

Summary of the Current Condition Report for Forest Biodiversity in the Lakes Timber Supply Area | 2019 Analysis

The Current Condition Report (CCR) for Forest Biodiversity in the Lakes Timber Supply Area was developed as part of the provincial [Cumulative Effects Framework](#) (CEF). The CEF identifies and assesses how values are impacted by cumulative effects¹ across the province. Assessment results from CCRs help explain the current state of a value and can be used to support management of cumulative effects. Forest biodiversity is a value assessed under the CEF as it is important to the conservation and maintenance of landscape biodiversity at all scales.

The purpose of this summary is to:

- Highlight results from from the Current Condition Report for Forest Supply Biodiversity: Lakes Timber Supply Area, Skeena Region – 2019 Analysis; and,
- Inform collaborative discussions among government, First Nations, natural resource industries, and community stakeholders when managing for forest biodiversity.

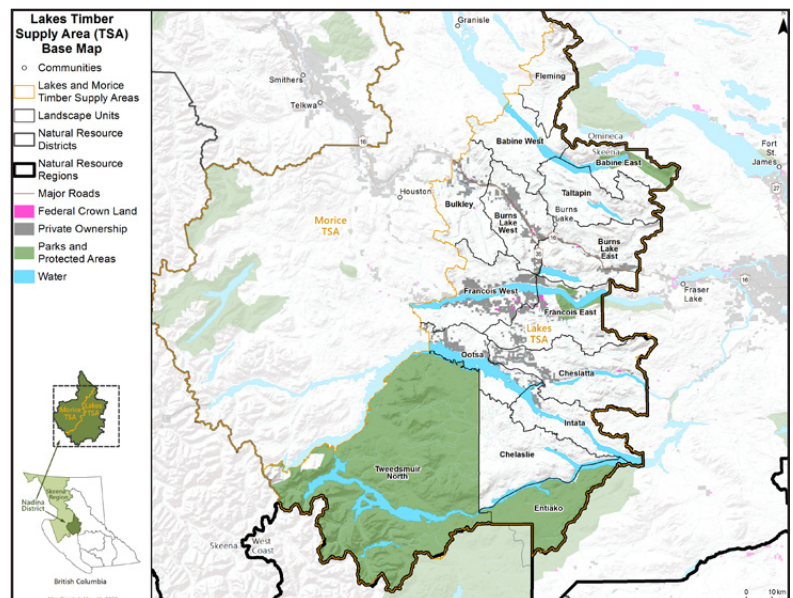
The forest biodiversity assessment evaluates coarse-filter landscape biodiversity elements (i.e. seral stage distribution, patch size distribution, interior forest) against natural benchmarks.

Disclaimer: This summary and current condition report was developed solely by the Province of British Columbia. This summary and report is based on GIS information and has not been ground-truthed. There will be opportunities for First Nations and the Province of British Columbia to collaborate on future current condition reports, monitor the condition of cumulative effects values, and validate the outcomes of these assessments.

Lakes Timber Supply Area

The Lakes Timber Supply Area (TSA) is in the Skeena Natural Resource Region in northwestern B.C. and covers approximately 1.57 million hectares (ha). Within the TSA, Burns Lake is the largest population center with the remainder of the population living in smaller communities such as Decker Lake, Grassy Plains, and Danskin. The TSA falls within the traditional territories of six First Nations: Cheslatta Carrier Nation, Lake Babine Nation, Ts'il Kaz Koh First Nation, Wet'suwet'en First Nation, Skin Tsee Nation, and Nee Tahi Buhn Band. There are six additional communities outside the Lakes TSA that assert rights and title within the TSA: Stellat'en First Nation, Nadleh Whut'en First Nation, Tlazt'en Nation, Ulkatcho First Nation, Takla Lake First Nation, and Yekooche First Nation.

There are six biogeoclimatic ecosystem classification (BEC) with several subzone variants throughout the Lakes TSA. The Sub-Boreal Spruce (SBS) BEC zone comprises most of the TSA (68%), generally located on the rolling hills of the central interior plateau and predominately occupied by lodgepole pine with some hybrid white spruce and subalpine fir. The SBS transitions to the Engelmann Spruce Subalpine Fir (ESSF) BEC zone in the higher elevation forests, covering 23% of the TSA. To the south in the Entiako Provincial Park is the Sub-Boreal Pine Spruce (SBPS) BEC zone, as well as smaller portions in the southeast of the TSA in the Mountain Hemlock (MH), Boreal Altai Fescue Alpine (BAFA), and Coast Mountain-heather Alpine (CMA) BEC zones. The combined area of these BEC zones (SBPS, MH, BAFA, CMA) is 9% of the TSA.



