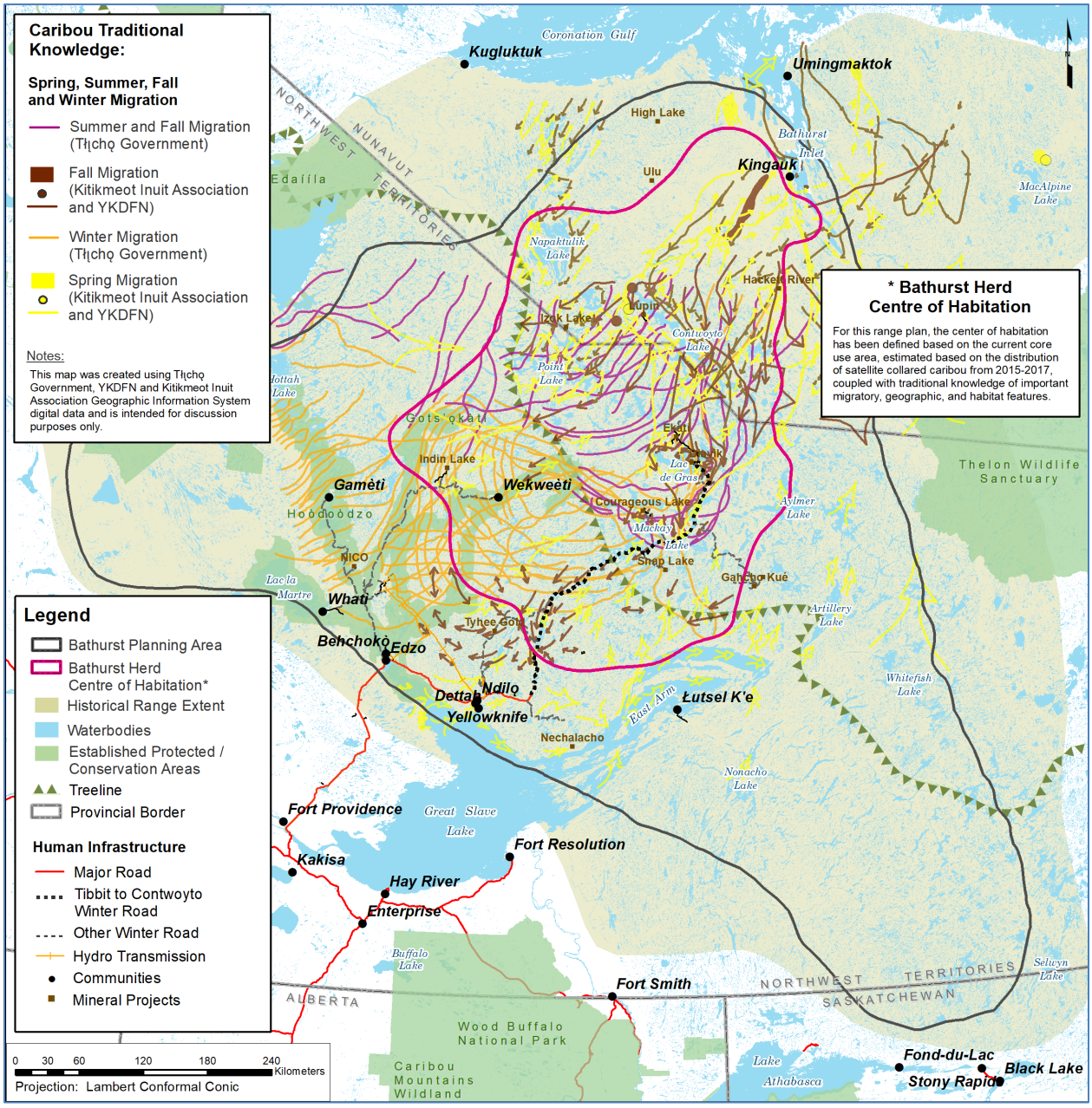


FIGURE 12: MIGRATION ROUTES IDENTIFIED BY TRADITIONAL KNOWLEDGE

During these seasonal movements, caribou are funneled between large lakes on narrow "bridges" of land (called "taataa" by the Tłı̨chǫ) and swim or wade across rivers or lakes at water crossing locations on the summer and fall range. Crossings are most frequently located at narrows caused by peninsulas or other shoreline irregularities, or where there is water turbulence or exposed rocks and gravel bars in the water. Caribou People have a long history with these sites and have intimate knowledge of their characteristics and locations, as they are important culturally for harvesting, camping and observing caribou. The Bathurst summer range in the central NWT Tundra contains the largest concentration of identified water crossings in the annual range. These features, land bridges and water crossings, are key to maintaining habitat connectivity between seasonal ranges.

2.3.3 Bathurst caribou – Centre of habitation (core use area)

For migratory barren-ground caribou, there is usually a part of the range that is most favourable and secure. The centre of habitation is a core use or refuge area that includes important habitats and migration paths, which a caribou population occupies and uses when it is at low numbers in its natural cycle. It is from this core use area that caribou extend their seasonal movements and gradually use more areas and travel greater distances as the population increases in abundance.[50]

While scientists call this the centre of habitation, traditional knowledge holders might identify this as an area known to be good hunting grounds or where you can usually find caribou. Traditional knowledge of lifeways, migration routes, caribou crossings, land bridges and other habitat features helps to identify these important parts of the range. For the Bathurst herd, the contraction of its annual range – as reflected by collared cows since 1996 – coincides markedly with the numerical decline in population size (Figure 2) and has resulted in the herd remaining far away from many Indigenous communities.

> ***The Elders explain how the caribou has a different way of knowing, and that all caribou have "one mind." As explained above, the caribou have a good memory of their land and of their migration routes. The herds know which tataa they must travel on to reach certain locations. Tataa are important corridors for them to follow on their way to better feeding grounds. Thus, the herds know the conditions on their migration routes and on their feeding grounds.*** (TRTI 2016b: 37)

We define the centre of habitation based on the current core use area, which has been estimated based on the daily distribution of satellite collared caribou from 2015-2017, coupled with TK of important migratory, geographic and habitat features (Figure 12 and Figure 13). Because of the important role of the core use area in sustaining migratory caribou herds throughout cycles of low and high numbers, it is suggested that mitigating land use activities more stringently in the centre of habitation is necessary.[51]

Thus, the centre of habitation reflects both an ecologically important area for the Bathurst herd using best available information, and a strategically important area for range management. In this context, the defined centre of habitation will be used for implementing range management actions over a five-year period, after which it will be reviewed and evaluated.

More detail on caribou range use and the methodology for defining the centre of habitation is provided in the supporting document titled Science and Technical Information on Caribou.[52]

[50] Skoog 1968; also see Bergerud et al. 2008; UPCART 2017.
[51] See UPCART 2017.
[52] BCRP 2017b.

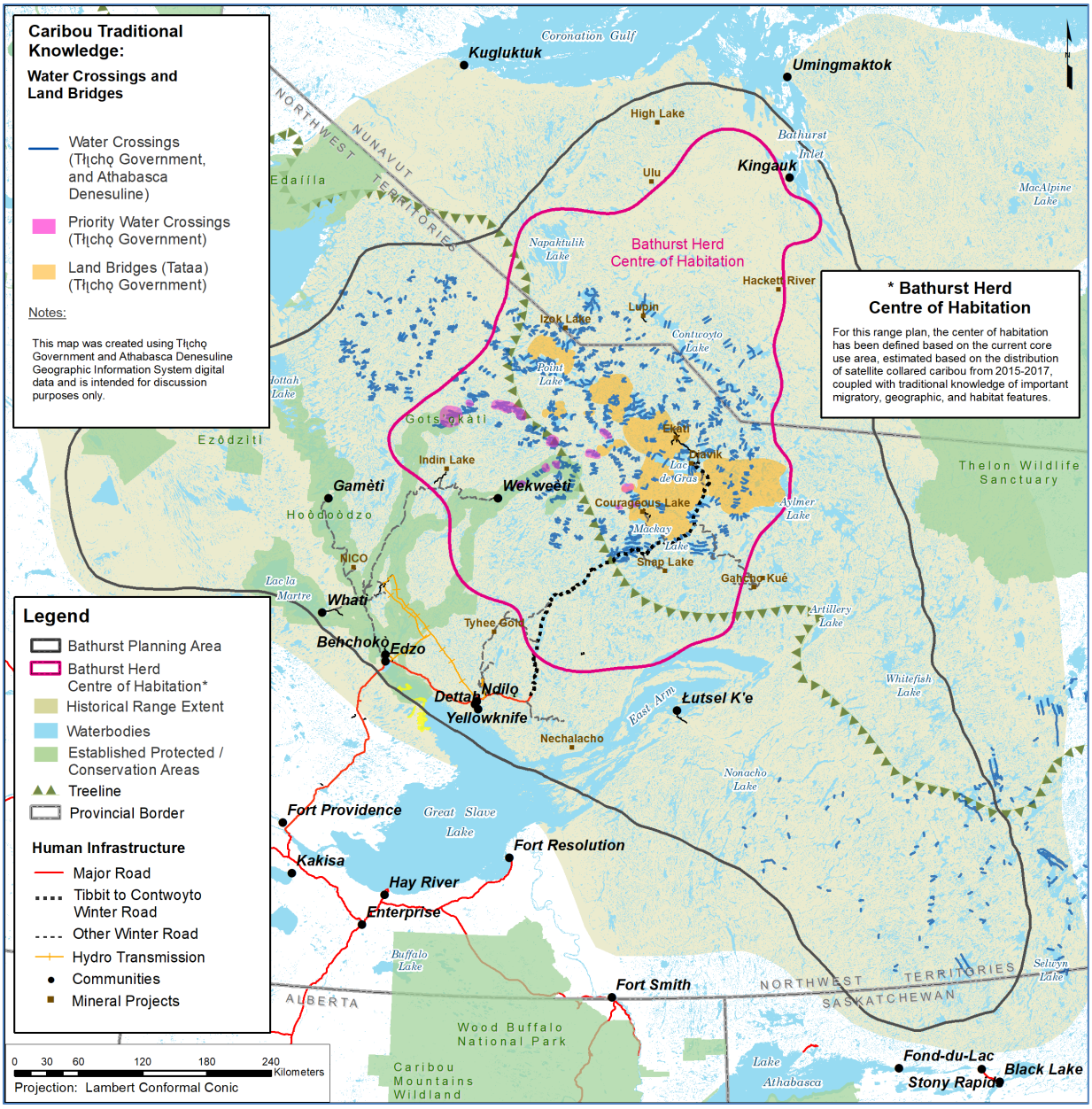


FIGURE 13: CENTRE OF HABITATION OF THE BATHURST CARIBOU HERD BASED ON THE 2015-2017 DATA FROM SATELLITE COLLARED ADULT FEMALES AND IMPORTANT MIGRATORY, GEOGRAPHIC AND HABITAT FEATURES AS IDENTIFIED BY CONTRIBUTED TK SOURCES

3 Range Plan components and recommendations

For several years, environmental assessment boards, wildlife management boards and Indigenous governments have been requesting a way of managing and minimizing range-scale human-caused disturbance. Supporting background documents describe the results of information gathering, major factors affecting caribou and key issues or management concerns.[53] Different range management tools to address major concerns were considered and examined in the Interim Discussion Document and the Draft Range Plan.[54] The GNWT received significant feedback on these documents (many hundreds of comments) and during technical and TK workshops in 2017. Direct input from members of the Working Group, submissions from Indigenous groups and external interest groups, and input gained through community visits all factored heavily into the development of this Range Plan.

