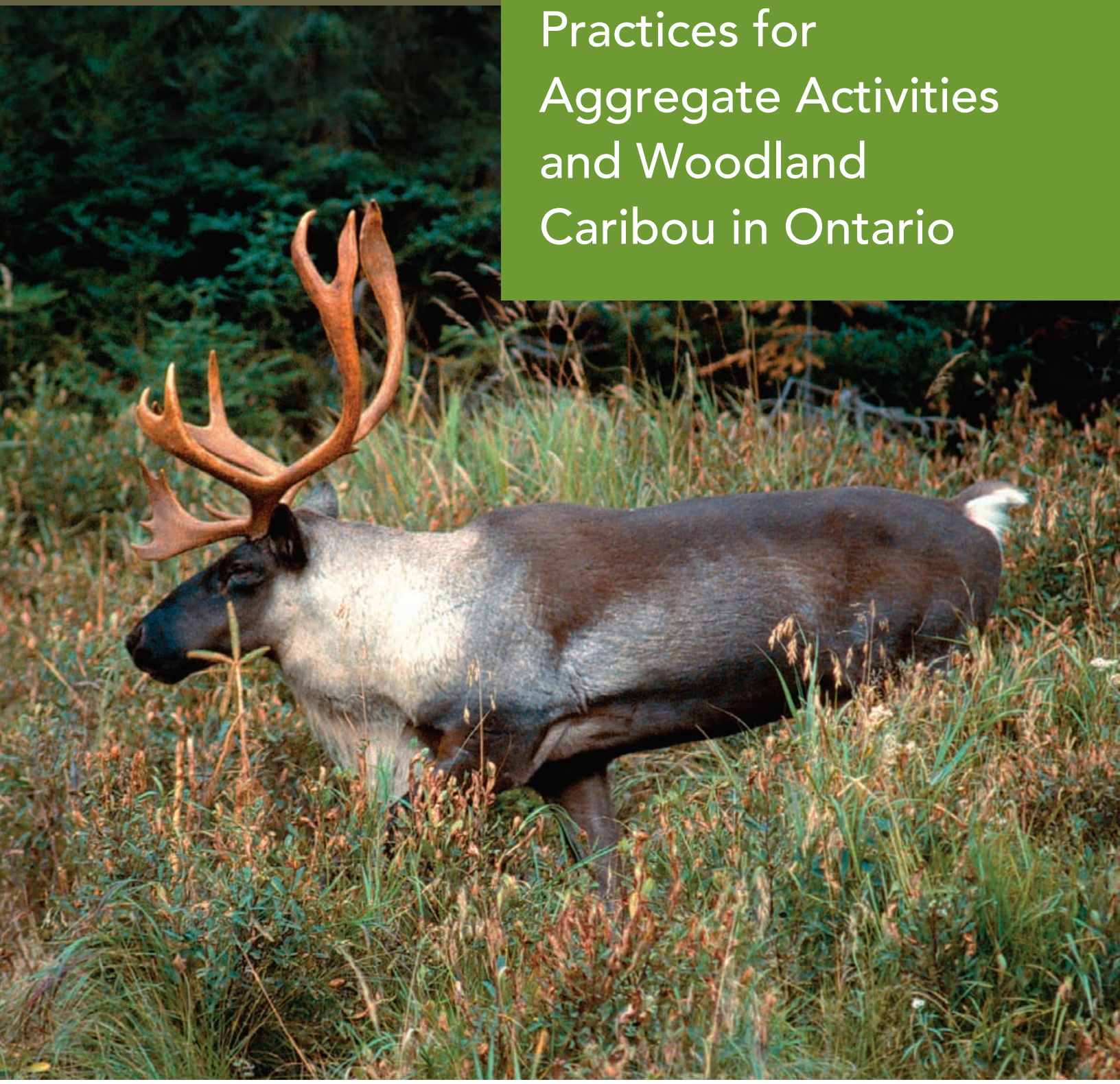
Ministry of Natural Resources

Best Management Practices for Aggregate Activities and Woodland Caribou in Ontario