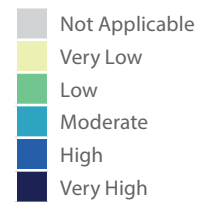
¹ Cumulative effects are changes to environmental, social, and economic values caused by the combined effect of past, present, and potential future activities and natural disturbance events. If not managed, these changes to the environment can compound and eventually impact various environmental, social, and economic values that are important to people in British Columbia.

Table 1: Summary of the Lakes Timber Supply Area Land Base.

Gross Area (ha)	Private Land (ha)	Federal Land (ha)	Parks (ha)	CE-CFLB (ha)
1,576,500	71,733	2,921	542,383	1,208,169

Forest Biodiversity Assessment

Forest biodiversity is assessed using a combination of indicators and hazard ratings based on three categories of threatening processes: 1) **habitat change**, 2) **habitat connectivity**, and 3) **species disturbance**. Hazards ratings of *Very Low*, *Low*, *Moderate*, *High*, and *Very High* are assigned to each of these categories based on how much the current condition (observed) deviates from the expected natural disturbance regime (Table 2):



- 1) **Habitat change** is the direct loss of forested habitat through land conversion (e.g., urban, agriculture) or degradation of forested conditions (e.g. forest harvesting) that disrupts habitat use. **Habitat change hazard rating** estimates how much the current seral stage amount (ha) has deviated from the expected natural conditions. The higher the hazard ratings, the more likely the habitat and ecosystem has been heavily modified. The two indicators used to determine the habitat change hazard rating are: 1) **increase in young (early seral) forests**, and 2) **decrease in mature and old² forests**.
- 2) **Habitat connectivity** refers to the connectedness of forest habitat patches. Connectivity is reduced the more forest habitats are fragmented and isolated from one another. This loss of connectivity between forest habitat patches limits species' movements and dispersal. The higher the hazard rating, the more forest habitats have been fragmented and isolated. The **habitat connectivity hazard rating** is based on **patch size distribution** that considers change in the size and distribution of remaining mature and old forest patches compared to what is expected naturally. The higher the hazard rating, the more likely that habitat connectivity is highly fragmented.
- 3) **Species Disturbance** is a change in behavior, biology, or interactions of species due to increased forest edge effects and disturbance associated with roads/linear features in forested habitats. Edge effects are the ecological changes that occur to habitats when a new forest edge is created. **Species disturbance hazard rating** considers the likelihood if there is less mature and old interior forest habitat than what would be expected to occur naturally, and the amount of forest area disturbed by roads and other linear features that could have negative impacts. The higher the hazard rating, the more likely that species decline from habitat avoidance, displacement, predation, and mortality. The two indicators used to determine the species disturbance hazard rating are: 1) **amount of mature and old forest interior habitat**, and 2) **area undisturbed by roads and linear features**.

Outcomes of these hazard ratings are then combined into an overall **Forest Biodiversity Risk rating**. This is calculated using a combined rating score based on the numerical average of scores assigned to each of the above hazard ratings. Areas with *High* to *Very High* Forest Biodiversity Risk represent the greatest risk to maintaining species associated with late seral forests because these habitats are most easily lost through combined effects of human and natural disturbances and take the longest time to replace or recruit.

Assessment results are reported by unique combinations of Landscape Unit (LU) and BEC which speaks to the landscape level risk to forest biodiversity as well as ecosystem specific risk. There are 59 LU/BECs across the Lakes TSA included in this assessment.

² Mature and old forest are combined into one rating assuming that: a) many forests classified as mature or old may have similar attributes and function as similar habitats for many species, and b) the ability of the forest inventory to distinguish forest age beyond 140 years since stand-replacing disturbances is limited.

Age Definitions

Table 2: Lakes North and Lakes South Sustainable Resource Management Plan (SRMP) Targets for Seral Conditions for the Lakes Timber Supply Area.

NDT	BEC Zone	Seral Stage Age Definition (years)			SRMP Targets (%) ^b					
					Early		Mat + Old		Old	
		Low	Low	Low	L ^a	I	L	I	L	I
2	ESSF	<40	>120	>250	na	<36	>14	>28	>9	>9
	SBS	<40	>100	>250	na	<36	>15	>31	>9	>9
3	ESSF	<40	>120	>140	na	<46	>14	>23	>14	>14
	SBS	<40	>120	>140	na	<54	>11	>23	>11	>11

^a There is no limit on the amount of early seral forest (<40 years) under a Low biodiversity emphasis (BEO) if minimum mature and old requirements are met. In this table, L stands for Low and I for Intermediate BEO.

