Current Condition Report for Forest Biodiversity: Lakes Timber Supply Area

APPENDIX 1

Overview of Forest Biodiversity Management in the Lakes Timber Supply Area (TSA)

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Forest Biodiversity Management in the Lakes TSA

Land Use Plans and Legal Orders

Across the province, landscape-level legal objectives have been established under the previous *Forest Practices Code of British Columbia Act* or under section 93.4 of the *Land Act*, for the purposes of the *Forest and Range Practices Act*. Land and Resource Management Plans (LRMP) have provided strategic management direction for the establishment of legal objectives. However, land use planning is presented differently in the Lakes Timber Supply Area (TSA). The planning process for the Lakes District LRMP (now the Lakes TSA) began in 1994 and was approved in 2000. However, six out of seven objectives from the LRMP were cancelled and replaced with objectives from the Lakes South and the Lakes North Sustainable Resource Management Plans (SRMP) that became legally established in 2003 and 2009, respectively. These plans are consistent with the provisions of the LRMP and the objectives that were legally established provide the legal direction for landscape-level (or coarse-filter) biodiversity. The LRMP objective that is still in effect pertains to mineral and wildlife management zones and is not directly related to biodiversity.

At the time the Lakes South SRMP was completed, the mountain pine beetle epidemic was in full swing in the TSA (early 2000's), while the Lakes North SRMP was completed at the end of the epidemic. Both plans were designed to allow biodiversity objectives to be implemented in a way that considered the effects and needs created by the infestation. Once the epidemic was no longer the driving force behind ecological processes and forest management in the area, the old growth forest objective for the Lakes South SRMP was amended so that Old Growth Management Areas (OGMA) could be established (to replace the aspatial old growth objective). Legal Spatial OGMAs were implemented in the 2009 Lakes North SRMP and later updated in 2016 through an amendment to the legal order.

The purpose of the SRMP objectives is to conserve biodiversity by providing clear objectives to ensure that a diversity of forest habitats is retained on the landscape. This is done by:

- Maintaining a range of age classes, including old growth forest, appropriately distributed across the landscape.
- Providing connectivity, to allow for the movement of organisms across the landscape by providing key "stepping stones".
- Maintaining species diversity and wildlife trees through time at both the stand-level and landscape-level.

A summary of legal objectives is included below. Each objective is accompanied by a set of strategies to assist in their implementation, but the strategies are not legally binding and are not reported here unless they include specific targets critical to meeting the objectives.

Biodiversity Targets

Lakes North SRMP

The Lakes North SRMP has seven objectives, four of which are legal and relate to seral stage distribution, OGMAs, stand structure diversity through wildlife tree retention and habitat connectivity. Two amendments were made to the original order (2009) that legally established these objectives. The first was an update to the location of several OGMAs in 2016 using improved data to better operationalize their boundaries, and the second was a change in 2017 to Objective 4 regarding habitat connectivity. Since a portion of Objective 4 was only in force until 2016 it had to be replaced. The wording was amended to provide a clearer definition to protect red- and blue-listed ecological communities and hydro-riparian ecosystems, but the map remained unchanged. Non-legal objectives from the plan pertain to patch size distribution, the retention of wild young forest, and coniferous and deciduous tree species diversity.

Seral Stage Distribution

The goal of the following seral stage distribution objective is to maintain the range of forest stand ages that were historically found within the various Biogeoclimatic (BEC) zones within the Lakes North SRMP area.

Lakes North SRMP Objective 1 (2009)
Maintain a range of forest seral stages by Biogeoclimatic zone within each landscape unit shown on Map 1 and in accordance with Table 1.