In order to achieve the overall Range Plan goal and objectives (Section 1.2) through an integrated approach grounded in multiple ways of knowing, the BCRP contains the following major components:

1. A **Cumulative Land Disturbance Framework (CLDF)** that provides over-arching landscape-level management benchmarks that identify management tool responses based on the importance of habitat areas and the levels of habitat disturbance. This approach is consistent with cumulative effects management in other jurisdictions in Canada.[55]
2. Seven **Management Tools** intended to mitigate caribou and habitat disturbance:
    1. **Community Guardianship**
    2. **Habitat Conservation**
    3. **Mobile Caribou Conservation Measures**
    4. **Road Planning and Management**
    5. **Offsetting/Compensatory Mechanisms**
    6. **Wildfire and Fuels Management**
    7. **Online Map Staking**

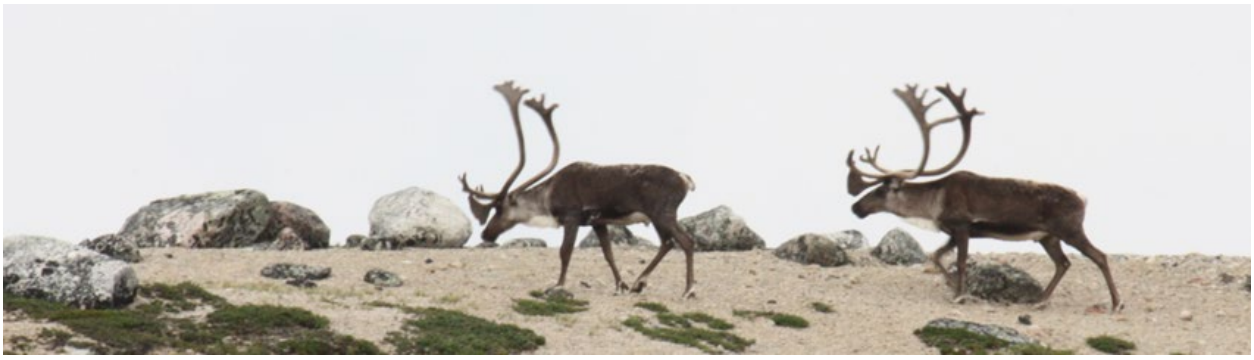
Some of these management tools are already being used, or have been used, to varying degrees in different parts of the Bathurst range; however, some are only applied to individual development projects through existing project review, approval and permitting processes. The Range Plan guides application of the tools in an integrated, coordinated and consistent manner across the entire range to manage disturbance in support of landscape resilience.

[53] BCRP 2017a, 2017b; BCRP 2017c.
[54] BCRP 2016a; BCRP 2018a.
[55] BC Government 2016; Antoniuk et al. 2012; Francis et al. 2013; Gooding et al. 2013.

Since the Bathurst range spans multiple jurisdictions and implementation success depends on multiple management authorities, important considerations to note include:

- Existing land use legal rights are to be respected.
- All management recommendations are subject to the legislated co-management processes that are in place and under development in each jurisdiction.
- While each jurisdiction has several potential legislative tools that could support implementation, the preference is to use flexible tools that support adaptive management as conditions change over time.
- Recommendations should be reviewed every five years to take into consideration the population status of the herd, changes in caribou distribution and range use, and other socio-economic and community factors.

The CLDF recommendation is discussed first below, followed by recommendations for each of the management tools.



3.1 Cumulative Land Disturbance Framework (CLDF)

Establishing disturbance thresholds in the CLDF on a regional scale will inform regulatory requirements for development projects and provide guidance for future land use planning. For community members, the CLDF aims to answer the question often asked when considering the amount of development and disturbance on caribou land:[56] "*How much is enough?*"

The tiered thresholds move from Desirable conditions at low levels of land disturbance through to Cautionary and High Risk conditions at increasingly higher levels of disturbance. Management responses correspondingly progress from basic through enhanced to intensive (Table 2). The intention of using tiered thresholds with increasingly stringent management responses is to reduce – and ultimately reverse – the negative trend of land disturbance effects as early as possible. Consequently, in the CLDF, all seven management tools are implemented at the Desirable range status level, and two of the tools (Road Planning and Management, and Offsetting/Compensatory Mechanisms) have increased requirements at the Cautionary range status level.

[56] BCRP 2016b.

The CLDF disturbance thresholds reflect limits of acceptable change, based on consideration of multiple values and perspectives – ecological (caribou), cultural, social and economic (see Text Box 4 for further discussion of the rationale for setting the CLDF thresholds).

Recommendation 1

The Cumulative Land Disturbance Framework contained in this Range Plan should guide land and resource decision-making by all authorities involved in such decisions until land use plans on the range are completed or revised. As land use plans are completed and revised they should consider the CLDF and other guidance provided in the BCRP.

It is important to highlight again here that Working Group members and other planning participants voiced different perspectives regarding the CLDF during the development of the Range Plan. These perspectives revolved around whether the human land disturbance thresholds represent an appropriate balance. Figure 14 presents and summarizes some of these varied perspectives.

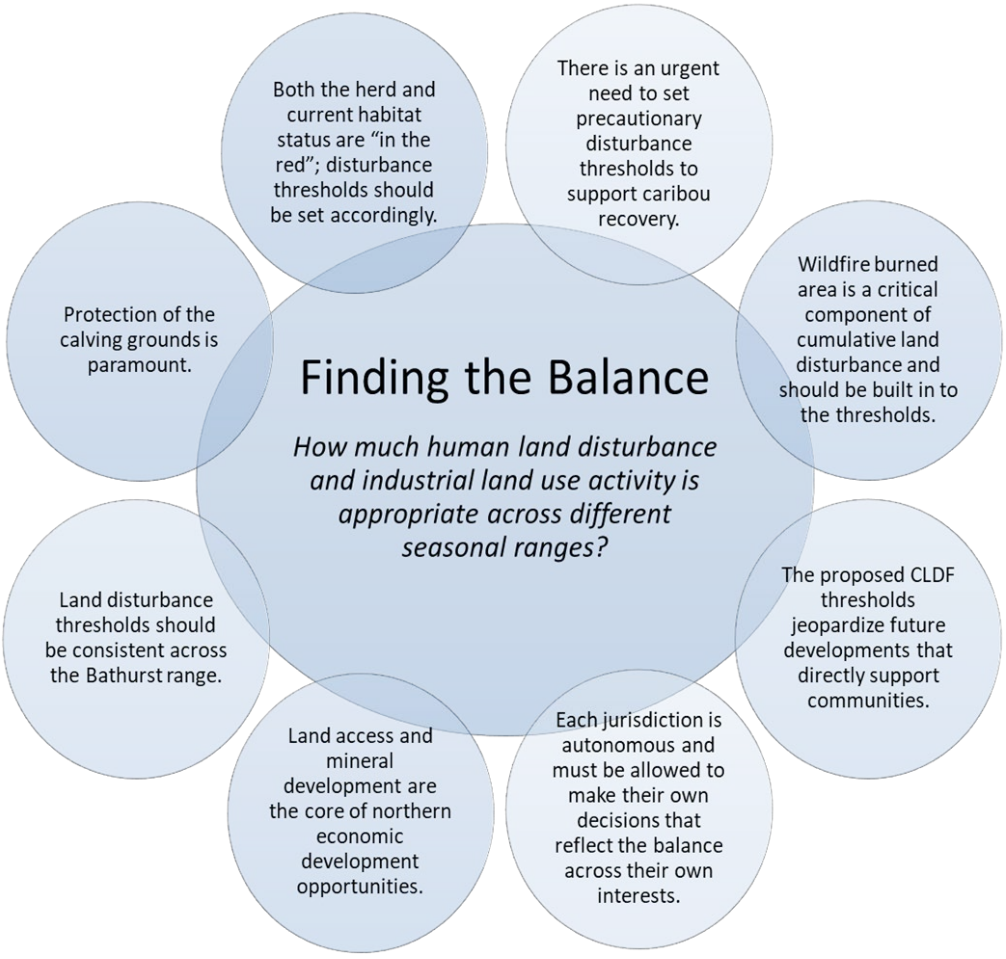


FIGURE 14: THE RANGE OF PERSPECTIVES REGARDING "FINDING THE BALANCE" IN LAND DISTURBANCE MANAGEMENT

TABLE 2: BCRP CUMULATIVE LAND DISTURBANCE FRAMEWORK

Amount of Disturbance	Status of Range	Management Tools and Response Level
High	**High Risk**	**INTENSIVE MANAGEMENT RESPONSE** Land activities resulting in new disturbance are advised only when active disturbances are minimized, removed or reclaimed such that total disturbance remains below the High Risk threshold.
Moderate	**Cautionary**	**ENHANCED MANAGEMENT RESPONSE (in addition to all recommendations in the BASIC level)** **Increased requirements for:** • **Road Planning and Management –** consider enhanced traffic management and design features. • **Offsetting/Compensatory Mechanisms -** habitat offsets at higher ratio and/or compensatory mechanisms (e.g. financial and in-kind contributions to science and TK research and monitoring, guardianship programs).
Low	**Desirable**	**BASIC MANAGEMENT RESPONSE** **Community Guardianship –** support Indigenous communities to watch (monitor) caribou and habitat conditions and support education regarding respectful harvest practice. **Habitat Conservation** – use legislation to protect the most important habitat areas: water crossings, land bridges, calving areas/post-calving. **Mobile Caribou Conservation Measures** – for land use activities that occur within the centre of habitation, implement Mobile Caribou Conservation Measures (i.e., restrict non-essential project activities when caribou are present) and associated monitoring, compliance and enforcement. **Road Planning and Management** – manage routing, timing of construction, design, and consolidation of routes across all users. **Offsetting/Compensatory Mechanisms** – counteract, or make up for, residual impacts on caribou considering: • **Habitat Offsets** – at a minimum 1:1 ratio (restoration, enhancement, preservation) (include legacy land disturbance) • **Compensatory Mechanisms** – if offsets are not feasible, use financial and in-kind contributions to science and TK research and monitoring, community guardianship programs **Wildfire and Fuels Management** – identify large patches of undisturbed winter range annually for the GNWT wildfire values at risk database that is used to prioritize wildfire response. **Online Map Staking** – use online staking to reduce the potential for caribou disturbance during the early phases of mineral exploration and thus increase caribou well-being through respectful practices.

3.1.1 CLDF boundaries and management thresholds

The CLDF spans the two major biomes within the range (Tundra and Taiga), which are further subdivided into smaller range assessment areas (RAAs) (Figure 15). The interim RAAs provide spatial units to assess and monitor the status of CLDF indicators (see Section 4). The five RAAs were created by considering traditional territories, human land use patterns, administrative boundaries and Bathurst caribou range use and habitat conditions as described in the supporting document, *Caribou Range Assessment and Technical*.[57]

FIGURE 15: BCRP CUMULATIVE LAND DISTURBANCE FRAMEWORK WITH TUNDRA AND TAIGA ZONES, AND RANGE ASSESSMENT AREAS

Disturbance threshold levels for the CLDF are **management thresholds**. They are informed by TK, community values, caribou biology and societal risk tolerance. They are reflective of a precautionary decision-making[58] approach to Bathurst herd management deemed necessary given the low population status. In implementing these thresholds, the GNWT will ensure the advice respecting management of caribou and caribou habitat contained within this plan is transparently factored into decisions in other areas of the GNWT's mandate alongside other considerations. Text Box 4 further describes the rationale for establishing the Bathurst CLDF threshold levels.

[57] BCRP 2017b.
[58] GNWT 2017b; O'Riordon and Cameron 1994.

Text Box 4

Rationale for establishing the BCRP CLDF threshold levels

The BCRP Cumulative Land Disturbance Framework management thresholds provide limits (*sensu* Kennett 2006) to manage the cumulative magnitude and extent of human footprints and development projects on the annual range of Bathurst caribou. The threshold levels serve as decision or management thresholds (*sensu* Martin et al. 2009), which reflect a balance of the ecological, cultural and socio-economic values. As such, the threshold values are as much based on cultural considerations as they are on ecological considerations. The level of socio-cultural/ecological risk and landscape change that communities, governments and industry consider to be acceptable may change over time as values and circumstances change. Important considerations in the development of the CLDF thresholds include:

- The Bathurst caribou herd is currently considered to be in a state of serious conservation concern due to its small population size, continuing high rate of decline in breeding females and changes in the relationship between people and caribou.[59] This, coupled with the uncertainty of future climate change impacts, justifies a precautionary approach to management.
- Both the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the NWT Species at Risk Committee (SARC) recently assessed barren-ground caribou as "Threatened," and they have been listed in the NWT.
- All harvest – including hunting by Indigenous people – has essentially ceased and a feasibility assessment of wolf management actions is being undertaken. These management actions focus on improving caribou survival.
- The linkages between habitat disturbance, land use activity and caribou population were evaluated based on computer modeling of future case land use scenarios (see the supporting document *Caribou Range Assessment and Technical Information*). The reduction in herd productivity due to encounters with human disturbance resulted in a population effect that was additive to the direct mortality effects of predation and hunting. This hypothesized relationship between human disturbance and caribou should be a continued focus of monitoring and research as the BCRP is implemented through adaptive management.
- Indigenous community members and TK holders have long stated there is a link between increasing levels of industrial development on the range and declines in herd size. There have been many formal requests to implement land disturbance thresholds. With declining caribou populations, there have been parallel declines in the traditional economy, food security, connection to the land and ultimately cultural identity.
- Implementation of the CLDF is considered to be a useful way to manage the cumulative and incremental impacts from land use at the range scale. At the same time, the CLDF provides management direction on acceptable levels of range disturbance and human activity that support sustainable development.

