

STRATEGIC CARIBOU RESTORATION IMPLEMENTATION PLAN

For the Central Group of Southern Mountain Caribou

Caribou Restoration Working Group

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Environment and BRITISH Climate Change Canada COLUMBIA



Table of Contents

Acknowledgements2
Introduction
Background2
Habitat Restoration for the Central Group of Southern Mountain Caribou2
Strategic Caribou Restoration Implementation Plan3
Overview
Study Area4
Collaboration and Methods4
Objectives5
Scale5
Priority Indicators
Weighting and Herd-Level Reporting7
Results
Habitat Restoration Tracking Database9
Restoration Candidates9
Additional Metrics10
Plan Implementation
Updates and Revisions
Conclusion12
References
Appendix A: Restoration Priority Analysis14

Acknowledgements

This report is the result of a collaborative effort by representatives of Saulteau First Nations, West Moberly First Nations, Environment and Climate Change Canada, and the B.C. Ministry of Water, Land and Resource Stewardship. We also acknowledge the contributions made by many of the parties' partner organizations. We would like to extend our gratitude to everyone involved in the Caribou Restoration Working Group for their efforts in setting project direction, plan development and analysis, report contributions, and reviewing materials. Thank you for your dedication and hard work.

Introduction

Background

The Central Group of Southern Mountain Caribou consists of six herd ranges of woodland caribou in the southwest portions of the Peace Region in B.C. (the Klinse-za, Kennedy Siding, Burnt Pine, Quintette, Narraway, and Scott herds). Historically, caribou were very abundant in the South Peace Region and were an important part of the seasonal hunting rounds of Indigenous peoples. Central Group caribou populations have declined sharply in the past 50 years, corresponding with extensive industrial activity within their herd ranges, and are currently at risk of extirpation (i.e., local extinction).

In 2020, the <u>Intergovernmental Partnership Agreement</u> for the Conservation of the Central Group of Southern Mountain Caribou (the "Partnership Agreement") was signed by representatives of Saulteau First Nations, West Moberly First Nations, the British Columbia government, and the Canadian government under <u>Section 11</u> of the federal *Species at Risk Act*. It provides a framework for government-to-government cooperation and collaboration in pursuit of the Shared Recovery Objective of "immediately stabilizing and expeditiously growing the population of the Central Group to levels that are selfsustaining and support traditional aboriginal harvesting activities, consistent with Aboriginal and Treaty rights."

Habitat Restoration for the Central Group of Southern Mountain Caribou Caribou habitat restoration has been ongoing within the Central Group of Southern Mountain Caribou since 2017, with habitat restoration projects implemented by various parties, including Saulteau First Nations, West Moberly First Nations, and the B.C. government.

Clause 33 of the Partnership Agreement commits the B.C. government to reducing disturbed critical habitat (as defined in Section 2(1) of the *Species at Risk Act*) for caribou within the Central Group. Habitat disturbance includes changes in ecosystem structure and function caused by humans (e.g., forest harvesting, mining, industrial activity) and natural impacts (e.g., wildfire, forest insects, floods). While caribou recovery protection

measures and proposed land use objectives are being used to address new disturbance rates, it is recognized that significant habitat restoration efforts are also required to achieve the Shared Recovery Objective mentioned above. Clauses 35 and 36 of the Partnership Agreement outline a collaborative approach to identifying, planning and implementing habitat restoration projects.

The collaborative process to establish selection criteria and identify priority habitat restoration areas began in 2022, with the creation of a Caribou Restoration Working Group that was focused on developing a Strategic Caribou Restoration Implementation Plan (SCRIP). The shared vision developed by the working group is to create large contiguous areas of quality caribou habitat, beginning with areas currently occupied by caribou and building out to create a landscape capable of supporting an expanded, self-sustaining caribou population.