Table 1: *Seral Stage Distribution Targets for the Lakes North SRMP Area (Objective 1 Table 1).*

Landscape Unit	Biodiversity Emphasis Option	BEC Zone	Early[a]	Mature + Old[b]	Old[c]
Burns Lake East	Low	SBS	N/A	>11%	>11%
		ESSF	N/A	>14%	>9%
Burns Lake West	Low	SBS	N/A	>11%	>11%
		ESSF	N/A	>14%	>9%
Taltapin	Low	SBS	N/A	>11%	>11%
		ESSF	N/A	>14%	>9%
Babine West	Low	SBS	N/A	>11%	>11%
		ESSF	N/A	>14%	>9%
Babine East	Intermediate	SBS	N/A	>23%	>11%
		ESSF	<54%	>28%	>9%
Bulkley	Intermediate	SBS	<36%	>23%	>11%
		ESSF	<54%	>28%	>9%
Fleming	Intermediate	SBS	<54%	>23%	>11%
		ESSF	<36%	>28%	>9%

[a] Early seral targets will be applied to anthropogenic disturbances. Early forest is defined as <40 years for Sub-Boreal Spruce (SBS) and Engelmann Spruce-Subalpine Fir (ESSF) Biogeoclimatic Ecosystem Classification (BEC) zones.

[b] Mature forest is defined as >100 years for SBS and >120 years for ESSF.

[c] Old forest is defined as >140 years for SBS and >250 years for ESSF.

Old Growth Forest Retention through OGMA Establishment

Old Growth Management Areas (OGMAs) are identified primarily for the purposes of retaining or restoring the ecological attributes associated with old forest, and maintaining areas that are subject to natural forest succession. They may also contribute to the retention of other features important for biodiversity or other values. OGMAs function to provide reserves for old growth forest-dependent species across the landscape. The areas were selected to meet old seral criteria over time, while minimizing impacts on timber supply.

The goal of the old growth forest objective is to manage for the retention of areas that are appropriately sized, contain, or can recruit specific structural old growth forest attributes, and represent the range of ecosystem types found across the Lakes North planning area. It is important to note that where other objectives overlap with OGMAs, those objectives continue to apply.

Lakes North SRMP Objective 2 (2009) (Map amended 2016)

Preserve Old Growth Management Areas as identified on Map 2.

a. Despite the above, timber harvesting is allowed for one or more of the following purposes, provided an alternate area or areas is identified and reserved from harvesting in the same Landscape Unit/BEC variant unit as in the original OGMA and the overall effectiveness of old forest conservation will not be diminished:

   i. New road development and maintenance where practicable alternatives exist, and subject to these roads being deactivated once operational activities are complete.

   ii. To address a substantiated forest health factor within an OGMA where this poses a significant and substantiated forest health risk to forests outside the OGMA and where harvesting constitutes an appropriate and effective control action.

   iii. To address a public or industrial safety concern, or an environmental hazard where no practicable alternative exists.

b. Boundary adjustments to the OGMAs are allowed, provided that an alternate area or areas is identified and reserved from harvesting in the same Landscape Unit/BEC variant unit as in the original OGMA, and that old growth attributes of the replacement OGMA meet or exceed the attributes of the original OGMAs.

Stand Structure through Wildlife Tree Retention

The goal of retaining wildlife trees is to promote healthy functioning ecosystems that provide wildlife habitat elements at the forest stand level. This will be promoted by maintaining forest stand structural attributes[1] of natural forests, within managed stands, through wildlife tree retention areas.[2]

[1] Forest stand structural attributes include, but are not limited to, living and dead standing trees; coarse woody debris; large living trees; tree species diversity; a variety of layers and opening sizes in the forest canopy; and a full range of above- and below-ground flora and fauna.

[2] Wildlife Tree Retention is an area specifically identified for the retention and recruitment of suitable wildlife trees. It can consist of a group reserve, or of a group of single trees dispersed over the harvest area.

Lakes North SRMP Objective 3 (2009)
Maintain stand level structural diversity by retaining wildlife tree retention (WTR) areas in the Lakes North plan area, as shown on Map 1, and as per (a), (b) and (c). a. Where an agreement holder completes harvesting in one or more cutblocks during any 12-month period beginning on April 1 of any calendar year, the holder must ensure that, at the end of that 12-month period, the total area covered by WTR areas that relate to the cutblocks is a minimum of 10% of the total area of cutblocks. b. An agreement holder who harvests timber in a cutblock greater than 3 hectares must ensure that, at the completion of harvesting, the total amount of WTR areas that relate to the cutblock is a minimum of 5% of the cutblock area. c. An agreement holder must ensure that high wildlife value trees/areas are retained after harvest. Where there are few trees with high value wildlife attributes available, locate retention on a priority basis as follows: i. in areas most suitable for long-term wildlife tree recruitment, and ii. in areas that are representative of the pre-harvest stand.