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Ontario

Best Management Practices for Aggregate Activities and Forest-dwelling Woodland Caribou in Ontario

Preamble

These Best Management Practices (BMPs) are meant to be used by aggregate sector proponents who are planning or conducting aggregate extraction or related closure activities. BMPs should be used during all phases of an activity and/or development, while working in the area of continuous and discontinuous distribution, to reduce and/or mitigate direct and indirect impacts to caribou and caribou habitat. Woodland Caribou are a threatened species in Ontario and receive protection under the *Endangered Species Act, 2007*.

Introduction

Woodland Caribou (forest-dwelling boreal population) (*Rangifer tarandus caribou*), henceforth referred to as caribou in this document are considered threatened in Ontario. Ontario's *Endangered Species Act, 2007* (ESA) provides species protection, under section 9, and habitat protection, under section 10, to species listed as threatened or endangered in Ontario. The Recovery Strategy for Woodland Caribou (*Rangifer tarandus caribou*, forest-dwelling, boreal population) in Ontario identifies threats to caribou and provides science-based advice for protecting and recovering caribou.

Habitat loss, degradation, and fragmentation from anthropogenic and natural sources, and increased predation as a result of habitat alterations, have led to local population declines throughout the distribution of caribou in Canada (Environment Canada 2012). Habitat alterations are due in part to resource development activities and linear features such as roads and corridors. The additive effect of these individual threats (i.e. cumulative effects), cause significant change to landscape-scale ecological functions, which affect the ability of caribou to live or persist in particular geographic area.

Ontario's Woodland Caribou Conservation Plan (CCP) is the government response statement to the recovery strategy as required by the ESA. The CCP outlines broad policy direction regarding caribou conservation and recovery, and prioritizes the actions the Ontario government intends to take to conserve and recover caribou in Ontario. The goal of the CCP is to maintain self-sustaining, genetically-connected local populations of caribou where they currently exist; improve security and connections among isolated mainland local populations; and, facilitate the return of caribou to strategic areas near their current extent of occurrence. Ontario has developed a number of policy documents to support the CCP and the conservation and recovery of caribou, which includes BMPs to increase awareness of caribou ecology and conservation practices.

BMPs describe techniques, methods, or processes that help reduce and/or mitigate direct and indirect threats that can negatively impact caribou and caribou habitat. BMPs may also enable collaboration among and between sectors in managing cumulative disturbance and associated effects within caribou ranges. BMPs are to be used in all phases of a resource development activity – *planning, development, operations and rehabilitation*.

Aggregate Activities and Caribou

Aggregates are natural deposits of gravel, sand, clay, earth and bedrock. In the north, aggregates are primarily used for road construction and a base for infrastructure, and as such

are an integral component of other resource development activities. The extraction of aggregates often involves clearing of forested areas for the creation of roads and infrastructure associated with pits and quarries. The typical sequence of development activities associated with aggregates involves planning, development, operations, and reclamation.

Aggregate activities can negatively impact caribou and caribou habitat. Impacts may include increased cumulative disturbance and loss of habitat within caribou range(s), habitat changes and fragmentation, and increased sensory disturbance. These impacts can result in increased predators and loss of connectivity between sub-range habitat features and caribou avoidance of high use areas (e.g. nursery areas) during sensitive periods (Refer to the general habitat description for caribou for description of sub-range habitat features and information on sensory disturbance). If proponents are only able to minimize or mitigate impacts through BMPs, additional authorizations under the ESA may be required if the species, or protected habitat, are impacted by the activity. Additional authorizations may include applying for an overall benefit permit under the ESA.

