



# Caribou Habitat Restoration Fund – Treatment Prescription Guidelines

## Technical Review Committee (TRC) recommendation for drafting effective habitat restoration treatment prescriptions (2.0)

Reference in this document is made to page numbers and appendices of the Operational Restoration Framework Woodland Caribou Habitat Restoration in British Columbia, British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development March 2021.

### Context

The TRC recommends writing clear operational objectives for the proposed project (P3). Objectives for most caribou habitat ecological restoration projects are to improve or enhance vegetation growth, mostly conifer trees, along a trajectory towards the forest stand condition in adjacent or nearby undisturbed forest. Functional restoration projects will often include establishing a forest community but may also include objectives to constrain human or predator access (P4).

### Overview

To enable evaluation of initial implementation of the treatments and subsequent monitoring, the prescription requires sufficient detail on the proposed treatments to measure performance. At a minimum the prescription should include a map of the areas that the prescriptions will cover, start, and stop points for prescribed activities, description of the prescribed activity, species, and planting density for areas where planting is prescribed, and additional relevant information such as detail prescriptions around streams. It is important to consider the reporting requirements needed in relation to provincial permits, data entry into RESULTS, and other funders. Data collection, reporting, and monitoring should reflect the reporting needs.

### Road/Site Specific Considerations

For some projects, slope recontouring may be required to meet site objectives and address limiting factors. Where there is material available soil “pull back” and similar activities may be prescribed to reduce access and to address limiting factors related to soil nutrients, soil compaction, and/or hydrology. Slope recontouring, or full fill retrieval, is an intensive intervention and requires detailed planning and understanding of risks related to hydrology and slope stability. For complex projects, prescribing professionals should provide detailed prescriptions and ensure that experienced operators undertake the work. Where there is material available soil “pull back” and similar activities may be prescribed to reduce access and to address limiting factors related to soil nutrients, soil compaction, and/or hydrology.

If soil compaction is a limiting factor, as is likely on resource roads, a site preparation treatment should be described such as a winged sub-soiler, ripper tooth or mounding. For compaction, physical treatment should be combined with freeze-thaw cycles before reduction in bulk density can be expected. Physical treatments must extend at least to the sub-soil. On features that have supported heavy equipment, soil compaction is a possible limiting factor. Compaction can be



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identified manually using a shovel or with more formal measurements (bulk density or penetrometer) if desired.

### Planting

Revegetation is anticipated in most projects and should take guidance from relevant silvicultural guidance (e.g. [Tree Species Selection Tool - Province of British Columbia \(gov.bc.ca\)](#); [Stocking standards - Province of British Columbia \(gov.bc.ca\)](#)), and be guided by the prescribing forester. Guidance will inform stocking to set the site on a trajectory towards a forest stand condition that resembles the surrounding, or locally similar desired forest. Prescriptions may need to vary from standard stocking guidance to achieve caribou habitat rather than timber objectives. To enable future monitoring and accurate costing of implementation, the prescription should specify locations, area, planting density, and species mix.

### Barriers

Where barriers are proposed to reduce human access or wolf mobility, the dimensions and distribution of the treatments need to be accurately described. Vehicle obstacles should be identified as to location, number or frequency, dimensions (e.g. berm height or ditch depth) and if living trees or dead trees / coarse woody debris (CWD), root wads, vegetation is incorporated. Measures to impair wolf movement should be described as to the nature (e.g. CWD, live trees, inorganic material), amount (e.g. m<sup>3</sup>, trees/m), and distribution (e.g. continuous, intermittent, concentrated) of obstructions. Where obstructions are field fit by operators the description should indicate the expected treatments and how many treatments per defined road segment.

### Monitoring

The TRC recommends that the proposal describes a monitoring regime that supports evaluation of the treatment implementation and subsequent performance/success (P 22, App F). Monitoring should focus on the treatment effects – what was done, and the treatment is achieving the desired result. In some cases, the treatment effect may be monitored through an indicator that is directly related to the treatment effect. Once the initial implementation monitoring (year 1-2) has quantified the implementation of the prescriptions (Did we do what we planned to do) other indicators may be monitored.