Connectivity

In order to provide opportunities for the distribution of species, populations and genetic material, the Lakes LRMP includes an objective to maintain or enhance habitat connectivity at the landscape level. One method to achieve this objective is to establish a network of landscape corridors. The components of the landscape connectivity matrix (LCM) include vegetative cover important for biodiversity; potential hydro-riparian ecosystems; and potential rate or endangered plant communities; as well as other areas to create a connected network, such as immature conifer, non-forest, or pine-leading stands.

Lakes North SRMP Objective 4 (2009) (Amended in 2017)
Maintain habitat connectivity within the landscape connectivity matrix (LCM) shown on Map 3 and in accordance with (a), (b), (c) and (d): a. Maintain each LCM in a contiguous mature and old forest condition. Each LCM is in a contiguous mature and old forest condition if: i. At least 70% of the forested area within each LCM is greater than 100 years old (SBS) or 120 years old (ESSF) at any time; and ii. Cutblocks are spatially distributed as follows within each LCM: a. A new cutblock cannot be adjacent to an existing cutblock unless at least 70% of the net area to be reforested on the existing cutblock has developed attributes that are consistent with a mature seral condition, and b. Harvesting must not result in a condition where more than 30% of the width of a LCM is younger than mature and old. b. Retain 100% of the forested area within the red and blue-listed ecological communities identified below: SBSdk 04, 08, 81, 82 SBSmc2 81, 82 c. Retain 100% of the hydro-riparian ecosystems identified below: SBSdk 04, 07, 08, 09, 10 SBSmc2 07, 09, 10, 12 ESSFmc 07, 08, 09, 10 ESSFmv1 04, 05 ESSFmv3 07 d. Despite a) above: i. Roads may be constructed where no practicable alternatives exist and must be deactivated once primary forest activities are complete, and ii. Live stems and non-merchantable understory in a stand must be retained where the salvage of dead pine trees within an LCM occurs. Salvage may only occur where 50% or more of the total mature and old stems are composed of dead pine trees, and only where harvesting of these dead pine trees maintains connectivity.

Lakes South SRMP

The Lakes South SRMP (2003) originally had 10 objectives, with eight of them legally established related to seral stage distribution, OGMAs, stand structure through wildlife tree retention, habitat connectivity, and patch size distribution. Objectives 2 and 3 pertained to old growth and were cancelled and replaced by an objective in 2007 to spatialize the non-spatial old seral retention targets into OGMAs. As a result of improved data, several OGMAs were modified in 29016 to better operationalize their boundaries. Non-legal objectives remain from the original SRMP and pertain to the retention of wild young forest and to coniferous and deciduous tree species diversity.

Seral Stage Distribution

The goal of the following seral stage distribution objective is to maintain the diversity of seral stages and disturbance regimes found within the various biogeoclimatic subzones and variants within the Lakes South SRMP Area.

Lakes South SRMP Objective 1 (2003)
Maintain early, mature plus old, and old seral stages by:
a. Using Table 1 to determine seral stage targets for each landscape unit within the Lakes South SRMP area, outside the Caribou Migration Corridor, including recruitment strategies where necessary;
b. Using Table 2 to determine seral stage targets for each caribou migration corridor seral stage management zone (see map 1) including recruitment strategies where necessary.

Table 2: *Seral Stage Distribution Targets for the Lakes South SRMP Area outside of Caribou Migration Corridor (Objective 1 Table 1).*

Landscape Unit	Biodiversity Emphasis Option	BEC Zone	Early[a]	Mature + Old[b]	Old[c]
Francois West	Intermediate	SBS	<54%	>11%	>11%
		ESSF	<36%	>14%	>9%
Francois East	Low	SBS	N/A	>11%	>11%
		ESSF	N/A	>14%	>9%
Cheslatta	Intermediate	SBS	<54%	>11%	>11%
		ESSF	<36%	>14%	>9%
Ootsa and Intata North	Intermediate	SBS	<54%	>11%	>11%
		ESSF	<36%	>14%	>9%

[a] The early seral stage objective will not be implemented in the short term. Early forest is defined as <40 years for Sub-Boreal Spruce (SBS) and Engelmann Spruce-Subalpine Fir (ESSF) Biogeoclimatic Ecosystem Classification (BEC) zones.