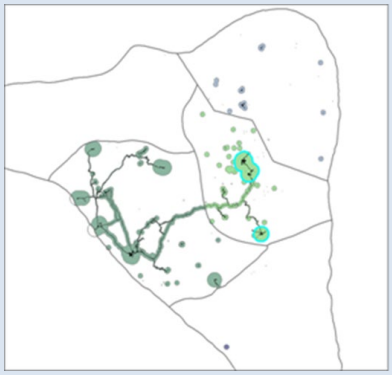
[59] BCRP 2017e

The CLDF tiers and threshold levels of human-caused land disturbance for the RAAs in the Tundra and Taiga biomes are presented in Table 3 and Table 4, respectively. In implementing this framework, the GNWT will be using the total disturbance thresholds comprised of the direct footprint of features on the landscape plus their associated zone of influence (ZOI). Text Box 5 provides additional context on the ZOI. To ensure that uncertainties related to ZOI are more transparent, equivalent direct disturbance metrics have been included as reference points. Threshold levels in the Taiga portions of the range have taken into consideration the average amount of forest expected to be less than 50 years of age based on fire cycle, forest age-class structure and natural range of variation in wildfire over time.

Text Box 5

Zone of influence (ZOI)

Human disturbance on the Bathurst caribou range results in direct habitat loss from land use features (i.e. roads, settlements, exploration sites, and operational mines). There is also an associated area around the direct footprint – a zone of influence (ZOI) – that corresponds to an avoidance response where caribou shift their distribution away from a land use feature as articulated by community members and scientists alike. The avoidance response may result in caribou reducing their occupancy within a ZOI or changing their migratory movements to move away from land use features. Furthermore, caribou within a ZOI may change their activity patterns by spending less time feeding, or the animals may change their selection and use of habitats.



The inset figure illustrates the direct human footprints that occur primarily within RAAs 1, 2, and 4; the shaded areas represent the scaled ZOIs for each of the various footprint types (see Appendix B of supporting report on *Caribou Range Assessment and Technical Information BCRP 2017b*). The highlighted polygons (i.e. light blue outline) represent the 14 km ZOI assumption for operating mines. The other large polygonal feature shows the 15 km ZOI assumption for human settlements.

For circumpolar caribou and reindeer, ZOIs have been observed in association with a variety of human footprints, including roads, transmission lines, recreational cabins and trails, and operating mines. For the Bathurst herd, a ZOI of up to 14 km was observed in association with the Ekati and Diavik open-pit diamond mines. Although there is annual and seasonal variability in ZOIs, which relate to changing human activity levels and variable caribou responses and sensitivities, the combined weight of scientific evidence and traditional knowledge strongly suggests that habitat loss and fragmentation resulting from human land use is greater than the simple sum of direct footprint areas.

For the Bathurst Caribou Range Plan, the total disturbance footprint was used to represent the amount of human disturbance on the annual range. The total disturbance footprint was based on the direct footprint plus standard ZOI values based on available literature and expert opinion (see BCRP 2017b). As part of the adaptive management approach recommended through the Range Plan, the ZOI values should be regularly reviewed and updated based on best available information.

Important considerations include:

- **ZOI:** ZOI assumptions and values used for the purposes of range planning are uncertain and should not be assumed to be appropriate for project-specific assessments. Details on ZOI assumptions are provided in the supporting document, *Caribou Range Assessment and Technical Information*.[60]
- **Wildfire**: In the forested Taiga biome, RAA3/4/5, wildfire area burned is an important consideration that will be tracked as part of the monitoring and management system (see Section 4). Threshold levels in the Taiga biome may need to be reconsidered in future plan revisions if monitoring shows a significant change in area burned relative to the natural range of variability.

TABLE 3: TUNDRA BIOME CUMULATIVE LAND DISTURBANCE FRAMEWORK TIERS AND THRESHOLD LEVELS

Risk to Caribou and/or Habitat	CLDF Disturbance Tier	RAA 1 Human-caused Land Disturbance Threshold Level	RAA 2 Human-caused Land Disturbance Threshold Level
High	**High Risk**	**Total (with ZOI)** **> 12,000 km^2** Direct equivalent > 140 km^2	**Total (with ZOI)** **> 9,000 km^2** Direct equivalent > 100 km^2
Moderate	**Cautionary**	**Total (with ZOI)** **6,000 km^2 – 12,000 km^2** Direct equivalent 140 km^2 70 km^2	**Total (with ZOI)** **4,500 km^2 – 9,000 km^2** Direct equivalent 100 km^2 – 50 km^2
Low	**Desirable**	**Total (with ZOI)** **< 6,000 km^2** Direct equivalent < 70 km^2	**Total (with ZOI)** **< 4,500 km^2** Direct equivalent < 50 km^2

[60] BCRP 2017b.

TABLE 4: TAIGA BIOME CUMULATIVE LAND DISTURBANCE FRAMEWORK TIERS AND THRESHOLD LEVELS

Risk to Caribou and/or Habitat	CLDF Disturbance Tier	RAA 3 Human-caused Land Disturbance Threshold Level	RAA 4 Human-caused Land Disturbance Threshold Level	RAA 5 Human-caused Land Disturbance Threshold Level
High	**High Risk**	**Total (with ZOI)** **> 19,000 km^2** Direct equivalent > 120 km^2	**Total (with ZOI)** **> 20,000 km^2** Direct equivalent > 130 km^2	**Total (with ZOI)** **> 25,000 km^2** Direct equivalent > 150 km^2
Moderate	**Cautionary**	**Total (with ZOI)** **9,500 km^2 - 19,000 km^2** Direct equivalent 120 km^2 – 60 km^2	**Total (with ZOI)** **10,000 km^2 - 20,000 km^2** Direct equivalent 130 km^2 – 65 km^2	**Total (with ZOI)** **12,500 km^2 - 25,000 km^2** Direct equivalent 150 km^2 – 75 km^2
Low	**Desirable**	**Total (with ZOI)** **< 9,500 km^2** Direct equivalent < 60 km^2	**Total (with ZOI)** **< 10,000 km^2** Direct equivalent < 65 km^2	**Total (with ZOI)** **< 12,500 km^2** Direct equivalent < 75 km^2

3.1.2

3.1.3 Current status of the Bathurst caribou range relative to the CLDF

The estimated cumulative land disturbance status of each RAA is shown in Table 5 and Figure 16. The disturbance status of each area is calculated based on direct development, their associated estimated zones of influence and natural wildfire disturbance over the past 50 years. Detailed methods and assumptions are provided in the supporting document, *Caribou Range Assessment and Technical Information*.[61]

TABLE 5: ESTIMATED STATUS OF EACH RANGE ASSESSMENT AREA BASED ON THE CLDF THRESHOLDS

RANGE ASSESSMENT AREA (RAA)	RAA AREA	CURRENT DIRECT HUMAN DEVELOPMENT FOOTPRINT	TOTAL HUMAN DISTURBANCE (FOOTPRINT + ZOI)	RECENT WILDFIRE DISTURBANCE (1967-2017)	TOTAL HUMAN AND FIRE CAUSED DISTURBANCE *	CURRENT CLDF STATUS
AREA 1: NUNAVUT TUNDRA	75,902 km^2	20 km^2 (< 0.1%)	1,080 km^2 (1.4%)	0 km^2 (0%)	1,080 km2 (1.4%)	**DESIRABLE**
AREA 2: NWT CENTRAL TUNDRA	56,134 km^2	70 km^2 (0.1%)	6,606 km^2 (11.8%)	5 km^2 (< 0.1%)	6,611 km^2 (11.8%)	**CAUTIONARY**
AREA 3: NWT WINTER RANGE – NORTHWEST	77,001 km^2	< 1 km^2 (< 0.1%)	<1 km^2 (<0.1%)	14,866 km^2 (19.3%)	14,866 km^2 (19.3%)	**DESIRABLE**
AREA 4: NWT WINTER RANGE – CENTRAL	84,858 km^2	89 km^2 (0.1%)	14,122 km^2 (16.6%)	31,605 km^2 (37.2%)	41,146 km^2 (48.5%)	**CAUTIONARY**
AREA 5: NWT WINTER RANGE – SOUTHEAST	95,127km^2 *(~1/3 Tundra & 2/3 Taiga)*	< 1 km^2 (< 0.1%)	88 km^2 (0.1%)	38,040 km^2 (40.0%)	38,128 km^2 (40.1%)	**DESIRABLE**

* Note: This total accounts for overlapping areas of total human disturbance (with ZOI) and wildfire disturbance; it is not a simple sum of each. At time of analysis, the 2017 wildlife mapping data were not available for the Saskatchewan portion of the range.

[61] BCRP 2017b.

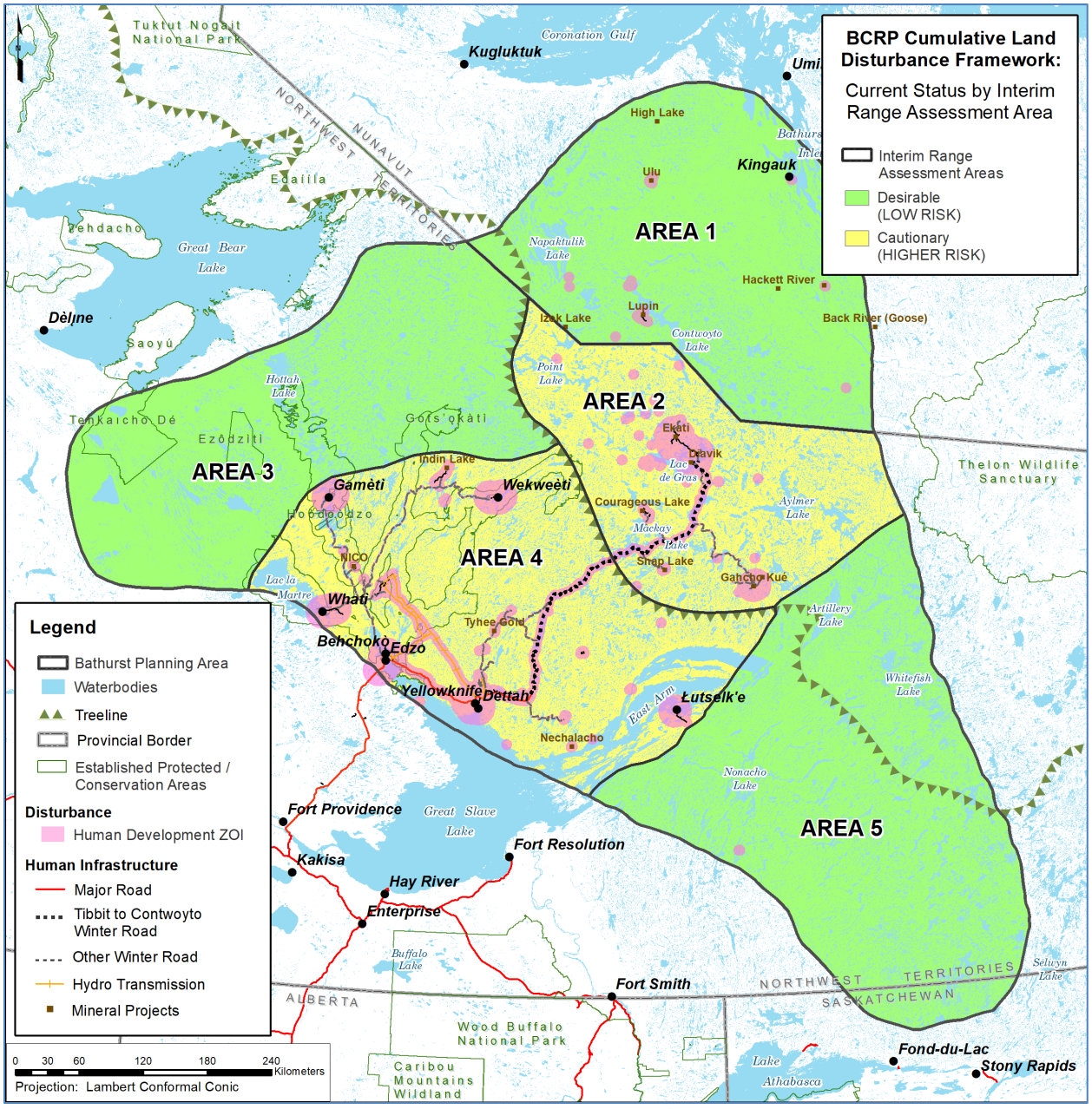


FIGURE 16: STATUS OF EACH RANGE ASSESSMENT AREA BASED ON THE CLDF THRESHOLDS

3.2 Management tools and responses

3.2.1 Community guardianship

Indigenous peoples are developing robust guardianship programs throughout their territories according to traditional laws and values as well as input from best available science.[62] These made-in-the-north approaches build on generations of watching the land and are grounded in the ethic held by Indigenous peoples that they have a responsibility as caretakers of their lands, wildlife and air. As asserted by multiple community members throughout the BCRP process, Caribou People across the range of the Bathurst herd are best positioned to be guardians for overall caribou well-being.

