CEF Cumulative Effects Framework

SUMMARY

March 2024

Summary of the Current Condition Report for Old Growth Forest in the Lillooet Timber Supply Area | 2019 Analysis

The Current Condition Report for Old Growth Forest in the Lillooet Timber Supply Area (TSA) was developed as part of the provincial Cumulative Effects Framework (CEF). The CEF identifies and assesses how values are impacted by cumulative effects[1] across the province. Results from current condition reports help explain the current state of values and can be used to support management of cumulative effects. Old growth forest is a value that is assessed under the CEF as it is important to the conservation and maintenance of landscape biodiversity at all scales. Functioning old growth forest delivers various ecosystem services as well as provides cultural and spiritual values.

The purpose of this summary is to:

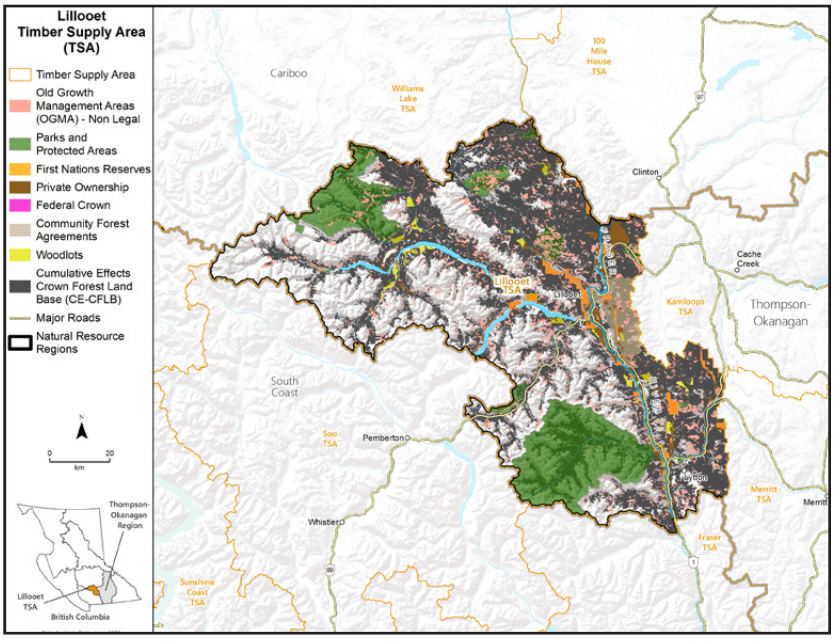
- Highlight results from the Current Condition Report for Old Growth Forest in the Lillooet TSA – 2019 Analysis; and,
- Inform collaborative discussions among government, First Nations, natural resource industries, and community stakeholders when managing old growth forest.

Note: This summary (and report) provides quantitative reporting on the legal targets and does not discuss the overall effectiveness or implementation of those targets.

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.

Lillooet TSA Assessment Area

The Lillooet TSA is in the southern interior of the province in the Thompson Okanagan Natural Resource Region (the Region) and covers approximately 1.1 million hectares. The Lillooet TSA is a topographically and ecologically diverse landscape that supports a range of biogeoclimatic ecosystem classification (BEC) zones. Most of the TSA is high elevation biogeoclimatic ecosystem classification (BEC) zones of the ESSF (46%), MS (13%), and alpine tundra (IMA 10%). The lower valley bottoms are IDF (26%) with PP and BG BEC zones in the lower elevation forests and grasslands.



The Lillooet TSA boundary and all the Crown land within the TSA defines the outer limits of this cumulative effects (CE) assessment. All area-based tenures (e.g., Tree Farm Licenses and Community Forests) that are more than 600 hectares are included in the assessment. The exception is all woodlots, regardless of size, are excluded from the assessment.

[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.

BRITISH COLUMBIA

The Cumulative Effects Crown Forested Land Base (CE-CFLB)[2] calculated for the Lillooet TSA is 551,208.4 ha, which is approximately 49% of the gross area of the TSA. Land use in the Lillooet TSA is predominately natural resource based, including forestry, agriculture, mining, and tourism, with forestry continuing to be the largest industry. The TSA has experienced changes on the land base from natural disturbances such as wildfires and pest infestations (e.g., mountain pine beetle in 2004). These events may further affect the remaining old growth forest in the TSA in combination with cumulative effects from resource development, urban development, and other potential climate change impacts.