Strategic Caribou Restoration Implementation Plan

Overview

The intent of the Strategic Caribou Restoration Implementation Plan (SCRIP) is to identify shared, landscape-level priority restoration areas within important Central Group of Southern Mountain Caribou habitat, estimate restoration capacity and funding needs, and direct near-term restoration activities. The plan is intended to be a living document and updated at regular (likely annual) intervals. This will be done in line with calendar year-end budget timelines to assist with annual financial planning, and to reflect changes related to current scientific research, available data, and progress being made on restoration projects.

The priority restoration areas mapped in this plan are not meant to be prescriptive or binding on any party or agency that is planning restoration activities within Central Group of Southern Mountain Caribou habitat. The plan is meant to be used as a guide to coordinate caribou habitat restoration efforts and to align multi-party restoration initiatives. It is recognized that other factors or constraints not considered when the plan was developed may lead to lower-priority restoration areas being considered for funding or action, as recommended by the Caribou Recovery Committee (CRC), which is responsible for reviewing applications for resource development activities within specified areas defined in the Partnership Agreement.

SCRIP builds on previously published planning documents, including the <u>Preliminary</u> <u>Tactical Restoration Plan for the South Peace Northern Caribou Ranges</u>, the Klinse-za Habitat Restoration Strategic Plan (Woods et al. 2018), the <u>Quintette Caribou Habitat</u> <u>Restoration Plan Phase 1</u> and Phase <u>2</u>, and the <u>BC Prioritization Support Tool</u>. While these published plans provide valuable information on habitat restoration potential at a landscape and site level, SCRIP is founded on shared values and aims to include Indigenous knowledge and newly established conservation and protection measures that have been instituted since the Partnership Agreement was signed in 2020.

Study Area

All spatial data and associated analyses are based on the Central Group of Southern Mountain Caribou herd boundaries, as delineated by the B.C. government in 2022, inclusive of the Klinse-za, Kennedy Siding, Burnt Pine, Quintette, Narraway, and Scott (west) herd ranges as shown in Map 1.

Map 1: Study Area as defined by the Central Group of Southern Mountain Caribou B.C. herd boundaries (2022)



The extent of the study area reflects current caribou use, not historical use nor future habitat needs. The spatial definition of what constitutes caribou habitat is updated regularly, and future versions of the plan may consider an adjusted study area for logistical purposes or to reflect updated herd ranges.

Collaboration and Methods

In January 2023, the Caribou Restoration Working Group participated in a full-day workshop to develop a collaborative, short-term assessment process to select priority caribou habitat restoration areas within Central Group of Southern Mountain Caribou critical habitat. Key objectives were identified to help prioritize caribou habitat restoration areas. Priority indicators were developed and a review of spatial data available through Saulteau First Nations, West Moberly First Nations, the B.C. government, and Environment and Climate Change Canada was completed. Following the workshop, a habitat restoration prioritization model was developed using ESRI ArcGIS software to model priority indicator scenarios.

Objectives

The following objectives were used to help prioritize caribou habitat restoration areas. Indicators or metrics were then defined and confirmed by the Caribou Restoration Working Group.

Recover Meaningful Habitat Areas

Preserve, restore and enhance caribou habitat, with consideration of habitat quality, connectivity, adjacency, and availability. Consider historical habitat use and future habitat needs. Consider foodscapes.

Incorporate Cultural Significance

Reflect cultural values represented through traditional use studies, with consideration of cultural practices and areas of high community value to both present and future generations.

Consider Longevity

Consider the potential for restored areas to be disturbed again in the future. Protection or partial protection is positive and reduces likelihood of future disturbance.

Consider Effectiveness

Cost, time to recovery, availability of prescriptions and other practical indicators should be considered when prioritizing areas for restoration efforts. Focus restoration activities where gain in undisturbed area meets a maximum disturbance level of 35%, prioritizing areas reaching less than 10% disturbance threshold, with consideration of disturbance type and age, available prescriptions, and time to recovery. This approach focuses restoration in areas with the greatest chance of meeting federal Southern Mountain Caribou Recovery Strategy recommendations (Environment Canada, 2014).

Develop Adaptive Approach

Assess and adjust restoration priorities when new Indigenous ecological knowledge and information becomes available or ecological conditions change.