Examples in Canada and Australia where government partnered with Indigenous peoples to establish land-based programs on traditional territories as part of the national park system have shown huge success in achieving a broad range of cultural, social, economic and environmental values and outcomes.[63] Local examples, such as the Tłı̨chǫ Boots on the Ground program,[64] Łutsel K'e Ni Hat'ni Dene (Watchers of the Land), Yellowknives Caribou Monitoring Program and Dehcho K'ehodi (Taking Care of the Land)[65] initiatives are guardianship models with significant caribou components that are relevant to the BCRP. In Nunavut, the NWMB is leading the Community-Based Monitoring Network, which empowers community members as stewards and monitors for their territory, while the Kitikmeot Regional Wildlife Board is currently developing a caribou monitoring program. These more recent initiatives built upon much of the monitoring research initiated as part of the West Kitikmeot Slave Study in the 1990s.

Guardianship programs, such as those already in place for the Bathurst caribou, could support Indigenous people across the entire Bathurst range to monitor caribou well-being, condition, abundance and distribution alongside socio-cultural and environmental conditions (natural and human/industrial). Increased support for community guardianship programs is strongly supported by all Working Group members.

Recommendation 2

Support Indigenous groups in the coordinated development and use of integrated community guardianship programs across the range of the Bathurst herd. Such programs would watch and report on activity associated with industrial development and harvest in combination with the movements, abundance, health and condition of caribou and caribou habitat, the relationship between caribou and Caribou People and overall caribou well-being.

[62] TNC 2016.
[63] SVA 2016; TNC 2016.
[64] TRTI 2017a, 2017b.
[65] DFN 2015.

3.2.2 Habitat conservation

Implementing habitat conservation measures for important habitat areas is the most direct way of avoiding habitat loss. Protected areas, conservation areas or habitat designations are legally designated areas (established under legislation and land use plans) that define restrictions on the types of activities that can occur. These restrictions can range from full exclusion of human activity (in a protected area) to restrictions on the types and seasons of activity (in a conservation area). Community members have long called for habitat protection for caribou, particularly during sensitive times of the year or at key areas across the range. These more formal approaches would build upon traditional practices used to sustain caribou over time (e.g. feeding the land and avoiding calving grounds during the calving season).

Many water crossing locations have received long-term, relatively consistent use by caribou and Caribou People. Knowledge of these areas has also determined the location of camps and communities to support harvesting opportunities. Ensuring continued use of key water crossings by caribou is critical to maintaining connectivity within the range and practising respect as part of caribou guardianship responsibilities.

Similarly, many communities talk about the importance of land crossings and eskers to successful migration. The location of land crossings and eskers in RAA2 highlights the importance of this central Tundra area for movement between the spring calving, post calving, summer and winter ranges. These land crossings are well-known to caribou and Caribou People for being both environmentally and culturally important. Indigenous governments and TK holders have begun the very important work of documenting priority water and land crossings for consideration (Figure 17). More work is needed to identify key eskers.

> ***People used to camp at water crossings. They knew the [caribou] would come that way. For example, an area where there are two big lakes, the animals will cross at the narrowest spot between them (NWTMN 2016: 5).***

The calving and post-calving range, largely in Nunavut, is considered by most to be the most important and sensitive part of the Bathurst range both from a traditional knowledge and scientific perspective (Figure 18). These areas are considered sacred, as the birthplace of the herd such that their protection supports an ethic of respect. Community members know this time as one to leave the caribou alone.[66] Restricting these areas from development will ensure caribou are protected from sensory disturbance and the habitat is not altered or destroyed. As calving grounds shift over time it is important that boundaries are assessed on a regular basis and adjusted to continue to offer the protection needed.

> ***The Elders say you should never impact [calving grounds] in one form or another because they are really sacred. They care for these calving grounds, particular spots on the land where it's just like a large swamp, or swampy areas where the ground becomes yellow from the calves. After they calve. And they don't want to dirty that part of the land from all the ashes or any other thing. You can't camp there or make fires.***
> (C51 in KIA 2014: 41)

Habitat conservation is proposed for those areas where habitats and/or caribou have been identified as particularly sensitive, as well as in areas to ensure range connectivity (i.e., water crossings, land crossings and calving grounds). Caribou use of the landscape is dynamic on a seasonal basis and therefore flexibility will be required in considering the use and applicability of habitat conservation tools on particularly sensitive seasonal ranges.

Recommendation 3

Using appropriate legislative tools, define the level of protection within an area specified around priority water crossings and land bridges as identified through TK and/or community direction.

The legislative tools should allow for boundary adjustments when TK, science and other land users identify changes in caribou distribution and range use.

Recommendation 4

Using appropriate legislative tools, define the level of protection within an area specified around the calving and post-calving areas of the Bathurst range.

The legislative tools should allow for boundary adjustments when TK, science and other land users identify changes in caribou distribution and range use.

[66] Thorpe et al. 2001; Stewart et al. 2004; Sangris 2012; TRTI 2016a, 2016b.

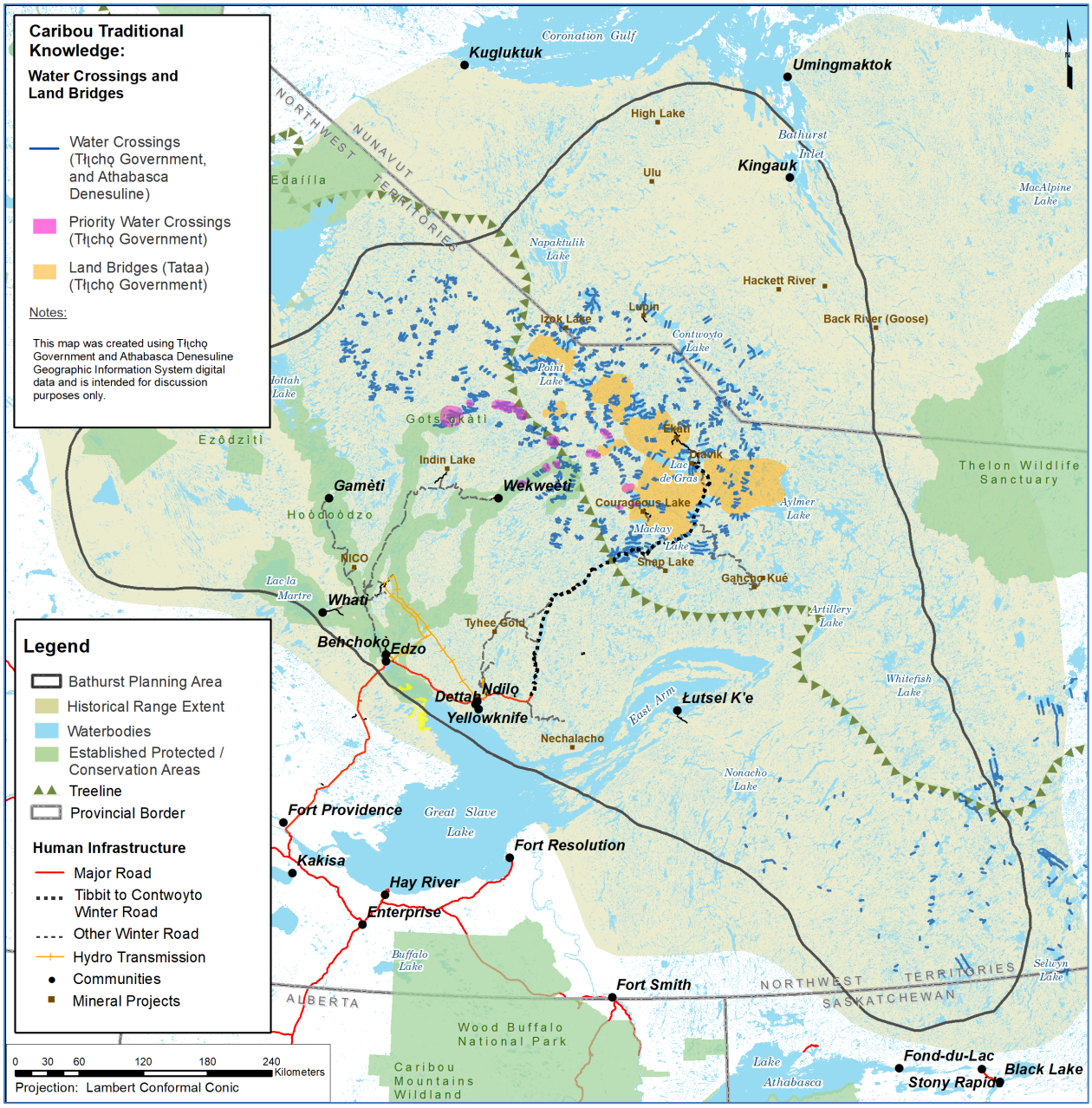


FIGURE 17: EXAMPLE OF LAND BRIDGE AREAS AND WATER CROSSINGS CONTRIBUTED BY TLICHO GOVERNMENT AND ATHABASCA DENESULINE. OTHER SOURCES MAY EXIST BUT WERE NOT AVAILABLE AT TIME OF PLAN COMPLETION

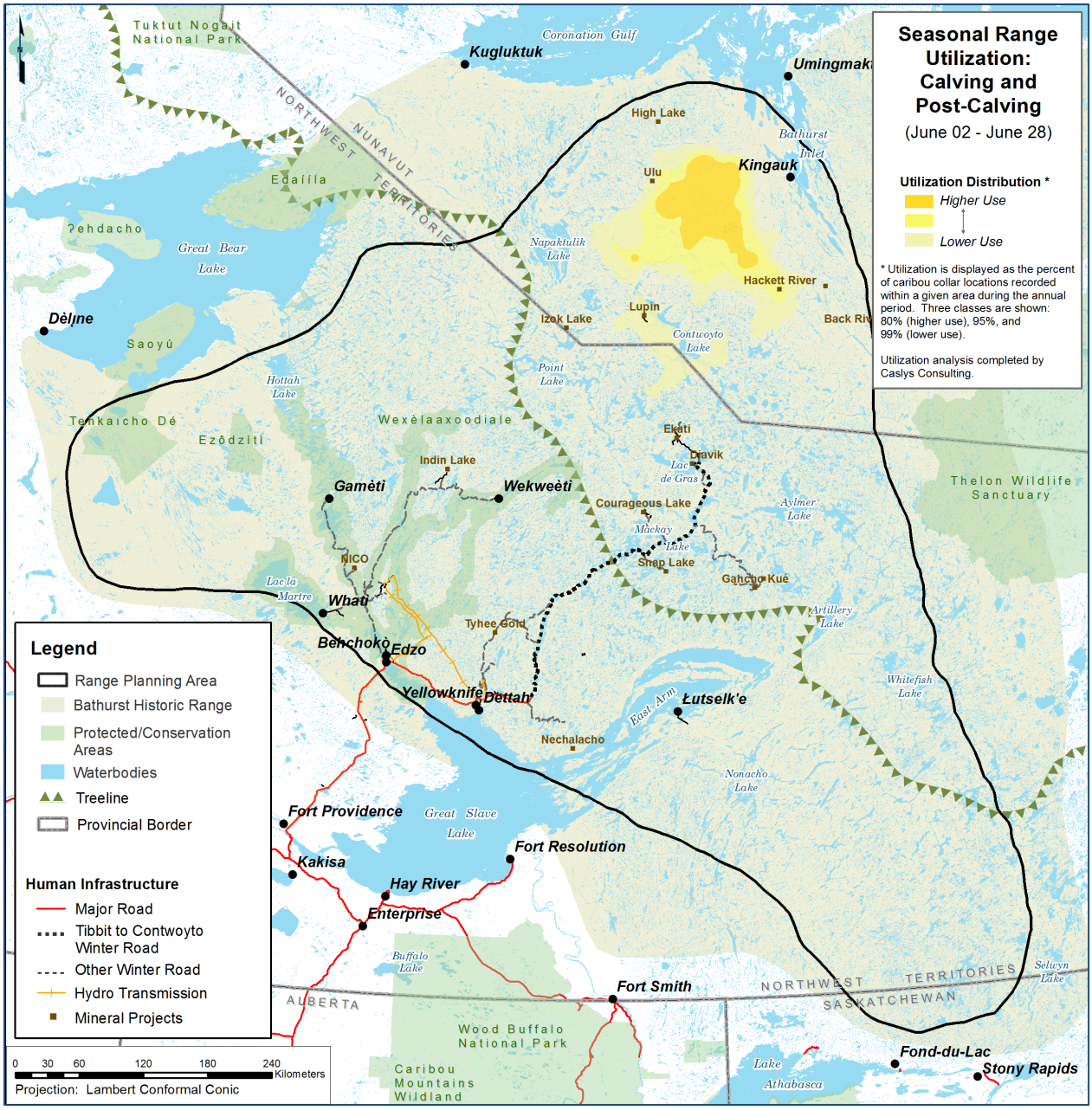


FIGURE 18: CALVING AND POST-CALVING GROUNDS AS DEFINED BY SATELLITE TELEMETRY DATA FROM 1996 TO 2014

3.2.3 Mobile caribou conservation measures

Implementing mobile caribou conservation measures (MCCM) in areas of the range where caribou are particularly sensitive and at a time when the herd is particularly vulnerable is a flexible way of minimizing caribou disturbance. The purpose of developing MCCM is to guide land use activities and operational practices in order to reduce sensory disturbance of caribou. MCCM do not protect habitat from physical disturbance: habitat loss could still occur in areas where only MCCM are used.