Old Growth Forest Management in the Lillooet TSA

There are 18 Landscape Units (LUs) in the Lillooet TSA. The old growth forest in these LUs are managed through legal old growth orders by two mechanisms:

1. **Non-spatial old forest targets legally established through the Provincial Non-Spatial Old Growth Order (PNOGO, 2004)**. Old growth forest targets are set in PNOGO by LU for each natural disturbance type (NDT), biogeoclimatic ecosystem classification (BEC), and biodiversity emphasis option (BEO) combination, and are defined by seral stage (Table 1). The PNOGO includes the option to reduce old growth forest retention in LUs with Low BEO by up to 2/3, and full targets do not need to be met for 240 years to avoid impacting timber supply. The CE assessment applied full targets to all LUs with Low BEO designation.
2. **Spatial non-legal Old Growth Management Areas (OGMAs)**. OGMAs were established in 2004 but were not legally designated under PNOGO. However, PNOGO targets are used to guide the amount of old growth forest required in OGMAs. Provisions for allowable OGMA incursions and amendments are managed through the Regional OGMA policies.[3]

Although **management to mature-plus-old forest targets are not a legal requirement** in the Lillooet TSA, an assessment against these targets was completed to better inform the current condition. Mature-plus-old forest policy targets are set in the Biodiversity Guidebook (1995) by LU for each NDT, BEC, and BEO combination with targets defined by seral stage (Table 2).

Age Definitions

Table 1. *Age of Old Growth Forest in the Lillooet TSA*

NDT	BEC zone	Legal Target: % Old Growth Forest Retention			Old Forest Age Definition (years)
		Low BEO	Int. BEO	High BEO	
NDT2	CWH	9	9	13	>250
	ESSF	9	9	13	>250
NDT3	ESSF	14	14	21	>140
	MS	14	14	21	>140
NDT4	IDF	13	13	19	>250
	PP	13	13	19	>250

Table 2. *Age of Mature-Plus-Old Forest in the Lillooet TSA*

NDT	BEC zone	Policy Target: % Mature + Old Retention			Mat + Old Forest Age Definition (years)
		Low BEO	Int. BEO	High BEO	
NDT2	CWH	17	34	51	>80
	ESSF	14	28	42	>120
NDT3	ESSF	14	23	34	>120
	MS	14	26	39	>100
NDT4	IDF	17	34	51	>100
	PP	17	34	51	>100

[2] A unique CE-CFLB is calculated for the CE assessment to include area-based tenures because they are required to manage for old growth biodiversity objectives. The full methodology can be found in the Old Growth Cumulative Effects Assessment Backgrounder (2024).

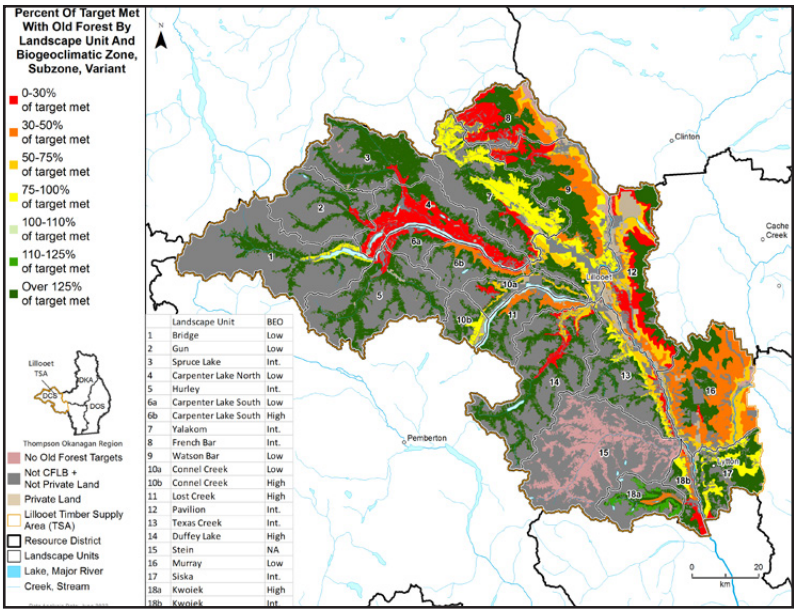
[3] In the Old Growth Management Area Guidance Thompson Okanagan (ILMB, 2007) regional OGMA guidance document, there are objectives that allow incursions for very specific reasons up to 10 hectares or 10% of the area of the OGMA, whichever is less, for any single OGMA. Any incursion beyond this threshold where consistency with desired old seral conditions cannot be demonstrated, or where an OGMA can be relocated to improve biodiversity values, would result in the OGMA being replaced with an ecologically suitable area.