Scale

Individual herd boundaries have been divided into sub-watershed-level landscape units, in alignment with landscape units used in the Saulteau First Nations Cumulative Effects Mapping Application, the <u>BC Prioritization Support Tool</u>, and provincial wildlife management planning processes. Ranging in size from 5,000 hectares to 30,000 hectares, the landscape units are considered appropriate for tactical field planning.

Priority Indicators

The following metrics were identified by the Caribou Restoration Working Group as key indicators for identifying priority habitat restoration areas.

Southern Mountain Caribou Critical Habitat

Important caribou habitat has been identified using a draft version of the caribou critical habitat linework (mapping) provided by Environment and Climate Change Canada (ECCC, 2023). The draft critical habitat includes high-elevation and low-elevation areas and reflects a combination of subject matter expertise, telemetry data, resource selection modeling, and other information sources to determine areas of current use and predictions of areas for future expansion and/or seasonal use by caribou. The draft critical habitat data is a part of the detailed critical habitat mapping for the amendment to the 2014 federal Recovery Strategy for Southern Mountain Caribou. The draft critical habitat linework is under active review and revision, including by Indigenous communities, jurisdictions, and subject matter experts. Each landscape unit has been assigned a score based on the proportion of the landscape unit (i.e., percentage of overlap) identified as draft critical habitat, with no distinction between high-elevation and low-elevation areas.

Habitat Restoration Effectiveness

Disturbance base layers were used to identify landscape units where caribou habitat restoration investments could result in the greatest benefits to the state of caribou habitat when accounting for permanent disturbances that cannot be addressed in a timely manner. For this analysis, restoration effectiveness refers to where the current landscape unit disturbance is above 35% but could be brought to below 35% or to below 10% following restoration activities. Landscape units that could be reduced to below 10% disturbance were classified as high priority, while those that could be reduced to below 35% disturbance were classified as medium priority. This analysis accounted for natural landscape recovery by assuming that logged cut blocks would be functionally recovered 40 years after the timber was harvested. Disturbance levels were projected 20 years out from the time of the analysis, assumed no further disturbance, and assumed all identified secondary road and seismic lines (i.e., corridors cleared for the purposes of resource exploration) would be restored within the next 10 years.

Connectivity

To account for movement of caribou within and between herd ranges, areas of caribou matrix habitat that fall adjacent to or in between core habitat areas were mapped. Core habitat buffers were established and linked through an assessment of telemetry walk-lines (i.e., movement of collared caribou) between core habitat areas. Each landscape unit was assigned a score based on the proportion of the landscape unit (i.e., percentage of overlap) identified in the connectivity spatial layer, with no distinction between inter-herd or intra-herd connectivity.

Partial Protection

Partial protection areas are subject to legislative protection from one or more sources of industrial disturbance but not all sources of disturbance. Partial protection includes provincial Ungulate Winter Ranges and Wildlife Habitat Areas established under the *Forest and Range Practices Act*; *Land Act* Reserves; and Sustainable Resource Activity areas identified in the Partnership Agreement. Each landscape unit has been assigned a score based on the proportion of the landscape unit (i.e., percentage of overlap) under partial protection at the time the analysis was done.

Full Protection

Full protection areas are subject to legislative protection from future industrial disturbance. Full protection includes BC Parks and Protected Areas, as well as moratorium areas identified in the Partnership Agreement. Each landscape unit has been scored based on the proportion of the landscape unit (i.e., percentage of overlap) under full protection at the time the analysis was done.

Habitat Disturbance

While disturbance is not a priority indicator, it is an important base layer that is used to inform the assessment. Current disturbance levels per landscape unit were calculated in a manner consistent with the federal Southern Mountain Caribou Recovery Strategy (Environment Canada, 2014), with industrial disturbance footprints defined by provincial disturbance datasets and with each disturbance footprint receiving a 500-metre buffer following standard guidelines. Habitat restoration efforts to date have prioritized linear feature (i.e., road, seismic line) restoration, which is expected to reduce caribou mortality in the short term. Non-linear disturbances are also important to address and are included in the restoration effectiveness indicator detailed above. Disturbance valuations are considered accurate at the time of analysis but will quickly become outdated as provincial disturbance datasets are updated.