^b Targets refer to the percentage of the forest land base. For the SRMPs, the forest land base is defined as the Crown Forest Land Base (CFLB). Refer to section 2.1.1.

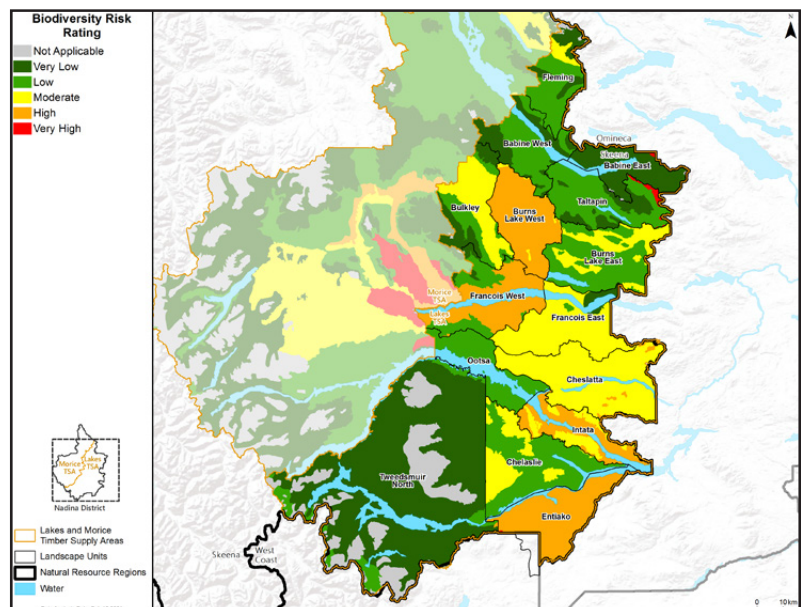
Assessment Results

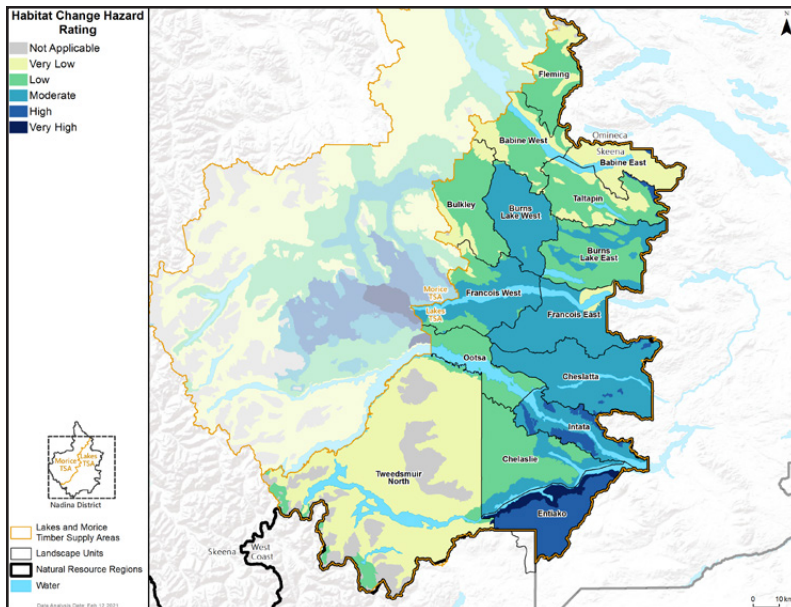
Forest Biodiversity Risk

Forest Biodiversity Risk ratings vary across the Lakes TSA and are primarily driven by differences in the amount of natural disturbances, forest harvesting and land use (i.e., agriculture, urban) across the TSA. The *High* to *Very High* Forest Biodiversity Risk ratings primarily fall within the SBSdk, SBSdw3, SBSpmc, and ESSFmv1 ecosystems due to the combined effects of forest harvesting, wildfire, and the mountain pine beetle (MPB) epidemic. Most of these ratings are concentrated in the Burns Lake West, Francois West, Intata, and Entiako LUs, as well as Babine East, Taltapin, and Chelatta LUs.

Areas of *Moderate* Forest Biodiversity Risk ratings cover a large area in the central portion of the TSA, primarily in the Francois East, Chelatta, Bulkley, Burns Lake East, Taltapin, and Chelaslie LUs. This includes portions of the ESSFmv1, SBSdk, SBSpmc2, and ESSFmc2 ecosystems. However, several areas rated as *Moderate* are likely close to or in a *High* risk condition due to the effects of recent wildfires, additional losses of mature and old interior forest as well as alteration of mature and old forest patch size distributions.