[b] Mature forest is >100 years for SBS and >120 years for ESSF.

[c] Old forest is >140 years for SBS and >250 years for ESSF.

Biodiversity Emphasis Options (BEOs) were assigned to Landscape Units (LU) as per the Prince Rupert Forest Region Landscape Unit Planning Strategy.[3] Low BEO targets apply to Francois East LU, Intermediate BEO targets apply to Cheslatta, Intata, and Ootsa LUs. The Intata and Ootsa LUs are both divided by the Nechako Reservoir with the southern portions of both LUs falling within the "Low Use" Seral Stage Management Zone (see Table 3). The northern portions of both LUs will be treated as a single unit for the purposes of seral stage distribution in which the Intermediate BEO targets will apply. High BEO targets are included in Table 2 for reference only as the High BEO LU (Chelaslie) is in the caribou migration corridor, therefore the targets listed in Table 3 apply.

Table 3: *Seral Stage Distribution of the Caribou Migration Corridors (Objective 1 Table 2).*

Seral Stage Management Zone	Seral Stages		
	>140 years	>80 years	Early <40 years[a]
High Use (LRMP CMC zone B, C, and D)	>40%	>60%	<25%
Moderate Use (LRMP CMC zone A)	>30%	>45%	<32%
Low Use (LRMP CMC zone E)	>20%	>30%	<54%

[a] The early seral stage objective will not be implemented in the caribou Moderate Use and Low Use zones for the short term.

[3] This strategy informed the landscape units and BEOs that were implemented through the Lakes North and South SRMPs.

Old Growth Forest Retention through OGMA Establishment

The goal of the following OGMA objectives is to manage for the retention or recruitment of appropriately sized areas of old growth forest. This includes "candidate OGMAs" intended to be managed during the mountain pine beetle infestations, as well as subsequent OGMAs identified that are appropriately sized, contain or could be managed to recruit, specific structural old growth forest attributes and represent the range of ecosystem types found across the Lakes South planning area.

Order to Amend Lakes South SRMP Objectives 2 and 3 (2007)

Manage for old growth forests by retaining Old Growth Management Areas (OGMAs), as identified on Map 1, and subject to the following:

Timber harvesting and boundary adjustments are not allowed in OGMAs, except as necessary under a) or b) and only where these activities will not diminish the overall effectiveness of old forest conservation.

a. Timber harvesting may be allowed for one or more of the following purposes, provided that a similar alternate area or areas is identified and reserved from harvesting in the same Landscape Unit/BEC variant unit as in the original OGMA, and provided that interior forest conditions are met:
    i. New road development and maintenance where no practicable alternatives exist, and subject to these roads being deactivated once operational activities are complete; or
    ii. To address a substantiated forest health factor within an OGMA, where this poses a significant and substantiated forest health risk to forests outside the OGMA and where harvesting constitutes an appropriate and effective control action; or,
    iii. To address a public or industrial safety concern, or an environmental hazard where no practicable alternative exists.
b. Boundary adjustments to the OGMAs may be allowed, provided that a similar alternate area or areas is identified and reserved from harvesting in the same Landscape Unit/BEC variant unit as in the original OGMA, and provided that interior forest conditions are met.

Connectivity

The goal of the following connectivity objective is to facilitate the flow of energy and organisms across the landscape. The rate of harvest disturbance permitted by the seral stage objectives will result in a reduced old forest component embedded in a matrix of younger forests. Thus, connectivity in this plan focuses on linking old seral ecosystems. Connectivity networks contain natural vegetation, usually mature to older forests, that serve to connect distinct patches on the landscape thereby allowing easier movement of plant and animal species between what would otherwise be isolated patches.