For example, through base line monitoring compaction was identified as the factor that was limiting the sites return to a forested state. After implementation monitoring confirms the completion of the prescriptions, monitoring tree survival and growth can be the indicator of successful decompaction, rather than measuring the actual decompaction by examining soil density change.

- For treatments that involve planting trees, guidance on monitoring can be found in: [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/silviculture/silviculture-surveys/2023-silv\\_survey\\_procedures\\_manual\\_final.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/silviculture/silviculture-surveys/2023-silv_survey_procedures_manual_final.pdf)
- See the Caribou Habitat Restoration Fund Project Monitoring Guidance For 2022-23: [https://hctf.ca/wp-content/uploads/2021/09/CHRF\\_Monitoring\\_Guidance\\_Document\\_2022\\_23\\_cycle.pdf](https://hctf.ca/wp-content/uploads/2021/09/CHRF_Monitoring_Guidance_Document_2022_23_cycle.pdf)

The TRC recommends monitoring those treatment metrics that inform achievement of the project objective. As the objective will usually include establishing vegetation cover, monitoring will likely include

- measurements of live stems/ha (stocking density);
- % live cover;
- vigor of trees;



- leader growth;
- vegetation composition (species mix);
- and % trees overtop competing vegetation (aka free growing).

Monitoring is required prior to treatment to establish a baseline of site condition and inform identification of the limiting factors at the treatment site, and to inform prescription development.

- Monitoring should be repeated 1-2 years after treatment to assess/evaluate implementation and early planting survival. It can identify the need for complimentary treatment (e.g. fill planting) if initial expectations are not being met.
- Monitoring should be done again 5-8 years after treatment to determine if the site is on the trajectory towards the desired future forest stand condition. At this stage tree growth relative to competing vegetation should be documented and ideally, a free to grow determination can be made.
- Monitoring should be done 20-30 years after treatment to determine if the site is established the trajectory towards a natural forest stand condition. The applicant/proponent is not expected to commit to these future (i.e. 3 + years after treatment) monitoring exercises but should identify their need to enable evaluation of the treatment.

## Resources

### Operational Restoration Framework Woodland Caribou Habitat Restoration in British Columbia

[https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/wildlife-wildlife-habitat/caribou/operational\\_restoration\\_framework.pdf](https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/wildlife-wildlife-habitat/caribou/operational_restoration_framework.pdf)

### Caribou Habitat Restoration Fund Project Monitoring Guidance For 2022-23

[https://hctf.ca/wp-content/uploads/2021/09/CHRF\\_Monitoring\\_Guidance\\_Document\\_2022\\_23\\_cycle.pdf](https://hctf.ca/wp-content/uploads/2021/09/CHRF_Monitoring_Guidance_Document_2022_23_cycle.pdf)

### Tree Species Selection Tool - Province of British Columbia (gov.bc.ca)

<https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/tree-species-selection/tool-introduction>

### Stocking Standards - Province of British Columbia (gov.bc.ca)

<https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/stocking-standards>

### Silviculture Survey Procedures Manual - Province of British Columbia (gov.bc.ca)

[https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/silviculture/silviculture-surveys/2023-silv\\_survey\\_procedures\\_manual\\_final.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/silviculture/silviculture-surveys/2023-silv_survey_procedures_manual_final.pdf)

### Guidelines for Decommissioning and Restoring Roads - USDA

[https://www.fs.usda.gov/t-d/pubs/pdfpubs/pdf16771804P/1677-1804P\\_GuideStoreDecomRoads\\_Sec508\\_07-02-18a\\_400dpi.pdf](https://www.fs.usda.gov/t-d/pubs/pdfpubs/pdf16771804P/1677-1804P_GuideStoreDecomRoads_Sec508_07-02-18a_400dpi.pdf)



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