Activity restrictions that are triggered when caribou are in the area, such as MCCM, are generally preferred by industry over fixed timing windows, as they are only required when caribou are in the vicinity. While providing increased flexibility, mobile measures also have higher monitoring requirements, and may introduce greater unpredictability to operational planning.

Community members have called for this type of management response,[67] and traditional cultural rules help provide some of the context for guiding land use activity related to caribou and caribou habitat. While this type of guidance is already implemented on an individual project basis, establishing a consistent approach for managing/restricting the timing and location of human land use activity would establish clearer guidelines for industry and provide a basis for improved habitat management at a range scale. Given the relatively short duration of the calving/post-calving period and the fact that calving grounds shift over longer time periods, some Nunavut planning participants also strongly suggested MCCM are the most appropriate approach in this seasonal range.

MCCM have not been applied to a great extent in the north or other jurisdictions in Canada, and where they have been used their effectiveness was not assessed.[68] Some work has been done to develop a rigorous method for detecting, triggering and taking action as caribou approach a development,[69] as well as an analysis of the potential effectiveness of MCCM.[70] These documents provide a reasonable starting point to test implementation in an adaptive management framework. The Review of MCCM commissioned by the Government of Nunavut (GN) recommends the application of MCCM on a trial basis to assess effectiveness

[67] BCRP 2016b, 2017e.
[68] Atkinson, S. 2016.
[69] Poole and Gunn 2015.
[70] Atkinson, S. 2016.

"across one or more seasonal ranges of one of a few overlapping herds." The recommendation below proposes the trial development and application of MCCM on the Bathurst range. The GN review suggests implementation proceed in three phases: planning (creating a MCCM framework), operation (application of MCCM at sites) and review (assessment and reporting on effectiveness).

Given the large geographic areas and dynamic range use patterns of barren-ground caribou, MCCM appear to provide the best combination of disturbance reduction effectiveness for caribou and operational flexibility for industry.

Recommendation 5

For applicable land use activities within the centre of habitation for the Bathurst herd, implement MCCM on a trial basis. Implementation should consist of three phases:

1. Planning (development of an approach that includes minimum standards for monitoring and mitigation)
2. Operation (coordination between government, industry and community guardians on monitoring and compliance)
3. Review (an assessment of the effectiveness including consideration of costs, personnel requirements and achievement of desired outcomes)

3.2.4 Road planning and management

Roads, with their associated human activity and traffic, are an important influencing factor in some parts of the Bathurst caribou range. Building on living memory of how small camps and other land disturbances affected caribou, traditional knowledge holders today have provided insight into the impacts of roads on caribou. A review of the TK literature and concerns expressed by Working Group members indicate that linear landscape features such as roads can affect the behaviour of caribou in many ways, including by:[71]

- Increasing noise, pollution and contaminants
- Altering migration routes and creating partial barriers to movement (e.g. steep snowbanks)
- Enticing use for easy walking, predator lookouts, and escape from insects
- Creating dust that can affect eating
- Causing habitat loss and fragmentation

Roads can also provide increased access into previously remote areas of the range, leading to sensory disturbance from road traffic, mortality from vehicle collisions and increased harvest opportunities, as documented through both scientific research and traditional knowledge.

Road planning and management can be effective in reducing both direct mortality and indirect sensory disturbance to caribou. Construction methods and route orientation can help reduce barriers to herd movement, and consolidation of routes among multiple users can reduce habitat fragmentation. The use of

[71] Kendrick et al. 2005; Parlee et al. 2005, 2013; EMAB 2012; Tłı̨chǫ Government 2013; Sangris 2012; Jacobsen 2013; Trailmark 2015; TRTI 2014; NWTMN 2016; AD 2016; TRTI 2016a, 2016b; LKDFN 2016; NSMA 2016; YKDFN 2016; BCRP 2016b.

seasonal roads rather than all-season roads can also help minimize the timeframe over which disturbance may occur. At a more strategic level, transportation corridor planning can examine route optimization to minimize impacts to caribou while still meeting transportation needs. Mitigating impacts on caribou from roads is one way to help restore respect for caribou.

The NWT relies on seasonal roads in many parts of the range to access communities and mines. As industrial development proceeds and expands across the range, and as the need for all-season roads increases due to climate change-induced shortening of winter road seasons, the need for careful planning processes for road development will become paramount. The Tłı̨chǫ All-Season Road from Highway 3 near Behchokǫ to Whatì has recently been approved. A spur road from Whatì to the NICO Fortune Minerals project will be the next phase to support development of the mine. The GNWT is also advancing work on an all-season infrastructure corridor into the Slave Geological Province from Tibbett Lake to Nunavut.

There are many examples of industrial operations on the Bathurst range taking approaches to manage and mitigate the impacts of roads on caribou. Road management plans are used to monitor caribou behaviour, suppress dust, and guide routing, construction and traffic. Some mining companies have convened TK panels comprised of traditional knowledge holders to incorporate their guidance on how to design roads to best allow for caribou migration and movements (e.g. Diavik TK Panel).

In the NWT, the recommendation for any new roads to develop a Wildlife Management and Monitoring Plan (WMMP) that addresses overall purpose, consolidation, routing and design will ensure consideration and mitigation of potential effects to Bathurst caribou.

At the Cautionary tier of the CLDF, examples of additional management requirements that would further minimize the impacts of roads on caribou include:

- Enhanced traffic management requirements (e.g. convoying)
- Enhanced road design features (e.g. lower shoulder slopes and finer crushed rock)

Recommendation 6

When developing new roads in the Bathurst caribou range, take into consideration the needs of multiple purposes and users, seasonality of construction and use, routing and design to minimize impacts to caribou.

3.2.5 Offsetting and compensatory mechanisms

Offsetting and compensatory mechanisms refer to the practice of taking action to compensate or make up for unavoidable residual impacts that remain after all reasonable mitigative actions have been taken to avoid, minimize and restore losses. The principle of "no net loss" underpins offsetting and compensatory mechanisms such that an equivalent positive action is taken to improve or at least maintain the current status of a particular value. This could be done through replacing, restoring, enhancing or preserving a particular value.[72]

In this Range Plan, a distinction is made between offsetting and compensatory mechanisms. The standard definition of offsetting involves the intentional creation of *measurable ecological benefits* to compensate for the residual ecological losses from development. This usually implies that residual losses are identified, quantified and have a clear, measurable link to the particular value of concern (e.g. welfare of caribou or caribou habitat). Offsetting requires that the ecological losses are replaceable either directly or through a reasonable, equivalent value and that permissible offsetting opportunities exist and are additional to existing mitigation actions. The concept of compensatory mechanisms in this Range Plan is proposed to recognize that offsetting in its truest sense is not always possible or feasible, but that there is still a desire for some form of compensatory action to be taken that will either address discrete impacts that are understood to negatively impact the herd, otherwise improve the condition of the range or improve the knowledge base in support of creating viable offsetting options in the future. The first steps in applying an offsetting requirement would be to identify the residual impact, assess its ability to be offset and determine whether feasible and permissible offsetting opportunities exist. The GNWT is working toward development of a framework for assessing potential offset actions that will be used in engagement with communities to provide further guidance on offsetting and compensatory mechanisms.[73]

Offsetting and compensatory mechanisms are being used in other jurisdictions in Canada to manage impacts to disturbed areas of wildlife habitat.[74] Habitat offsets essentially refer to the trading of an amount of one habitat type that will be lost for an equivalent amount of similar quality habitat that is restored or protected elsewhere so that the total amount is maintained. Due to the risk associated with imperfect knowledge of restoration or habitat enhancement techniques, multipliers are often applied such that offset sites are several times larger than the original area of direct disturbance. Compensatory mechanisms may include financial contributions to funds that support research, habitat restoration/enhancement/reclamation or educational programs or monitoring/guardianship programs. Community input can help identify and prioritize potential

[72] See for example the Business and Biodiversity Offsets Programme: http://bbop.forest-trends.org/
[73] Poulton 2018.
[74] See for example BC Government 2014.

offsetting sites and projects on the Bathurst range and outline when other compensatory actions may be more appropriate.

The concept of offsetting was first raised in the NWT during the environmental assessment of Dominion Diamond Mines's Jay project. The MVRB required Dominion Diamond Mines to develop a Caribou Offset and Mitigation Plan with specified elements as part of a "*comprehensive and innovative combination of mitigations… to reduce the risk of serious harm to the Bathurst Herd to the lowest possible level.*"[75] Elements required in the plan were not offsets in the strictest sense, but were nonetheless compensatory actions that could be deemed to benefit the herd such as enhanced dust mitigation and accelerated restoration, as well as financial support for research into: a) causes of the decline in the Bathurst herd; b) mechanisms of the zone of influence around development sites; c) assessment of the distribution of caribou within and outside industrial features including roads (geofence collar data); and, d) TK based monitoring programs.[76]

Working Group members have highlighted that offsetting and compensatory mechanisms could be used to deal with some of the legacy disturbances of past land use activity (e.g. abandoned structures, fuel caches, etc.).

At the Desirable tier of the CLDF, direct habitat offsets are the first priority. If offsets are deemed infeasible, compensatory mechanisms should be used. At the Cautionary tier of the CLDF, examples of additional management requirements that would further offset or mitigate the impacts on caribou include:

- Applying higher ratios for habitat offsets
- Mandatory compensatory mechanisms, including financial contributions toward integrated research, monitoring and community guardianship programs

Recommendation 7

Use offsetting/compensatory mechanisms that are scaled to project type, size, and CLDF status (Desirable or Cautionary). Such approaches should consider:

- Land tenure requirements
- Habitat restoration, enhancement and preservation (including legacy land disturbance)
- Financial and in-kind contributions to integrated science and TK research and monitoring programs on possible impact pathways and innovative ways to offset impacts

[75] MVRB 2016.
[76] DDEC 2017.

3.2.6 Wildfire and fuels management

Wildfire is the most important natural disturbance factor across the forested Taiga portion of the Bathurst range. Because of its influence on caribou habitat, area affected annually by wildfire must be tracked and assessed in conjunction with managing human-caused land disturbance.

There are limited human, financial, and physical resources (i.e. aircraft and equipment) available to manage wildfires on an annual basis. Fighting wildfires in caribou habitat would likely require resources in addition to those needed to protect communities and human property. Since many of the wildfires that have the greatest impact on caribou habitat are large and remote, they may be nearly impossible to control.

The GNWT uses a "values at risk" hierarchy to determine priorities for wildfire management. Human life and infrastructure/property are the top priorities that guide GNWT decisions about fire response, but natural resource values (such as caribou habitat) can factor in as an additional priority. Fuel treatments such as prescribed burns and fire breaks can be used in some cases (and under the right conditions) to attempt to protect important areas and are recommended by Caribou People as a way to respect caribou. Caribou People note that an increase in the size and frequency of wildfires combined with constraints on fire suppression have threatened much caribou habitat, particularly in the winter range.[77]

In recent years, ENR has worked with some NWT communities to identify areas of important winter caribou habitat to include in their "values at risk" hierarchy of decision-making, but this has not been done for the entire winter range of Bathurst caribou and has primarily focused on areas near communities. Other approaches such as prescribed burns and revegetation have been used infrequently.[78] The GNWT does not replant after fires because the burned areas are often too large to replant effectively, and because natural regeneration is often more successful than planted seedlings.