Weighting and Herd-Level Reporting

A landscape unit restoration priority score was calculated for each priority indicator. All priority indicators, except the full protection priority indicator, were combined using an equal weighting approach. The long-term certainty of habitat was considered by the Caribou Restoration Working Group as the most important indicator, so the full protection priority indicator had the highest weight in the analysis at 50%. The technical considerations of the restoration priority analysis are provided in Appendix A.

As landscape conditions and caribou habitat use differ between herd ranges, the decision was made to prioritize landscape units relative to respective herd ranges, rather than at the study area scale. A herd-level landscape unit ranking sorted each landscape unit into three priority classes: high, medium, and low. No attempt has been made to prioritize between herd ranges. The intention is for habitat restoration activities to be carried out in multiple herd areas concurrently, with sequencing determined by logistical and administrative considerations on an annual basis.

Exceptions to this herd-level reporting are the Burnt Pine and Kennedy Siding ranges. The Burnt Pine caribou herd was declared extirpated in 2014 (Seip & Jones, 2013) following a precipitous population decline caused by habitat degradation. However, caribou from the Kennedy Siding herd have been occupying Burnt Pine habitat in recent years as the Kennedy Siding herd expands. Since caribou are regularly migrating between the two herd ranges, the decision was made to determine priority areas jointly for the Burnt Pine and Kennedy Siding ranges, essentially treating the two ranges as a single, merged herd range.

Results

The restoration prioritization analysis results are represented spatially in Map 2. Landscape units shown in dark green have high restoration priority on a "per herd" basis and represent approximately 940,000 hectares in total. The high restoration priority areas account for approximately 36% of the study area.



Map 2: Priority Habitat Restoration Areas, per Herd

Habitat Restoration Tracking Database

In 2024, a habitat restoration database was created to better track and share restoration information at an operational level, improve permitting efficiency by screening for administrative constraints more proactively, and update restoration candidate estimates.

The restoration tracking database contains spatial layers illustrating where:

- restoration treatments have been conducted on linear features (defined as "treated" in the database)
- linear features have regenerated to a sufficient state such that no treatment has been prescribed (defined as "verified unavailable" in the database)
- linear feature restoration prescriptions are available
- potential administrative and forestry constraints occur on the landscape

Restoration Candidates

An estimate of habitat restoration candidates was calculated using the length of nonpermanent linear disturbance features, such as seismic lines and non-permanent roads. Permanent disturbances such as pipelines, highways, and mines were not included in restoration candidate estimates. All "treated" and "verified unavailable" disturbance features from the restoration tracking database were removed from restoration candidates. A near-term restoration candidate estimate was also calculated by removing the administrative constraint layer from the restoration tracking database. All restoration candidate calculations should be considered an overestimate of the restoration work required in SCRIP. The estimated candidate pool will decrease as more accurate disturbance data become available and field verification continues.

Identified restoration candidates, per herd range, are summarized in Table 1. Approximately 12,700 kilometres of restoration candidates are identified within the high priority landscape units, representing 20% of the restoration candidates identified in the study area. Further refinement of the estimated candidates will be required. Table 1: Summary of landscape units, current and post-restoration disturbance (effectiveness indicator analysis), and estimated linear restoration candidates, by herd range and priority class.

Herd Range	Priority Class	Number of Landscape Units	Landscape Unit Area (hectares)	Current Disturbance	Post- Restoration Disturbance	Estimate of Restoration Candidates (kilometres)
Klinse-za	High	12	248,505	33%	12%	948
	All	36	666,691	50%	28%	4,017
Burnt Pine/	High	10	164,087	38%	12%	1,850
Kennedy Siding	All	30	481,713	50%	29%	5,896
Quintette	High	14	297,570	71%	28%	9,055
	All	42	741,317	81%	42%	37,024
Narraway	High	10	180,435	11%	2%	400
	All	30	534,804	49%	15%	14,618
Scott	High	4	48,672	91%	80%	480
	All	11	193,308	79%	65%	1,162
Central Group Total	All	149	2,617,833	-	-	62,717

* Current disturbance and estimated post-restoration disturbance were taken from the restoration effectiveness indicator analysis. Post-restoration disturbance levels were projected 20 years from the time of analysis, assumed no further disturbance, and assumed all identified secondary road and seismic lines would be restored within the next 10 years.