Lakes South SRMP Objective 4 (2003)

Maintain within a managed forest setting, landscape corridor (map 3) dominated by mature tree cover and containing most of the structure and function associated with old forest by:

a. Providing habitat connectivity within the landscape;

b. Permitting movement and dispersal of plant and animal species.

Patch Size Distribution

The purpose of the following objective is to create and maintain a pattern of seral stages distributed across the landscape reflecting the pattern created by a natural disturbance regime. The objective and its strategies focus on the pattern of harvest development.

Lakes South SRMP Objective 5 (2003)
Attain a pattern of development, over time, across the Lakes South planning area that represents the natural disturbance pattern. Table 7 provides guidance as to the range of patch sizes that are considered representative of natural patterns for the planning area.

Table 4: *Percent of Forested Area by Natural Disturbance Type (NDT) (Objective 5 Table 7).*

NDT	BEC Subzone	Patch Size		
2	ESSFmc	<40 ha	40-80 ha	80+ ha
		30-40%	30-40%	20-40%
3	SBSdk	<40 ha	40-250 ha	250+ ha
	SBSmc2	10-30%	10-30%	40-80%

Stand Structure through Wildlife Tree Retention

The goal of Wildlife Tree Retention (WTR) is to maintain the structural attributes[4] (standing dead and dying trees, coarse woody debris of suitable size left on the ground, tree species diversity, and understory vegetation diversity) of natural forests within managed forests over the rotation of a managed stand.

Lakes South SRMP Objective 6 (2003)
Maintain structural diversity in managed stands by retaining Wildlife Tree Patches in each cutblock to the targets in Table 8. Shifting or varying targets among cutblock within a harvest unit may be considered when risks to biodiversity are low or when based on a sound biological rationale. Cutblocks that are smaller than 2 hectares, or harvest units where there are no cutblocks greater than 2 hectares are exempted from this objective.

The original objective 6 had an error and was corrected with an errata sheet. Notice was also provided to forest licensees. The word "less" in the original objective was replaced with the word "greater".

Table 5: *Wildlife Tree Patch (WTP) Retention Targets for the Period of Accelerated Allowable Annual Cut while Beetle Harvesting is in Effect (Objective 6 Table 8).*

	% of Cutblock Retained as WTP					
BEC Subzone	Chelaslie	Ootsa	Intata	Cheslatta	FL West	FL East
SBSdk	>12	>12	>16	>12	>13	>14
SBSmc2	>12	>12	>16	>12	>13	>14
ESSFmc; ESSFmcp	>9	>9	>9	>9	>12	>9

[4] Structural attributes: components of a forest stand (including living and dead standing trees, canopy architecture, and fallen dead trees) which together determine stand structure.

The Regional Executive Director of the previous Ministry of Forests, Lands, Natural Resource Operations and Rural Development confirmed in a letter that the period of an accelerated allowable annual cut (AAC) for beetle harvesting ended in the Lakes Timber Supply Area (TSA) as of November 21, 2019. Therefore, Table 8 in the Lakes South SRMP (Table 5 above) has been replaced with the Forest Planning and Practices Regulation (FPPR) section 66 targets. This also eliminates the need for separate provisions regarding cutblock size, as all cutblocks will default to the FPPR standards.

Lakes South SRMP Objective 7 (2003)
Ensure representation of pre-harvest stand wildlife tree values by: a. Designating wildlife tree patches containing predominantly coniferous trees having an average age that is generally consistent with the age of the stand harvested and; b. Designing wildlife tree patches with a forested crown closure of not less than 25%. Harvested areas containing WTP with less than 25% crown closure or scattered wildlife trees will contribute to WTP requirements equivalent to the basal area left behind (WTP equivalent area calculated using the average BA of the block harvested).

Lakes South SRMP Objective 8 (2003)
Maintain old growth and wildlife tree values within wildlife tree patches by allowing natural processes to occur within wildlife tree patches unless infestations or infections in the wildlife tree patch threaten to spread to the adjacent forested areas. Where intervention is required, treatment will retain a diversity of structural attributes consistent with Objectives 7 and 8 or a suitable replacement wildlife tree patch will be located.