BMPs provide best advice and guidance to support proponents in meeting legislative or regulatory requirements for licensing or permitting under existing legislation (e.g. ESA, Aggregate Resources Act (ARA)), assisting aggregates producers in managing their activities to avoid or mitigate potential impacts to caribou and caribou habitat. Producers should be familiar with all statues, regulations, amendments and guidelines governing all aspects of aggregate development where the activities are being conducted. Prior to commencing activities, these should be reviewed and the local MNR office should be contacted to obtain the most up-to-date information and the proper planning, minimization and rehabilitation techniques can be considered and employed.

Additional Policy Considerations Related to Caribou and the ESA

This document is one of a series of guidance documents developed to support the implementation of the ESA and caribou conservation and recovery. The MNR species at risk website will continue to be updated as new information and guidance is developed. Regular visits to this website are encouraged to find the most recent species at risk information and direction.

Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits

The ESA Submission Standards for Activity Review and 17(2)(c) Overall Benefit *Permits provides* policy, process and complete submission guidance for proponents seeking overall benefit permits. It provides explanations of key concepts for terms within the Act that pertain to activity review (the process to determine whether a permit is needed). The package includes; Information Gathering Form and guide, Avoidance Alternatives Form and guide, and the C-Permit Application Form and guide.

http://www.mnr.gov.on.ca/en/Business/Species/index.html

Categorizing and Protecting Habitat under the Endangered Species Act

The *Categorizing and Protecting Habitat under the Endangered Species Act* provides guidance on the terms “damage” and “destroy” within the context of subsection 10(1) of the Act. The Policy identifies a set of principles and considerations that MNR will use when determining whether a proposed activity will damage or destroy habitat. The Policy also explains how habitat protected under the ESA will be categorized based on the species anticipated tolerance to alteration.

http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@species/documents/document/stdprod_085648.pdf

Range Management Policy in support of Woodland Caribou Conservation and Recovery

The *Range Management Policy in support of Woodland Caribou Conservation and Recovery* provides direction to conserve and recover caribou in Ontario through the development and implementation of a Range Management Approach. This Policy works in conjunction with MNR's existing legislative framework and provide further direction when authorizing activities proposed to occur within caribou ranges. The direction in this policy works to be consistent with the protection provisions afforded to caribou under the ESA. Implementation of the Range Management Approach requires application of this policy across all sectors and activities.

http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@species/documents/document/mnr_sar_car_rgmgmt_ply_en.pdf

Integrated Assessment Protocol for Woodland Caribou Ranges in Ontario

The *Integrated Assessment Protocol for Woodland Caribou Ranges in Ontario* describes the process followed to conduct an Integrated Range Assessment and to prepare an Integrated Range Assessment Report. Integrated Range Assessments provide rationale for range delineation, historical and contextual background information to quantitatively assess range condition and are a requirement of the Range Management Policy in support of Woodland Caribou Conservation and Recovery.

http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@species/documents/document/mnr_sar_car_assmnt_ptl_en.pdf

General Habitat Description for the Woodland Caribou (Forest-dwelling boreal population) (Rangifer tarandus caribou)

The *General Habitat Description for the Woodland Caribou (Forest-dwelling boreal population) (Rangifer tarandus caribou)* is a technical document that provides greater clarity on protected habitat of caribou based on the general habitat definition found in the ESA. A general habitat description also indicates how caribou habitat has been categorized, as per the policy *Categorizing and Protecting Habitat under the Endangered Species Act*, and is based on the best scientific information available.

http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@species/documents/document/mnr_sar_ghd_car_en.pdf

Guidance for Assessing Impacts of Activities on Woodland Caribou and their Habitat

The *Guidance for Assessing Impacts of Activities on Caribou and their Habitat* provides specific guidance pertaining to how to complete the *ESA Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* process for caribou and caribou habitat. It can be used by proponents planning and conducting any type of activity within the continuous and discontinuous distribution of caribou. The guide explains how proponents can consider range level impacts and impacts to sub-range features when planning activities and when considering activity alternatives and how proponents can gather detailed information to support MNR in assessing if an activity is likely to contravene the ESA.