Additional Metrics

Other metrics were considered in addition to the priority indicators detailed above, including information pulled from the restoration tracking database on the availability of prescriptions, estimates of near-term restoration candidates, and areas already treated. Administrative information (such as forest district data) and cultural landscape markers are also reported where applicable. Underlying spatial data and tabular summaries are available to restoration implementers working in the area.

Plan Implementation

SCRIP will be used to support a coordinated habitat restoration implementation approach across the Central Group of Southern Mountain Caribou and used to secure sufficient funding to increase capacity for regional habitat restoration. It's envisioned that Saulteau First Nations, West Moberly First Nations, and restoration practitioners will take the lead on near-term implementation activities, including the creation of site-level restoration prescriptions and effectiveness monitoring. The B.C. government and Environment and Climate Change Canada will collaborate with Saulteau First Nations and West Moberly First Nations on stakeholder engagement, program coordination, long-term implementation funding, and permitting.

Restoration activities will be driven by the priority areas identified in SCRIP, along with logistical considerations and additional data gathered during field visits. Restoration efforts will be spread across the Central Group herds, although near-term work plans are expected to focus on areas where funds have already been invested in restoration investigations and implementation. This will result in the highest level of implementation occurring in the Klinse-za herd range over the next one to three years, in order to maximize the effectiveness of new protection measures and ongoing recovery efforts, while investigative work and pilot projects begin in other herd ranges.

To support habitat restoration activities in all herd ranges concurrently, new funding proposals are being drafted to secure long-term provincial and federal funds through the Partnership Agreement to support the implementation of priority restoration activities identified in the plan. Funding proposals and near-term operational plans are being developed based on the outputs of SCRIP, currently available prescriptions, and completed work identified in the habitat restoration tracking database. Herd-level restoration targets are not being set as part of SCRIP, since restoration capacity is expected to expand relative to the amount of dedicated restoration funds.

Updates and Revisions

The Strategic Caribou Restoration Implementation Plan is meant to be a living document. Future updates will reflect ongoing habitat restoration progress made under the Partnership Agreement. The Caribou Restoration Working Group will update the plan to reflect progress that has occurred, ensuring that the plan identifies new priority areas as current targets are met. As new and emerging scientific and traditional knowledge about caribou and caribou recovery becomes available, the working group will address any identified analysis gaps that could not be addressed during the timeframe of the plan's development.

A priority of the working group is to include detailed remote sensing data to better quantify the current state of disturbance within the study area. The inclusion of cultural value datasets and restoration monitoring data from previously completed projects has also been identified as an area of future study. Revisions may also be required to reflect changes in protection status within the study area over time, following the implementation of land use planning initiatives or due to marked changes in habitat use following wildfire events or other disturbances.

The Caribou Restoration Working Group will continue to meet through 2025. The composition of the group will be determined based on the scope of work required, adhering to the core principles of remaining collaborative and seeking representatives

from each party identified in the Partnership Agreement. It's envisioned that the Caribou Recovery Committee will review updates to SCRIP annually, although the frequency of any revisions will vary depending on what new information becomes available. Proponents are advised to always ensure they are accessing the latest version of the plan and supporting materials.

Conclusion

The Partnership Agreement provides a framework for government-to-government cooperation and collaboration to achieve the Shared Recovery Objective of "immediately stabilizing and expeditiously growing the population of the Central Group to levels that are self-sustaining and support traditional aboriginal harvesting activities, consistent with Aboriginal and Treaty rights."