Assessment Results

The current condition of old growth forest in the Lillooet TSA was assessed using the four indicators as outlined in the *Interim Assessment Protocol for Old Growth Forest in British Columbia (2017)*. Assessment units (AUs), which are defined by a combination of LU, BEO, NDT, and BEC are used to report on the current condition of old growth forest and mature-plus-old forest on the CE-CFLB. The Lillooet TSA has 18 LUs with a total of 159 AUs used in this CE assessment.

Indicator #1: Amount of Old Growth Forest

Indicator Description: This non-spatial indicator determines the current amount of old growth forest within each AU in relation to the legal targets for old growth forest in the CE-CFLB.



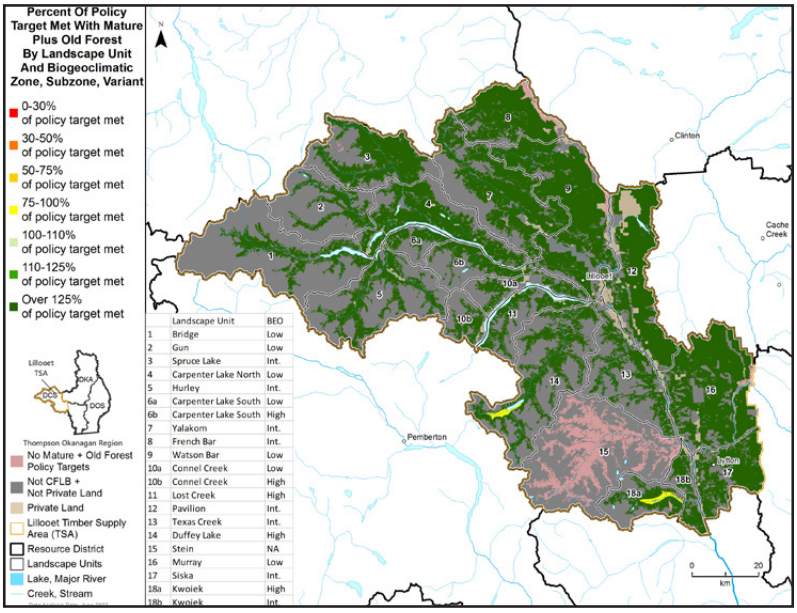
	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Assessment Results:

- 31.6% (174,301.3 ha) of the CE-CFLB is old growth forest.
- Of the 159 AUs in the TSA, **100 AUs (63%) have sufficient amounts of old growth forest compared to the targets (270,569.1 ha of CE-CFLB)**. These occur mostly in higher elevations (ESSF and MS zones). There are 15 BEC subzones/ variants (out of 29) with all AUs meeting the legal targets.
- The remaining 59 units (37%) have not met the defined targets with old growth forest. These occur across the TSA but are more common in the dry, low elevation valley bottoms (IDF and PP zones). There are 9 AUs with no old growth forest remaining (3,831.9 ha of CE-CFLB).

Indicator #2: Amount of Mature-Plus-Old Forest

Indicator Description: This non-spatial indicator determines the current amount of mature-plus-old forest within each AU in relation to the policy targets for mature-plus-old forest in the CE-CFLB. As mature forest will become old growth forest over time, it is important to assess where mature-plus-old forest is available to recruit towards old growth forest targets.