http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@species/documents/document/mnr_sar_car_assmnt_gd_fr.pdf

Using the BMPs

The Best Management Practices are organized in a hierarchical approach. The BMP Principles are the overarching purpose for applying General and Activity Specific BMPs where activities are being conducted in the continuous and discontinuous distribution of caribou. The General BMPs and Activity Specific BMPs, where appropriate, should be applied to all activities during the planning, development, operational and rehabilitation stages of a project. The General and Activity Specific BMPs are further organized into avoidance, minimization, and rehabilitation practices. Avoidance practices provide guidance to properly plan activities to limit the impact to caribou before commencing operations. Minimization practices provide guidance to minimize impacts while conducting activities in situations when avoidance practices cannot be employed. Rehabilitation practices should be used during all stages of resource development to ensure the long-term habitat disturbance from conducting the activity is remediated.

Activities and Best Management Practices can change from time to time based on new information. Not all activities related to the sector may be listed in the Activity Specific BMPs. In these cases, proponents should aim to meet the principles of these BMPs by applying the General BMPs, and other relevant specific activity guidance where necessary.

Best Management Practice Principles

During **planning**, **developing**, **operations and rehabilitation** of any aggregate activity, proponents should:

- **Minimize the disturbance footprint of the activity, and its overall contribution to cumulative disturbance and loss of habitat within the range**
- **Minimize habitat changes and fragmentation to maintain the function and connectivity of sub-range habitat features**[1]
- **Minimize the density of linear features to avoid increases in predator efficiency (i.e. distribution, ease of travel)**
- **Minimize habitat disturbance and sensory disturbance near High Use Areas**[2]
- **Minimize activities that increase the risk of caribou mortality (e.g. reduce vehicular traffic, access to aggregate area for hunting)**

General Best Management Practices

Sub-range habitat features, such as seasonal ranges, high use areas (nursery areas, winter use areas, travel corridors) and other areas within a caribou range may be particularly sensitive to development[1]. Proper planning such as employing BMPs for activities and rehabilitation will help proponents manage their activities to minimize habitat and sensory disturbance. When employing the BMP Principles proponents should consider the use of the following General BMP for avoidance, minimization, and rehabilitation of any aggregate sector development and activity:

Avoidance

- Ensure the most current information on caribou distribution and habitat use is used during planning.
- Plan to avoid known or potential High Use Areas (Nursery Areas, Winter Use Areas, Travel Corridors).
- Plan to avoid activities within Seasonal Ranges, where possible.

[1] Refer to General Habitat Description for the Woodland Caribou (forest-dwelling boreal population) (*Rangifer tarandus caribou*) for additional detail

- Plan for the entire activity footprint to be only as large as necessary to conduct the activity safely.
- Plan to restrict field practices to only what is necessary (e.g. conduct desktop exercises when possible).
- Plan to carry out scheduled activities in the shortest time frame possible.
- Use existing infrastructure (e.g. trails, roads, etc.) for person and equipment travel rather than creating new infrastructure.
- Plan to provide caribou awareness and education to field staff when working in sensitive areas.

Minimization

- Minimize the cumulative disturbance of the activities by maximizing the use of existing infrastructure (e.g. trails, roads, etc.) for person and equipment travel when conducting operations.
- Minimize sensory disturbance (e.g. noise, dust, light, etc.) within 10km of known or potential High Use Areas during sensitive periods when reproduction and rearing, winter aggregation and foraging, and seasonal dispersal is occurring:
    - Nursery Areas (May 1 to July 14 very low tolerance, July 15 to September 15 low tolerance)
    - Winter Use Areas (December 1 to March 31)
    - Travel Corridors (April and/or November)
- Minimize noise by ensuring that all exhaust systems have mufflers installed properly and that all machinery is operating as per specifications, and avoid idling.
- Minimize all activities that disturb the ground surface in such a way that the amount of topsoil that is moved is minimal.
- Minimize the amount of disturbance by restricting the size of area cleared with heavy machinery.
- Do not feed, follow or harass animals.