The large-scale application of fire management treatments is limited by the large expanse of the Taiga forest in the NWT and the logistical constraints and costs associated with taking action in remote areas. Nonetheless, there may be opportunities to take action in some years, recognizing that the benefits of that action may be negated by fires in the future. Caribou People can provide key insights into identifying important caribou habitat for prioritized action.

Loss of winter habitat in the Taiga due to recent wildfires has also been identified as a concern. Adding, on an annual basis, large, strategically-located patches of forest in the central Bathurst winter range to the GNWT

[77] Parlee et al 2013; TRTI 2016b; DNNLC 2016; LKDFN 2016; BCRP 2016b, 2017e.
[78] While people talk about controlled burns being practiced in the past by Caribou People, it was not possible to find discussions of this through the literature review.

fire management "values at risk" database will formally recognize the potential importance of these areas to a recovering population. While there are negative long-term consequences to complete fire suppression, the need to protect "caribou food" is an important concern expressed by community members.[79]

Recommendation 8

On an annual basis, identify large, strategically-located patches of forest in the central Bathurst winter range for the GNWT fire management "values at risk" database. Response to wildfires in these areas would be based on an analysis of the current fire load, fire environment, resource availability and similar considerations of the management options at the time of the wildfire event.

3.2.7 Online map staking

Over the past century, the Bathurst range has experienced significant mineral exploration activity resulting in multiple producing mines. In 1991, prospectors identified diamonds in the Lac des Gras region of the Slave Geological Province in the central Bathurst range, leading to a dramatic increase in the level of mineral exploration in the central NWT and the Kitikmeot region of Nunavut. During the mid-1990s to late-2000s, active mineral claims covered most of the central and northern portion of the Bathurst herd range. This large increase in exploration activity was the source of concerns about cumulative effects on Bathurst caribou voiced by community members, regulators and scientists.

A sustained level of mineral exploration is required to develop a mine: fewer than 1 in 10,000 exploration projects typically result in a producing mine. Each stage of the mineral exploration and development cycle requires different types of jobs and has varying levels of economic contributions. Early exploration involves activities such as prospecting, staking a claim, ground and air-based geophysical work and exploratory drilling. For many of these activities, habitat disturbance is addressed through the terms and conditions of a land use permit or water licence. However, some of the earlier exploration phases of work do not require a permit or licence.

A prospector's licence only authorizes a person to prospect and explore for the purpose of staking and recording a mineral claim in the areas where they are not prohibited from doing so. Prospecting permits allow the permittee the exclusive right to stake and record claims inside the permit area. Current regulations require claim stakers to do so on the ground, which often involves the use of the low altitude rotary aircraft to transport stakers from one location to another. This particular low-level environmental disturbance would be eliminated with the implementation of an online map staking electronic system because the need to ground stake on the land will no longer be necessary. Online map staking would not change community engagement obligations of mineral developers.

Recommendation 9

During the development or amendment of legislation related to mineral resources development, consideration should be given to the feasibility of online map staking to reduce sensory disturbance to caribou.

[79] BCRP 2016b.

4 Adaptive Management

Adaptive management in its simplest form is "learning from what you do and changing practices accordingly."[80] This is similar to the Indigenous ethic of "learning by doing." By acknowledging environmental change and uncertainty and the resulting need to observe, learn and respond, adaptive management is consistent with many TK practices and management systems.[81] In practice, adaptive management consists of:

- A structured, iterative process for planning and implementing management actions
- A dedicated monitoring program to implement the plan, assess effectiveness and learn more about the system being managed
- The update of plan elements and future management actions

An adaptive management framework for the Range Plan will provide a link between a) annual activities focused on tracking and assessing disturbance levels and range use, and b) longer term activities that occur at five year intervals that comprise an approach to regular assessment, review and renewal of Range Plan elements (Figure 19).

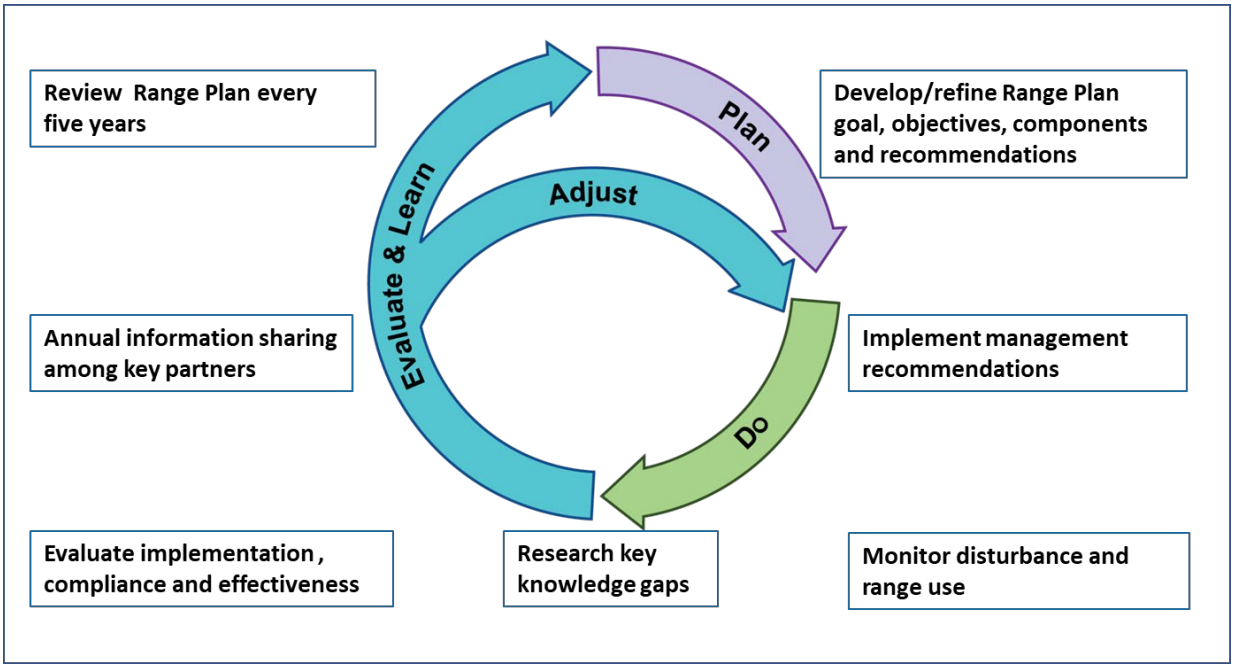


FIGURE 19: AN ADAPTIVE MANAGEMENT FRAMEWORK FOR THE BATHURST CARIBOU RANGE PLAN

[80] Stankey et al. 2005.
[81] Berkes et al. 2000.

4.1 Monitoring

To support the Range Plan adaptive management framework, several types of monitoring are required. This begins with basic monitoring of land disturbance and range use, coupled with monitoring to evaluate implementation, compliance and effectiveness of the Range Plan.[82]

4.1.1 Land disturbance and range use

The implementation of disturbance thresholds across the Bathurst range requires a process for regularly calculating and updating the amount of human-caused and natural disturbance on the landscape. An annual disturbance tracking system requires consideration of many factors, including what methods are used to calculate and track disturbance (what counts and how to measure it) and the spatial unit used to calculate the amount of disturbance. In addition, to implement MCCM in the Enhanced Management tier, the centre of habitation will need to be defined and mapped. Lastly, tracking and reporting on size and severity of wildfires[83] will help assess any change in fire dynamics and caribou range use patterns over time. All results will be distributed and posted on a public website.

1. Anthropogenic disturbance footprints will be tracked and updated annually for each RAA based on the following methods:

    - Detection and tracking of new sources of disturbance that would be counted as increases to disturbance amounts.

        - ENR will track and report on amounts of new land disturbances through the Cumulative Impact Monitoring Program Inventory of Landscape Change (web-based geographic information system).[84] This consists of reviewing land and water board public registries for any newly permitted activities and their associated footprints. The ZOI would be added according to the assumptions currently used in the disturbance mapping for the Range Plan.

    - Detection and tracking of existing disturbances that have changed or stopped their activities would have their footprints and ZOI adjusted accordingly.

        - ENR will use land and water board public registries to determine any existing projects that have either changed (moved from operation to reclamation phase or from exploration to development phase) or shut down their activities. Human disturbances that are no longer in use, have changed activity levels, or are restored or reclaimed may have ZOI values applied in relation to the updated activity level. Criteria would need to be established to determine whether a restored or reclaimed disturbance is removed from the previously defined direct footprint.

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[82] Bunnell and Dunsworth. 2009.
[83] Rickbeil et al. 2017.
[84] http://www.enr.gov.nt.ca/en/services/cumulative-impact-monitoring-program-nwt-cimp/inventory-landscape-change-webviewer

- Total disturbance levels in each RAA will be calculated, followed by an assessment of CLDF status based on that level.
    - ENR will calculate total disturbance (footprint and ZOI) for each RAA consistent with methods used for disturbance mapping in the Range Plan and based on the combination of new disturbances and existing disturbances that have either changed or been removed.

2. Mapping the centre of habitation/core use area for implementation of the MCCM:
    - Based on available science and TK, ENR will derive a map of the centre of habitation for the Bathurst herd for use in management decisions. The centre of habitation/core use area is defined as the annual range derived from satellite collar locations from 2015-2017 (using the 95% isopleth of a kernel density estimator) coupled with traditional knowledge of important migratory, geographic and habitat features. The centre of habitation will be evaluated and updated within five years of BCRP implementation based on the most current caribou collar data.
3. Tracking wildfire on an annual basis and comparing amount burned to the natural range of variation will be required to assess trends in wildfire frequency, area burned and wildfire severity. Human disturbance threshold levels in the Taiga portions of the range may need to be revisited if such changes are documented.
    - ENR will track and report on the number of wildfires, area burned and wildfire severity. Wildfire disturbances will be estimated based on areas of mapped fire perimeters, using remote sensing methodologies to estimate burn severity. New wildfire disturbances in the Bathurst caribou range will be tracked and mapped through coordination with the Forest Management Division of ENR.

4.1.2 Implementation

Have we done what we said we would? Implementation monitoring helps us to determine whether the Range Plan management recommendations were implemented as planned.

- ENR will report on the progress of implementing BCRP recommendations across jurisdictions. This will include whether recommendations were implemented, to what extent, and if appropriate, when implementation is expected to occur.

4.1.3 Compliance

Have we done what we were told to do? Monitoring for compliance helps us to track whether BCRP management determinations and recommendations made as part of regulatory oversight are followed. This includes compliance with land use permit terms and conditions, review board recommendations, conditions in project certificates and Wildlife Management and Monitoring Plans. As compliance monitoring is usually carried out by management authorities through inspections, compliance monitoring through the BCRP will have to integrate compliance records across the various authorities.

- ENR will, to the extent possible, report on compliance with implemented Range Plan recommendations. This includes reviewing inspection reports on the land and water board public registries and inspection reports associated with WMMPs.

4.1.4 Effectiveness

Did our actions achieve our objectives? Effectiveness monitoring helps us to assess whether the recommendations and/or mitigation practices that were implemented met their objectives – in other words, were the practices effective? For the BCRP, effectiveness monitoring would likely be undertaken by the responsible party that is implementing a management action or mitigation practice along with the management authority. Measures of effectiveness would generally incorporate land and caribou centric indicators and should be developed in concert with Indigenous communities. Specific monitoring indicators will need to be developed together with implementation details for each recommendation (see Section 5).

Effectiveness of mitigation actions needs to be assessed at different scales and should consider areas of clustered development (e.g. Lac de Gras). It will also require integrating project-specific scale monitoring with monitoring conducted at the range scale. Although the ability to test and evaluate effectiveness will be difficult at the broader range scale, it is important to consider feasibility and how collective monitoring efforts will be coordinated and linked across scales. Guardianship efforts may contribute greatly in this regard.

- While further work is required to develop indicators (i.e. measures) for assessing effectiveness, ENR will, to the extent possible, work with partners to bring together information on site-specific mitigation and monitoring programs with broader scale information from scientific and TK sources (including guardian programs), on:
    - Environmental conditions (i.e. climate, vegetation and fire)
    - Herd demographics (i.e. size, trend, survival and recruitment)
    - Health indicators (i.e. pregnancy rates and body condition)
    - Caribou movement patterns and habitat use

4.2 Review

ENR will prepare an annual update of Range Plan implementation activities and monitoring undertaken by Range Plan partners. This update will be made available on the ENR website and should also be discussed at meetings with representatives from Nunavut, northern Saskatchewan, Indigenous governments and organizations, co-management partners, industry and environmental organizations. The update may be coordinated with annual gatherings held by the Bathurst Caribou Advisory Committee. Some key items for review include:

- Updates on Guardianship programs
- Herd population status
- Disturbance levels to land and caribou (including wildfire)
- Status of implementation of recommendations
- Summaries of key land management decisions and recommendations made in the Bathurst range
- Assessments of the effectiveness of mitigations
- Perspectives from key partners, communities and collaborators

The Range Plan will undergo formal review every five years and will be updated as needed to respond to community direction, changing environmental conditions, status and trend of the herd, any new stressors apparent on the range of the Bathurst herd, significant changes to wildlife management regimes (e.g. implementation of Nunavut Land Use Plan) and any new research results relevant to the Range Plan. Elements of the Range Plan to be reviewed and renewed may include management objectives and land disturbance threshold levels, as well as methodologies and associated assumptions and criteria. Renewal of the Range Plan would be based on a review of results, which would be reflected by key management recommendations and decisions on land use and cumulative effects management made during the preceding five years.