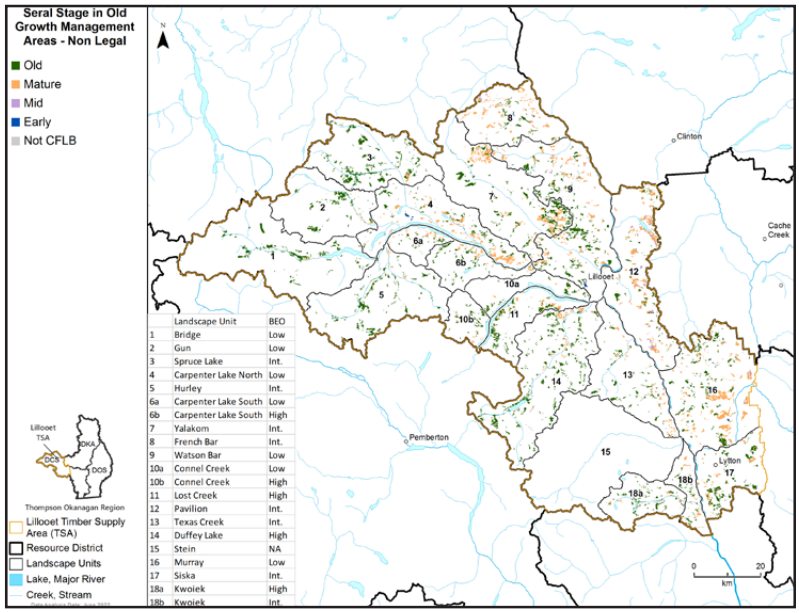
	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Assessment Results:

- 71.7% (395,489.7 ha) of the CE-CFLB is mature-plus-old forest. There is considerably more mature-plus-old forest across the CE-CFLB (71.7%) compared to old growth forest alone (31.6%).
- Of the 159 AUs in the TSA, currently **157 AUs (99%) meet or exceed the mature-plus-old forest policy targets**.
- There are 27 out of 29 BEC subzone/variants with all AUS meeting the policy targets.
- The 2 AUs that do not meet the mature-plus-old forest policy targets are the Duffy Lake LU (CWHms) and Kwoiek LU (IDFww). Both AUs account for a relatively small total CE-CFLB area (2,664.5 ha) and are close to meeting the targets (91.8% and 85.2%, respectively).

Indicator #3: Incursions into Old Growth Management Areas

Indicator Description: This indicator compares the area of anthropogenic (human-caused) disturbance footprint (i.e., incursions) in OGMAs relative to allowable incursions specified in the Regional policy or guidance.[4]



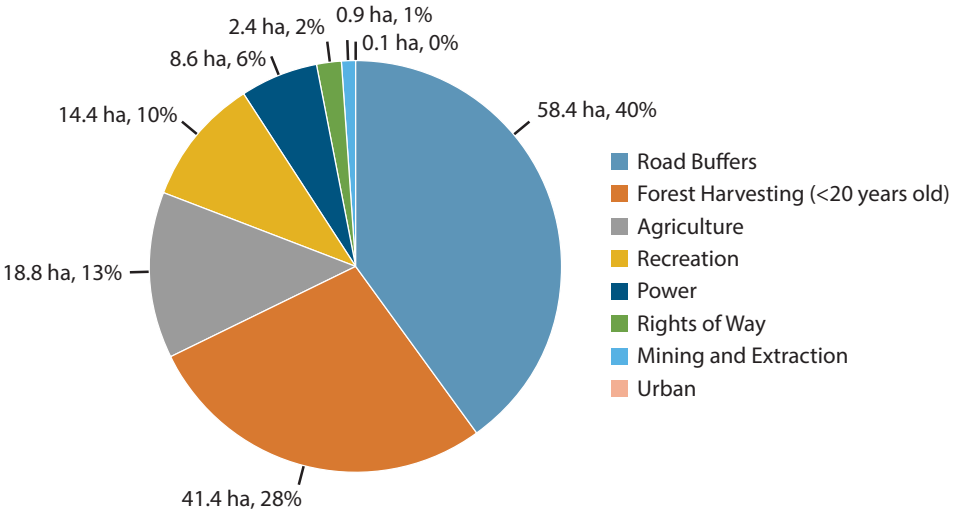
Assessment Results:

- There are 2,458 spatial non-legal OGMAs in the Lillooet TSA with a total OGMA area of 74,908.4 ha and a CE-CFLB of 64,729.0 ha.
- 562 OGMAs (23%) show some level of disturbance, impacting 483.8 ha of total OGMA area.
- **66 OGMAs (3% of all non-legal OGMAs) have incursions greater than the allowable threshold.** These incursions represent 0.2% (144.9 ha) of the total OGMA area in the TSA.
- Most incursions were due to road development (40.2%) followed by forest harvesting (cutblocks) (28.6%).
- Most incursions disturb less than 5% of the total OGMA area. The OGMAs with the greatest percent of incurred area occur in the Carpenter Lake North (100%, 92%, and 76%), Duffly Lake (68% and 66%), and Texas Creek (66%) LUs.