Areas of *Very Low* and *Low* Forest Biodiversity Risk ratings are primarily in the far northern and southern portions of the TSA in the Tweedsmuir North, Chelattie, Ootsa, Bulkley, Babine East, Babine West, and Fleming LUs. This includes substantial portions of the SBSpmc2, SBSdk, and ESSFmc ecosystems. These areas of *Low* risk ratings may be driven by legal designations for wildlife habitat (e.g., no-harvest caribou ungulate winter ranges, landscape connectivity corridors) and provincial parks (e.g., Tweedsmuir Park).

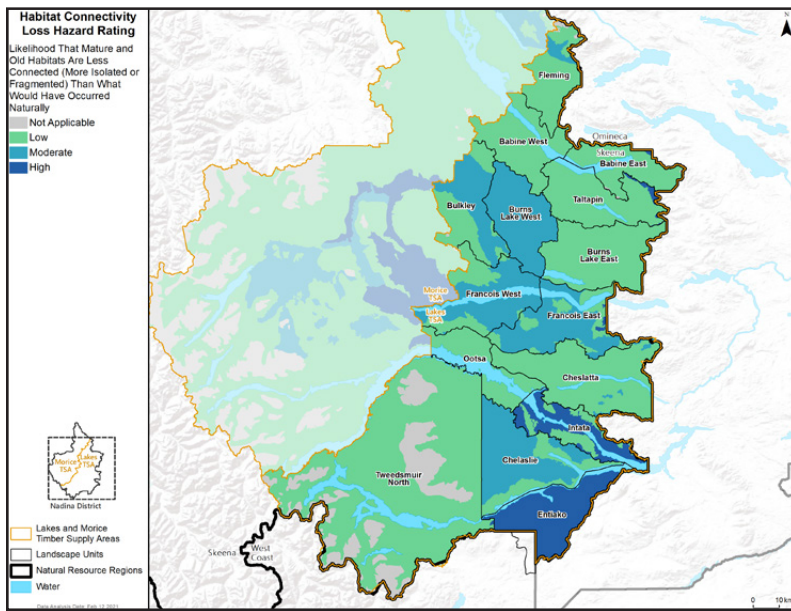




Habitat Change Hazard Rating

Areas rated as *High* to *Very High* Habitat Change Hazard cover a relatively small portion of the TSA, primarily in the SBPSmc in Entiako LU and the SBSmc2 in the Intata LU. However, areas rated as *Moderate* hazard includes significant portions of the SBSdk and SBSmc2 ecosystems in the central portion of the TSA (Francois East, Francois West, Burns Lake East, Burns Lake West, Intata, and Cheslatta LUs).

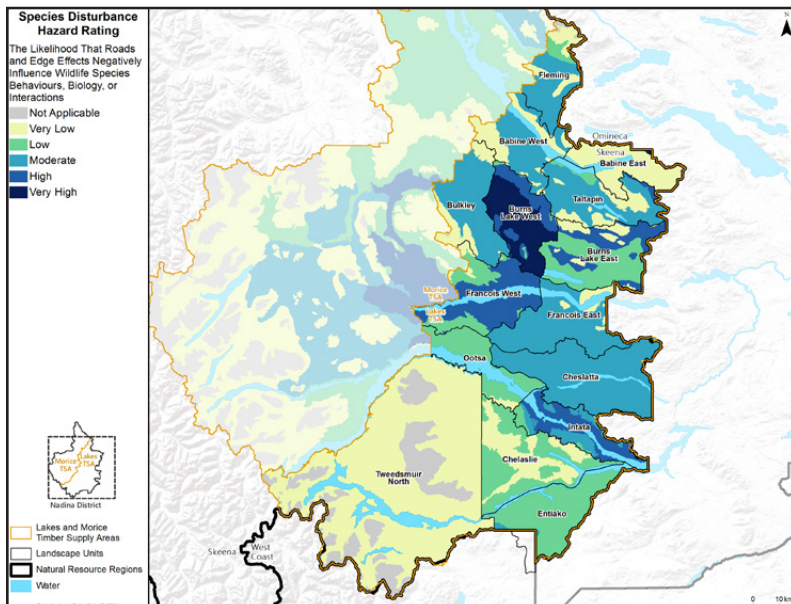
The *Low* and *Very Low* hazard ratings occur in the northern and southern portions of the TSA. This is largely due to legal designations that restrict forest harvesting, such as Tweedsmuir Park in the south, caribou ungulate winter ranges (UWRs), old growth management areas (OGMAs) or landscape connectivity corridors.