Rehabilitation

- Planning for rehabilitation should be considered before operations begin, and in all stages of aggregate licensing and permitting
- Preserve organic mat where possible or stockpile material on site when not possible.
- Store removed vegetation so that it can be later used as a seed source, moisture retention aid and shade for new growth during reclamation.
- Avoid seeding of non-native or invasive grass and legume based mixes which will create competition for native target species and alternate food sources for predators and alternate prey.
- Rehabilitate and restore habitat that was disturbed at the activity site:
    a) site preparation and planting of jack pine or spruce at a minimum density of 1000 stems per hectare; or,
    b) site preparation and aerial seeding of jack pine at 20,000 viable seeds per hectare; or
    c) implement alternate site renewal treatments to return it to a forested condition that reflects the original stand, or for exposed bedrock, restoring sparse conifer forest cover or open rock areas.

- Rehabilitate progressively as aggregate resources are depleted..
- Remove all extraneous materials – bring out what you bring in.

Activity Specific Best Management Practices

The following outlines activities and potential impacts associated with aggregate sector activities during planning, development, operations and closure; and identifies the potential effects those activities can have on caribou and/or caribou habitat. The BMPs provided below should be used with the General BMPs to avoid, minimize or mitigate. Moreover, they can be applied to other activities, where applicable. Other BMPs not listed here may be developed and applied to your activity.

Aggregates include earth, gravel, sand, clay, limestone, dolostone, sandstone, shale, marble, and granite (Aggregate Resources Act, 1990). Gravel pits are those sites where sand and gravel is extracted from naturally occurring deposits. Quarries are those sites where the solid bedrock is blasted and the crushed into fragments.

Excavation of aggregate is integral to various resource activities – for preparation of access roads, laydown areas, facility locations, placement of materials such as riprap, etc. Often excavations must occur on sloped areas as well as areas adjacent to watercourses, wetlands, swamps and lakes which are part of the landscape associated with the site that is being developed.

Aggregate Extraction

To be employed in addition with General Best Management Practices:

Aggregate pits and quarries can turn into permanent water bodies if extraction goes below the water table. Where the regeneration of lichen for a winter food source is a higher priority than minimizing the footprint of the disturbance, preserve adequate substrate for lichen and forest cover regeneration.

- Maintain substrate above the water table where lichen and forest cover regeneration is a priority.

Drilling & Blasting

To be employed in addition with General Best Management Practices:

Drilling and blasting activities near known or potential high use areas may deter caribou from using those areas due to habitat loss and fragmentation, and increases in sensory disturbance (i.e. noise).

- Minimize noise and frequency of activities from drill rigs and drilling equipment.
- At pump set-up sites, minimize the number of trails to the shoreline and set-up areas (i.e. use the same pump set-up as much as possible)
- Minimize the frequency and noise associated with blasting between May 1 to Sept 15 near nursery areas; during April and November near travel corridors; and between December 1 to March 31 near winter use areas.

Infrastructure

To be employed in addition with General Best Management Practices:

Design the operation to locate infrastructure such as weigh scales, buildings, crushers, etc. within the area that is already being disturbed for aggregate extraction to minimize disturbance and therefore the amount of habitat loss and fragmentation.

Operational facilities may have predator attractants or alternate food sources such as food, garbage, and grey water. Predator-proofing areas with the use of fences and bear-resistant containers will reduce the potential attractants and access by predators.

- Install suitable and efficient fencing around potential predator attractants (e.g. food, garbage, etc.)
- Use bear-resistant garbage containers and receptacles.