In addition to regularly scheduled reviews, if any Range Assessment Area (RAA) in the Bathurst range enters the Critical tier of the CLDF, this should trigger a formal review of the overall Range Plan.

4.3 Research

Research is the formal investigation or experimentation to address knowledge gaps using scientific methodology and/or through participatory investigations based on traditional knowledge. The BCRP acknowledges and emphasizes the need to prioritize and conduct collaborative research to address key knowledge gaps regarding the impacts of disturbance to the land and to caribou themselves. Some of the knowledge gaps identified by the BCRP Working Group are highlighted below. This is not a comprehensive list of recommended research topics. Additional work on an accompanying strategic research plan for the BCRP should be completed to further explore and prioritize knowledge gaps facilitate the undertaking of appropriate collaborative research projects, and develop innovative strategies for funding.

4.3.1 Potential research topics

1. **Zone-of-influence (ZOI):** The ZOI of human development footprints on caribou is a key assumption for estimating and managing total disturbance on the Bathurst range. Although ZOI is not easily measurable, it is a fundamental and intuitive way of accounting for the reduction in use of habitat that extends beyond a direct footprint. There is a need to improve and standardize methodologies for estimating ZOI that incorporate caribou response variables to habitat type (e.g. Tundra vs. Taiga), development type (underground vs. open pit mine, industrial road vs. winter snowmobile trail), and associated footprint-based activity levels. Research should focus on understanding factors that cause caribou avoidance patterns and contribute to the variability in the caribou response. Also, more work is required to understand ZOI from a TK perspective.

2. **Annual range-wide land disturbance indicator/threshold:** The current CLDF is organized around thresholds for the five range assessment areas. Further research should be directed toward the need for and potential approaches to establishing an annual range-wide land disturbance indicator or threshold.

   This includes research focused on testing the hypothesized relationship between human disturbance and caribou, which was defined through scenario analyses using the CARMA integrated model. Key assumptions of the disturbance hypothesis, including behavioral impacts and energetic consequences to caribou at the scale of individuals, groups and populations should be evaluated further based on field study and simulation modelling.

3. **Non-footprint-based activity impacts:** Potential disturbance to caribou (and habitat) associated with non-footprint-based activities (e.g. early mineral exploration, tourism and biological research) is an important and recurring concern of communities and managers. Research is required to document and evaluate the potential impact of non-footprint-based activities on caribou (and caribou habitat). A first step will be to develop a systematic approach for identifying and monitoring non-footprint activities as definable sources of potential disturbance on the Bathurst range in time and space.

4. **Identification of important habitats**: It is generally recognized that some areas of the seasonal and annual ranges are more important to Bathurst caribou and Caribou People. Correspondingly, connectivity between those important seasonal range use areas is critically important for long-term conservation of Bathurst caribou. Research is needed to identify and estimate the importance, sensitivity and productive capacity of key areas and habitats for Bathurst caribou, including those areas that maintain connectivity across the caribou range, such as water crossings, land crossings and eskers. This information will help identify sensitive habitats and seasonal windows for Bathurst caribou that can be incorporated into mitigation measures to prevent fragmentation across the annual range. New research on habitat use, relative importance and connectivity may help develop a working definition of critical habitat for barren-ground caribou.

   Identifying and monitoring important habitats across the annual range of the Bathurst herd will require a seamless vegetation classification across the entire range. This should be developed based on remotely sensed data across the Tundra and Taiga biomes.

5. **Habitat offsets:** There is currently minimal use of habitat offsets in the NWT and across the North. Further research conducted in collaboration with communities is needed to help determine

measurable ecological benefits and to identify potential offset project opportunities as well as appropriate alternative compensatory mechanisms.

6. **Wildfire effects:** Wildfires are a key natural disturbance that influences the quality, quantity and spatial heterogeneity of winter range for migratory barren-ground caribou. Very few publicly available reports detail TK of the effects of wildfire, which suggests an important data gap, particularly given the importance of wildfire effects expressed by community members throughout the BCRP process. New approaches should be developed to integrate remote-sensing data to map and estimate effects of recent wildfires on winter range conditions and caribou use of habitat. Community-based TK studies, as well as empirical field research, are required to better understand the ecological influence of wildfire burn rates (i.e. natural range of variation) and burn severity on habitat and range use by Bathurst caribou, as well as considering implications of climate change scenarios.

7. **Fuels treatments and post-wildfire regeneration:** Feasibility studies should address community concerns and perspectives regarding potential wildfire management actions that are intended to conserve important winter range areas. Some examples include the use of controlled burns to treat forest fuels and protect older patches of forest, and revegetation treatments of burned areas. Such studies should directly assess the effectiveness, costs (both financial and human), logistics and potential application of these approaches more broadly.

8. **Community guardianship programs:** Future research should build upon traditional knowledge and people's ongoing relationship with caribou and the environment, providing key insights based on unique measures and indicators of caribou well-being. It should also facilitate participatory active research with community programs aimed at bridging inter-disciplinary collaborations between social and ecological sciences. In addition, ways to enhance community-based monitoring networks across the range that are based on TK and driven by Caribou People with significant youth engagement should be explored.

9. **Healing the people-caribou relationship:** While community guardianship programs represent one way to foster respect and potentially support the relationship between people and caribou, more community-driven research is needed to explore how this complex relationship can be healed and the role of traditional values and knowledge.

5 Implementation

Successful implementation of the BCRP will require a genuine commitment from governments, industry, organizations, communities and individuals. Range Plan recommendations are generally intended to support and influence a variety of land use and wildlife management decision-making processes as well as guide community and industry-based initiatives. These include:

1. Land use planning
2. Community guardianship programs
3. Wildlife management recommendations and actions (governments and renewable resources boards)
4. Environmental assessment
5. Regulatory processes
6. Industry protocols and best management practices

The Range Plan attempts to apply the concept of cumulative land disturbance management thresholds as the foundation for implementation.[85]

5.1 Communities across the Bathurst range

As guardians who have always cared for caribou within their asserted territories, Indigenous peoples across the Bathurst range have a critical role to play in charting the best path forward for Bathurst caribou. Several communities have already taken bold steps along this path through formalized guardianship programs. The GNWT, Tłı̨chǫ Government and Government of Nunavut presently have legal responsibilities to protect barren-ground caribou, but much will be determined by the ways in which people "on-the-ground" in communities assert their roles, responsibilities and rights to inspire actions to protect caribou.[86] Traditional law coupled with legal tools of governments today will largely determine the success of the Range Plan.

Specific actions that communities, organizations and individuals can take include:

- **Assert pressure on governments and leadership at all levels.** Bottom up pressure and support are required as a foundational action. This is true for all levels of government ranging from Indigenous to territorial to federal.
- **Develop, promote and abide by traditional laws/community codes of conduct for harvest and land access.** At the most fundamental level, practising respect begins with individuals who take responsibility for themselves and those around them.
- **Participate in the further development, promotion and implementation of community guardianship programs**. Indigenous community members are uniquely skilled to work at the intersections between ecological, cultural and compliance monitoring systems. Involvement in watching programs can serve as the basis for educating all land users to respect caribou.

[85] Kennett 2006.
[86] "We can't have rights without responsibility. If we assert rights to caring for land and monitoring the water and the fish, we have to do it too." (Stephanie Poole in SVA Consulting 2016: 18)

- **Actively engage with governments, organizations and industry to support implementation of Range Plan recommendations**. As people with rights to their territories, Indigenous peoples can leverage their role as guardians and land stewards to get all parties on-board with Range Plan implementation.

5.2 Industry

Mineral exploration and development have been a significant part of the northern economy for many decades. The list of benefits to northerners is long, and include employment, taxes, training, local business spending, major infrastructure legacy developments (e.g. roads, hydroelectric facilities, etc.), and Impact Benefit Agreements directly with Indigenous communities and organizations. The GNWT also negotiates Socio-Economic Agreements for major mining projects, which outline industry commitments to northern residents including northern employment, business opportunities, and support for community, family, individual and cultural well-being initiatives. The Mining Association of Canada's "Towards Sustainable Mining" initiative also sets sustainability standards for mineral exploration and development projects. Industry proponents know that, as leaders in the creation of a sustainable northern economy, they play a critical role in ensuring a resilient landscape for Bathurst caribou over the long term.

In addition to the recommendations set out in the CLDF that have requirements for developers (e.g. MCCM, offsetting/compensatory mechanisms, road planning and mitigation and online mineral staking), other actions that companies, organizations and land development proponents can take include:

- **Embrace sustainability.** Mining sustainably starts during exploration, continues through operations, and ends during reclamation phases. Consistent with the Mining Association of Canada's "Towards Sustainable Mining" initiative, long term commitments to sustainability and transparency through the entire mineral development cycle should be demonstrated in all business and management plans.
- **Increase engagement with communities.** Embrace the role of working with communities and earning their trust. Support the development and implementation of community guardianship programs in Impact Benefit Agreements and beyond.
- **Strive for socio-cultural environmental excellence**. Attaining full compliance with all land use regulations and requirements and publicly communicating results is just a starting point. Achieving excellence in environmental performance means investing in research through scientific and traditional knowledge studies aimed at finding innovative approaches to socio-cultural and environmental protection and encouraging and rewarding staff to achieve better conservation outcomes.
- **Actively engage with governments and communities to support implementation of Range Plan recommendations**. Demonstrate leadership and advocate the need for all partners to fulfill their responsibilities toward implementation.

These are important considerations that support a healthy, sustainable resources sector. The GNWT is currently developing a Mineral Resources Act that recognizes their importance, seeks to make the NWT mining sector more competitive, respects the rights and traditions of Indigenous peoples, and promotes sustainable land use.

5.3 Other jurisdictions

The recommendations in the Range Plan are directed primarily at land use and wildlife management authorities in the NWT for implementation. Where the Range Plan makes recommendations in parts of the range that fall within other jurisdictions (i.e. Tłı̨chǫ lands, Nunavut, Saskatchewan) they are non-binding and provided as advisory for consideration under the co-management land and resource management processes of those jurisdictions.

Partners in Nunavut are currently in a particularly interesting and challenging position relative to the development and implementation of the Range Plan. They share the same interests in restoring respect for caribou and protecting caribou habitat while supporting local and territorial economic development, particularly in the Kitikmeot region. Their focus is appropriately set on the current development of the territory-wide Nunavut Land Use Plan. The BCRP has been developed in the spirit of the *Memorandum of Understanding: Cooperation on Managing Shared Populations of Caribou Between the GNWT and the GN* to "promote and advance common goals relating to the management and conservation of caribou."

5.4 GNWT approach to implementation

Within the integrated land and resource co-management system of the NWT, the Range Plan will rely on a variety of policy and legislative actions, as well as collaboration with the many different bodies with authority for land use and wildlife management decisions including the GNWT, Indigenous governments, renewable resources boards, environmental review board and land and water board (see Table 6 for a list of the governing bodies in the NWT and their roles).

At the broadest level, the GNWT will, as a whole, consider the BCRP when making decisions regarding land and resource use. Consideration will be given to developing a policy or framework that describes how different departments will integrate consideration of the Range Plan guidance and recommendations into their core decision-making mandates.

For those processes where the GNWT provides input (e.g. environmental assessment/impact reviews, land use plans and regulatory processes such as land use permitting) the GNWT will draw on the recommendations and guidance provided by the BCRP. Existing projects will continue operating under current permit terms and conditions, environmental agreements and Wildlife Effects Monitoring Programs (WEMPs). As WEMPs come up for review and are approved under the NWT *Wildlife Act* as Wildlife Management and Monitoring Plans (WMMP), the recommendations in the BCRP will be considered. New projects triggering land use permits or water licences will be reviewed with consideration to Range Plan recommendations.

Further details on specific opportunities for GNWT implementation action are described in the subsections below. Table 7 provides a summary of implementation actions for each Range Plan recommendation the GNWT will undertake in the near- and mid-term timeframes.