Habitat Connectivity Loss Hazard Rating

A small portion of the TSA is rated as *High* Habitat Connectivity Loss Hazard in the Intata and Entiako LUs. The lower elevation SBSdk ecosystem in the Intata LU contains a high proportion of private land, much of which has been converted to agriculture, and a history of forest harvesting, resulting in a patchwork of fields, developments, and forests. In the Entiako LU, much of the area was affected by wildfires resulting in little remaining mature and forest area or large forest patches.

Moderate ratings are common in the central portion of the TSA in the SBSdk and SBSmc2 ecosystems where most mature and old forest are in smaller (less than 250 ha) patches. The *Low* and *Very Low* ratings occur in the northern and southern portions of the TSA and are largely due to legal designations that restrict forest harvesting, such as Tweedsmuir Park and caribou UWRs, OGMAs and landscape connectivity corridors.



Species Disturbance Hazard Rating

High and *Very High* Species Disturbance Hazard is generally in the lower elevation SBSdk and SBSdw3 ecosystems where human settlement and land use activities are concentrated. Areas of *Moderate* hazard occur throughout much of the SBS ecosystems in the Bulkley, Cheslatta, Intata, and Taltapin LUs, where frequent large-scale disturbances are common. Areas rated as *Low* and *Very Low* hazard include largely undeveloped part of the TSA, such as Tweedsmuir, Chelaslie, Entiako, and Babine East LUs.

Summary

- Forest Biodiversity Risk focuses on risk to wildlife and plant species that are dependent on late seral (mature and old) forest habitats, as it is these habitats that are limited in managed landscapes. Forest Biodiversity Risk is greatest where the combined outcomes of three habitat hazard categories are rated as *High* to *Very High*.
- The distribution of Forest Biodiversity Risk in the Lakes TSA is generally consistent with the direction from the Lakes North and South SRMPs and the amount and distribution of Biodiversity Emphasis Options (BEOs). The areas designated as Low BEO generally have a higher risk of biodiversity loss, and areas designated as High BEO have a lower risk of biodiversity loss.
- *Moderate* to *High* Forest Biodiversity Risk ratings are concentrated in the central portion of the TSA due to cumulative effects of land use (i.e., urban, agricultural, infrastructure), forest harvesting, and natural disturbances. *High* risk is primarily in the SBSdk and SBSmc2 ecosystems in the Burns Lake West, Francois West, and Intata LUs, whereas large portions of the SBSdk and SBSmc2 ecosystems in the central portion of the TSA are rated as *Moderate* in the Burns Lake East, Francois East, and Cheslatta LUs.
- In several LUs rated as *Moderate* the actual risk may be *High* due to impacts of mountain pine beetle and wildfire that are not fully captured in all the indicators used in this assessment.
- Parks, protected areas, and other legal designations that restrict development appear to be contributing to mitigating risk to forest biodiversity.

Opportunities

- Mitigating risk should be considered where the current landscape conditions for forest biodiversity are inconsistent with existing management direction (e.g. guidance and/or legal targets) and where risk to forest biodiversity is the highest.
- Mitigating risk requires defining the desired future condition for an area and implementing management strategies that will shift current conditions towards those desired conditions. This may involve defining acceptable levels of risk to forest biodiversity³.
- Local planning efforts are the best approach to establish desired future conditions and setting targets for management for forest biodiversity.
- In the absence of desired conditions expressed through local planning, it is recommended to manage forest biodiversity at moderate or lower levels of risk, as these conditions are more likely to maintain forest biodiversity and other forest ecosystem services while still providing future management options.
- In most cases, mitigating risk to forest biodiversity can be completed by effectively implementing the key biodiversity elements outlined in the Biodiversity Guidebook's coarse-fine filter management approach. Additional strategies to manage road access and considerations for effective implementation of spatial designations and non-spatial targets with shifting disturbance regimes due to changing climate will be required.

³ Defining risk tolerance involves determining targets for each key biodiversity element (i.e., seral distribution, patch size distribution, old growth forest retention, interior forest, landscape connectivity, stand structure) that are likely to maintain important ecosystem services (e.g., wildlife habitat, carbon sequestration, flood mitigation, timber) at desired levels.

Data sources: Based on information from the Current Condition Report for Forest Biodiversity in the Lakes Timber Supply Area, Skeena Region - 2019 Analysis.