Clause 33 commits the B.C. government to reducing the amount of disturbed critical caribou habitat (as defined under the federal *Species at Risk Act*, Section 2(1)) within the Central Group. Although land use objectives and protection measures are being used to address new disturbance rates, significant habitat restoration is essential to meet caribou recovery goals. Clauses 35 and 36 outline a collaborative approach to planning and implementing habitat restoration projects.

To date, SCRIP has identified shared landscape-level priority restoration areas within important habitat of the Central Group of Southern Mountain Caribou in B.C. It has also estimated restoration candidates using disturbance data and a restoration tracking database. SCRIP will help inform the development of site-level restoration prescriptions and is being used to build an implementation schedule at the operational level. The prioritized areas and estimated restoration candidates are helping to evaluate restoration capacity and funding needs, direct near-term restoration activities, and guide a coordinated approach to caribou habitat restoration implementation for the Central Group of Southern Mountain Caribou.

References

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Priority Indicators							
Theme – Full Protection (Priority	Input	Analysis (Statistical)	Output				
Weight 50%)							
Full Protection	CPA Partnership Agreement Zones	Merge, Dissolve, Join,	Percent Score per				
	(A2, B3, B2 – Park, B3, B3 – Park)	Tabulate Intersection,	Landscape Unit				
	BC Existing Parks and Protected	Conditional Statement					
	Areas						
Themes – Combined (Equal Weight)	Input	Analysis (Statistical)	Output				
Partial Protection	BC Wildlife Habitat Areas	Merge Dissolve Join	Percent Score per				
	BC Ungulate Winter Range Areas	Tabulate Intersection	Landscape Unit				
	West Moberly First Nations	-					
	Woodland License (CPA Partnership						
	Agreement Zone - B5 - Adjusted)						
Critical Habitat	ECCC Critical Habitat (High and Low	Dissolve, Join,	Percent Score per				
	Elevation)	Tabulate Intersection	Landscape Unit				
Effectiveness: 10%	Time to Recovery Scenario 2;	Calculate <10%	Selection Set (<10%)				
undisturbed	Age Out = 20 years						
Effectiveness: 35%	Time to Recovery Scenario 2;	Calculate 10% - < 35%	Selection Set (<35%)				
undisturbed	Age Out = 20 years						
Connectivity: Core and	ECCC Critical Habitat (High and Low	Buffer, Merge,	Percent Score per				
Adjacency Combined	Elevation) with a 5km buffer	Dissolve, Join,	Landscape Unit				
	combined with BC Telemetry data	Tabulate Intersection					
Report Processing							
Reporting Per Herd	Priority Indicator Themes (combined)	Clip, Re-calculate,	Rank Score (High,				
	with Full Protection	Summarize	Medium, Low) per				
Oth an Indian tana			Landscape Unit				
Other Indicators	Taxat	Description	Output				
	Input	Description	Dersont Score por				
SFIN Cultural	Land Cover Alterations + Cultural	Tabulate Intersection	Landscape Unit				
Lanuscape Status		Tabulate Intersection	Lanuscape Onic				
Tabular Summaries	036)						
Landscape Unit Area	Area Summary for each Landscape	Ouerv: Calculate Area	Total area (HA) per				
(Ha)	Unit	Query. Calculate Area	Landscape Unit				
Current Disturbance	Current percent disturbance per	Ouerv: Time to	Percent Score per				
(Time to Recovery	Landscape Unit, buffered by 500m	Recovery Scenario 1;	Landscape Unit				
Percent)		Age Out = 20 years					
Post-Restoration	Gain in undisturbed habitat	Query: Time to	Percent Score per				
Disturbance (Time to		Recovery Scenario 2;	Landscape Unit				
Recovery Percent)		Age Out = 20 years					
Estimated Restoration	Regional Strategic Environmental	Query: Seismic and	Restorable linear				
Candidates (km)	Assessment (RSEA) anthropogenic	Non-permanent	(km) summary per				
	disturbance – baseline 2022 (SFN);	Roads, Export, Merge;	Landscape Unit				
	Restoration Tracking Database	Erase Restoration					
		Tracking Database					
		Spatial Layers					

Appendix A: Restoration Priority Analysis