TABLE 6: AUTHORITIES IN THE NORTHWEST TERRITORIES LAND AND RESOURCES CO-MANAGEMENT SYSTEM

Administrative Body & Authority	Role in Decision Making Process	Role
Land Use Planning Boards (LUP Boards) Responsible for developing and monitoring implementation of a land use plan for respective settlement areas established through land claim agreements. LUP Boards are established in the Sahtú and Gwich'in regions. The Tłı̨chǫ Government is responsible for land use planning on Tłı̨chǫ lands. A process for land use planning in Wek'èezhìı is outlined in the Tłı̨chǫ Agreement.	• Develop and monitor implementation of regional land use plans (LUPs) in areas with settled land claim agreements • Can carry out conformity checks, grant exceptions or amend the LUP • Contain conformity requirements that guide the EA and regulatory processes • Screen applications referred by the LWBs for conformity with LUP	Land Use Planning
Environmental Assessment/Impact Review Boards The Mackenzie Valley Review Board (MVRB) conducts environmental assessment and environmental impact reviews of developments in the Mackenzie Valley.	• Conduct EAs and recommends approval (with or without mitigation measures) or rejection to responsible authorities • Order environmental impact review if a more comprehensive assessment is required • The independent panel conducts the environmental impact review and similarly recommends approval (with or without mitigation measures) or rejection	Environmental Assessment
Land and Water Boards (LWBs) Under the MVRMA, the Mackenzie Valley, Sahtú, Gwich'in, and Wek'èezhìı land and water boards regulate the use of land and water and the deposit of waste through the issuing of Land Use Permits and Water Licences.	• Preliminary screener regardless of whether an EA is required or not • Conduct public review on a proposed development (potential for significant adverse impacts may be a cause for public concern) • Screening for LUP conformity (refer to LUP Boards when necessary) • Issue Land Use Permits and Water Licences with terms and conditions	Project Screening/ Regulatory
Regulators *other than LWBs* e.g. GNWT	• Preliminary screener regardless of whether an EA is required, or not • GNWT authorizations that require preliminary screening are listed in the *Preliminary Screening Requirement Regulations* (these regulations have not yet been amended to reflect current GNWT authorizations)	Project Screening/ Regulatory

Administrative Body & Authority	Role in Decision Making Process	Role
	• Conduct public review on a proposed development (potential for significant adverse impacts may be a cause for public concern) • Write lease, licence or permit terms and conditions for land and resource management activity (including timber harvesting, oil and gas, and mineral development). Licences and permits include terms and conditions and other measures provided by the regulator/informed by EAs and EIRs • The Responsible Ministers make consensus decisions on recommendations, often with associated mitigation measures, from the Review Board. For projects not on federal land, the GNWT Minister of Lands signs the decision on behalf of all the Responsible Ministers • ENR approves Type A Water Licences or Licences for which a public hearing has been held	
Renewable Resources Boards (RRBs) Regional authority responsible for managing wildlife habitat (forests, plants and protected areas) and commercial activities related to wildlife in the settlement region. In the Mackenzie Valley, renewable resources boards have been established through land claim agreements in the Gwich'in, Sahtu and Tłı̨chǫ regions.	• Review proposals for wildlife management or wildlife management plans, consult with proposal submitting party and other managing bodies, and make final recommendations or determinations on the proposal. Each Party can accept, reject or vary recommendations.	Wildlife Management Plans
Land and Resource Administration: **GNWT and respective Indigenous governments (IGs).**	• IGs make all land and resource decisions on privately owned lands with surface and sub-surface rights. The GNWT consults with IGs on all other settled and unsettled lands. • The Department of Industry, Tourism and Investment issues sub-surface mineral rights through the *Territorial Lands Act* as well as sub-surface oil and gas rights through the *Petroleum Resources Act* and the *Oil and Gas Operations Act*. • The Department of Lands issues tenures for quarrying, recreational	Issuance of Land Rights & Tenures

Administrative Body & Authority	Role in Decision Making Process	Role
	leases, licences of occupation and commercial leases…. and others. • ENR issues Forest Management Agreements, Timber Harvesting Licences and Timber Harvesting Permits • Responsible for the disposal of land through sales agreements or leases. Applicants obtain the right to legally occupy the surface of land for a specific period of time from the land manager or land owner.	

5.4.1 Guardianship

BCRP Working Group members encouraged implementation of guardianship programs to start as soon as possible. While the social, economic, cultural and environmental value of guardianship programs is undisputed,[87] implementation of a range-wide guardianship program requires Caribou People to come together to build a vision, set strategic priorities, create an operational plan and evaluate the program through key performance indicator monitoring.[88] The program must be grounded in a community approach and aligned with community priorities.

In the 2017-2018 budget, the federal government committed $25 million over five years to support the establishment of a network of guardianship programs in Canada. It is unclear what amount, if any, might be available for programs in the NWT, Nunavut and Saskatchewan. Other funding opportunities could include governments, industry and non-profit agencies.

The GNWT will partner with Indigenous partners to kick-start the development and enhancement of programs. The first steps are to develop a strong plan; learn from others; secure steady funding; establish good governance; receive buy-in from governments, industry, funders, supports, etc.; engage youth; and develop systems for ongoing participation, accountability, transparency, commitment, organization, and secure data management. The GNWT is already collaborating toward convening a multi-day workshop focused on learning from existing programs and proposing a future program.

The success of implementing guardianship programs to honour TK and rebuild the relationship between people and caribou will depend upon the following actions, at a minimum:

- Recognize that guardianship depends upon people working together for caribou well-being
- Engage youth in guardianship activities and learning opportunities with Elders
- Care for caribou, in keeping with traditional practice and laws
- Protect sensitive areas to fulfill responsibility as guardians
- Build on and expand upon existing "watching" programs
- Direct financial and other support towards guardianship programs
- Include education on respectful harvest practice in guardianship programs
- Reconcile predictions from community members that caribou would decline, starting in the 1990s, and take partial responsibility

5.4.2 Habitat conservation

The GNWT will continue to work with Indigenous governments and organizations to identify important water crossings, land crossings and other land and habitat features across the range (e.g. eskers). Once identified,

[87] SVA Consultants 2016: 5.
[88] TNC 2016.

these places will be documented 'on-the-record' for use in all future land use planning and regulatory processes.

Recognizing that land use planning can take a long time, and fixed land use designations can be difficult to modify once in place, the GNWT will work with partners to identify opportunities for using habitat protection provisions under the *Wildlife Act* and *Species at Risk(NWT) Act* to provide habitat conservation for identified high priority habitat areas. New legislation in the NWT offers the opportunity to flexibly designate the types of activities that would be allowed/excluded and the timeframe within which the restrictions would apply. The specific legislative provisions include:

- Conservation area, s. 89 *Wildlife Act*
- Habitat protection under s. 93 *Wildlife Act*
- Habitat conservation under s. 152 *Species at Risk (NWT) Act*
- Habitat Designation under s. 80 *Species at Risk (NWT) Act*

5.4.3 Wildfire and fuels management

The Forest Fire Management Policy (53.04) establishes the "values at risk" hierarchy for allocating resources to fire suppressions and fuels treatment purposes. The Wildlife Division of ENR will provide information on important large patches of undisturbed winter habitat for use in the "values at risk" decision-making hierarchy annually. These areas will be identified in collaboration with Indigenous governments and communities. No new policy or legislation is required.

5.4.4 Road management and planning

Road management and planning to minimize impacts to caribou through seasonality of construction and use, routing and design (Section 4.2.4) can be implemented through various means including the requirement of a Wildlife Management and Monitoring Plan (WMMP) under s. 95 of the *Wildlife Act*.

The *Wildlife Management and Monitoring Plan Guidelines* stipulate criteria for when a WMMP is required depending on road type and length.[89]

5.4.5 Mobile caribou conservation measures and offsetting/compensatory mechanisms

The *Wildlife Management and Monitoring Plan Guidelines* specify circumstances under which WMMPs are required and generally what they should contain. These guidelines specify that Range Plans identifying areas with cumulative land disturbance concerns (i.e. land disturbance at the Cautionary or High Risk levels) are a trigger for requiring a WMMP. In such cases, any project or land use activity meeting the criteria specified in the guidelines could be required to implement mobile caribou conservation measures and/or offsetting/compensatory mechanisms as part of a WMMP. Currently, the requirements for a WMMP are tailored to the size of the project and a template is provided for smaller operators to minimize the regulatory burden.

[89] This will apply to roads as defined by the *NWT Motor Vehicles Act*, as well as access roads and trails as defined by the federal Northern Land Use Guidelines (INAC 2017).

The GNWT has developed a guidance document on how the implementation and coordination of MCCMs might proceed in the NWT. It outlines the shared responsibilities among government and industry partners for monitoring and the potential triggers and responses that might occur. It also presents the basis for a pilot project test of the procedures before finalization. Industry partners will be engaged throughout the process. This guidance will build on recent advances in thinking and experiences such as those presented at the Nunavut Wildlife Management Board Habitat Workshop in 2015.[90]

[90] Poole and Gunn 2015.

TABLE 7: NEAR-TERM AND MID-TERM IMPLEMENTATION ACTIONS

Recommendation	Implementation Actions	
	Current / Soon to Commence	**Following Cabinet / WRRB Approval**
1. Cumulative Land Disturbance Framework	• Initiate development of guidance on how the CLDF should be considered in GNWT land and resource use decisions	• Translate guidance into formal policy

2. Community Guardianship	• Finalize the report on implementation considerations for community guardianship
	• Distribute report and seek input from all partners
	• Work with partners to set up an initial workshop to scope out the vision, objectives, and opportunities to develop, support and link range-scale and regional guardian programs
		• Work with partners to secure funding sources for initial phases of the program
		• Work with partners on:
		  • Ongoing coordination of programs
		  • Developing safety policies/procedures
		  • Developing common reporting protocols
		  • Periodic range-scale sharing workshops

3. Habitat Conservation – Water Crossings, Land Bridges and Eskers	• Initiate assessment of detailed opportunities and requirements to apply provisions in the *Wildlife Act* and *Species at Risk (NWT) Act* • Facilitate cross-departmental dialogue as required • Investigate opportunities for partnership funding (e.g. Canada Nature Fund)	• Work with Indigenous partners to further identify high priority habitat areas, potential boundaries around those areas and types of restrictions • Develop policy and regulations to enable implementation of habitat conservation measures for those areas
4. Habitat Conservation – Calving and Post-Calving Area	• Continue dialogue with the Government of Nunavut and other Inuit and Co-management organizations on the importance of collaborative management of shared caribou populations	• Work collaboratively toward updating the Memorandum of Understanding to reflect the primary importance calving and post-calving ground protection for shared caribou populations
5. Mobile Caribou Conservation Measures	• Finalize the report on implementation considerations for MCCM • Distribute report and seek input from all partners • Identify potential locations to pilot implementation of MCCM • Explore ways to ensure consistency between WMMP guidelines and the Range Plan	• Convene a technical workshop with industry-sector partners to develop practical operational protocols (i.e. communications, data acquisition and sharing, etc.) • Engage with all range planning partners to share progress and seek input • Implement an initial pilot program

Recommendation	Implementation Actions	
	Current / Soon to Commence	**Following Cabinet / WRRB Approval**
6. Road Planning and Management	• Ensure consistency between WMMP guidelines and the Range Plan • Finalize and formalize WMMPs so they may be used as a regulatory mechanism to guide road planning and management.	• Development of comprehensive Best Management Practices (BMPs) • Develop and refine road BMP guidance for future land use planning and possible inclusion in updates to the GNWT 25-year Transportation Strategy
7. Offsetting/ Compensatory Mechanisms	• Distribute the assessment framework report and seek input from all partners	• Engage with all range planning partners to seek input on potential offsetting projects and compensatory mechanisms • Develop an inventory/database of potential habitat offset opportunities • Develop guidance, policy and/or regulations to identify when offsetting is technically feasible and appropriate
8. Wildfire and Fuels Management	• Work with Indigenous governments and communities to identify important areas of winter habitat • Work with the Forest Management Division to develop procedures for integrating these areas into the values at risk hierarchy (i.e. number and size of areas, timing of information sharing, etc.)	• Continue to characterize range of natural variability (RNV) in amount of area burned, fire severity and frequency on the winter range and develop criteria for determining when the system might be considered to be deviating from RNV • Explore the opportunities under the Forest Management and Protection Act to collect licence fees in support of research into revegetation and fuel treatment
9. Online Map Staking	• Continue to monitor status of the Mineral Resources Act review process on the opportunity to include provisions for online map staking	• Engage with all range planning partners to share progress and seek input • Develop draft policy guidance and/or regulations as appropriate

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