On-site Access Roads, Trails and Linear Corridors

To be employed in addition with General Best Management Practices:

Exploration/Pre-licensing

New, large linear developments such as trails, roads or other linear corridors may negatively impact caribou and their habitat by increasing disturbance, amount of habitat loss and fragmentation within the range. Caribou may exhibit avoidance of high use areas due to sensory disturbance from construction and traffic during spring/summer reproductive and winter foraging periods.

- Minimize exploration activities and road construction between May 1 to Sept 15 near nursery areas; during April and November near travel corridors; and between December 1 to March 31 near winter use areas.

Access Roads (construction and operations phase)

- *Access Roads are developed exclusively to access the permit or licensed area but lie outside of the site boundary. These roads are for use by haulage vehicles and used for the operational life of the aggregate permit or license – these would include winter roads, as well as year-round roads. Control of the road is exclusively the responsibility of the aggregate producer. On-site access roads are roads within the permit or license boundary and controlled exclusively by the aggregate operator. Multi-use roads are existing roads used by multiple users including aggregate haulage vehicles during the life of the aggregate permit or license. Some upgrading of the road may be required, but otherwise impacts from aggregate activities are limited to increased traffic volume for the duration of the permit or license. Although the responsibility for road maintenance is not exclusively belonging to the aggregate producers, the MNR encourages collaboration with other road users in the application of these and other related industry BMPs with respect to caribou.*Minimize extraction activities and traffic volume between May 1 to Sept 15 near nursery areas; during April and November near travel corridors; and between December 1 to March 31 near winter use areas.

Traffic may lead to an increase risk of road mortality and may deter caribou from using high use or calving sites due increases in sensory disturbance (i.e*., noise).*

- Place signs along roads and corridors (e.g. to increase awareness of caribou, to post speed limits, to prevent public use, and to discourage recreational use, etc.).

- Identify reduced speed limits and/or seasonal travel restrictions (between May 1 to Sept 15 near nursery areas; during April and November near travel corridors; and between December 1 to March 31 near winter use areas).
- Use gates or other physical barriers to reduce additional traffic on roads.
- Allow for breaks along roads in long windrows (e.g., slash or rock, snow berms), unobstructed access routes across the right-of-way.

Roads can provide favourable areas for the growth of deciduous shrubs and trees, resulting in increased availability of browse for moose and deer, and potential wolf and bear predation.

- Use appropriate vegetation control measures to prevent growth of deciduous shrubs and trees within the right of way.

Plowing of roads not required for operations or maintenance during winter adds to the density of linear features and may leave additional travel corridors for predators and increased vehicular traffic.

- Limit snow plowing of access and maintenance roads to only those required for current operations, maintenance and/or emergency access. Wing snow banks to reduce height.

Roads may negatively impact caribou and their habitat by flooding areas and increasing the amount of habitat loss and fragmentation within the range.

- Ensure adequate water movement where an all-weather road crosses wetland complexes by using appropriate bridges, half culverts on pilings or other drainage techniques. Use techniques that will reduce soil/peat compaction.

Road/Trails Rehabilitation

To be employed in addition with General Best Management Practices:

Roads and/or trails no longer required for development, operations or maintenance add to disturbance, amount of habitat loss and fragmentation within the range; can provide favourable areas for the growth of deciduous shrubs and trees, resulting in increased availability of browse for moose and deer, and potential wolf and bear predation; and may leave additional travel corridors for predators.

- Restrict vehicular access (e.g. berm, water crossing removal, etc.).
- Scarify road or trail to alleviate gravel or soil compaction that has occurred as a result of use to aid in proper vegetative regeneration.

Infrastructure and Site Reclamation

To be employed in addition with General Best Management Practices:

Infrastructure that no longer required for development, operations or maintenance adds to disturbance, amount of habitat loss within the range It can also provide favourable areas for the growth of deciduous shrubs and trees, resulting in increased availability of browse for moose and deer, and potential wolf and bear predation; and may leave additional travel corridors for predators.

- Remove any infrastructure (e.g. buildings) that is no longer required in order to facilitate regeneration of forest cover.

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