Indicator #4: Amount of Old Growth Forest in Old Growth Management Areas

Indicator Description: This indicator determines the amount of old growth within OGMAs in relation to PNOGO targets. OGMAs were the mechanism used to meet old growth forest retention targets, therefore a comparison provides an assessment of that implementation strategy.

Total Area (ha) and Disturbance Type of Incursions into Non-Legal OGMAs



Assessment Results:

- In non-legal OGMAs, 50.7% of the total OGMA area is old forest (37,972.6 ha), 32.1% is mature forest (24,045.9 ha), with small components of mid (2.4% or 1,826.4 ha) or early (1.0%) or 780.3 ha) forests.
- There are **27 AUs with sufficient amounts of old growth forest within non-legal OGMAs** to meet PNOGO targets. These are mostly in the ESSF and MS BEC zones.
- The remaining **132 AUs currently have insufficient amounts of old growth forest within non-legal OGMAs** compared to PNOGO targets, most of which are in the MS, IDF and PP BEC zones. Of these, 13 LU-BECs have no old growth forest within the non-legal OGMA boundaries.
- While there are sufficient amounts of old growth forest in most LUs compared to legal targets, it is generally not within the non-legal OGMA boundaries (82% of OGMAs are not meeting targets).

[4] Incursions are defined as alterations to OGMAs caused by permitted activities, such as forestry cutblocks and roads, non-forestry-related activities (e.g., pipelines, oil and gas), and human use features such as recreation sites and trails.

What are the general reasons contributing to current condition?

- Natural disturbance – There is a long history of wildfires and natural disturbances in the TSA, including pest and insect damage (i.e., mountain pine beetle), that has impacted and resulted in large areas without old growth forest stands.
- Forest harvesting – This has occurred in all LUs, some associated with salvage in response to forest health as well as wildfire impacted stands, which has influenced the amount and distribution of old growth forest in the TSA.
- Access to timber – In general, the steep terrain makes the TSA have a limited timber harvesting land base (THLB) compared to other TSAs, resulting in large areas that are inoperable for forestry and likely other development. Areas with easier access to timber (e.g., low elevations, closer to population centres) are often further away from meeting the targets.
- Younger forests – Mature forests may have been used to meet the old growth forest targets in AUs with insufficient old growth forest or to minimize socio-economic impacts to forestry operations.
- Analysis limitations – Incursions into OGMAs may be overestimated as it was not possible in the analysis to remove anthropogenic disturbances, except for forestry cutblocks, that occurred prior to OGMA establishment due to the lack of dates in the source data.
- Resource development – Old growth forest and OGMAs are subject to impacts from other (non-forestry) resource development as these sectors are not legally required to manage for old growth forest (e.g., mines, land conversion, and oil and gas).
- Policy interpretation – The varying interpretation of orders and policy, as well as approaches to analysis and tracking of old growth forest by the Province and licensees, presents challenges to accurately track and monitor old growth forest conditions relative to the orders over time.
- Policy implementation – The application of provincial policy and guidance may have resulted in or contributed to the targets not being met within OGMAs because it was designed to mitigate the impacts to timber supply from the management of old growth forest (e.g., Landscape Unit Planning Guide prioritized OGMAs in areas considered uneconomical for forest harvesting or in areas that were managed for other values, which may have resulted in a trade-off of old growth forest biodiversity for areas that didn't impact timber supply).

Opportunities

The following opportunities related to old growth management are identified for consideration in the Lillooet TSA:

1. Review current non-legal OGMA locations and seral stage within OGMAs in AUs that do not contain sufficient old growth forest to meet legal targets. The establishment of OGMAs was intended to retain old growth forest in line with PNOGO targets and should be reviewed to better understand if the intended outcomes are being achieved.
2. This assessment shows a general trend of sufficient old growth forest available across many AUs (i.e., the CE-CFLB across the TSA) but not necessarily within the non-legal OGMAs. Determine if there is an opportunity to adjust the non-legal OGMA boundaries to capture more old growth forest that will better support old growth forest biodiversity objectives.
3. Review the current process in place for the tracking and monitoring of OGMA incursions and amendments to ensure the original intent of the OGMAs are maintained.
4. Identify opportunities to integrate the findings of this report, including the CE assessment results and data into planning and decision-making processes (e.g., Forest Landscape Planning, co-management with First Nations).

Data sources: Based on Information from: Current Condition Report for Old Growth Forest in the Lillooet TSA – 2019 Analysis.