

# Current Condition Report for Forest Biodiversity: Lakes Timber Supply Area

## APPENDIX 6

### Habitat Connectivity Loss Hazard Rating and Mature-plus-Old Forest Patch Size Distribution in the Lakes Timber Supply Area (TSA)

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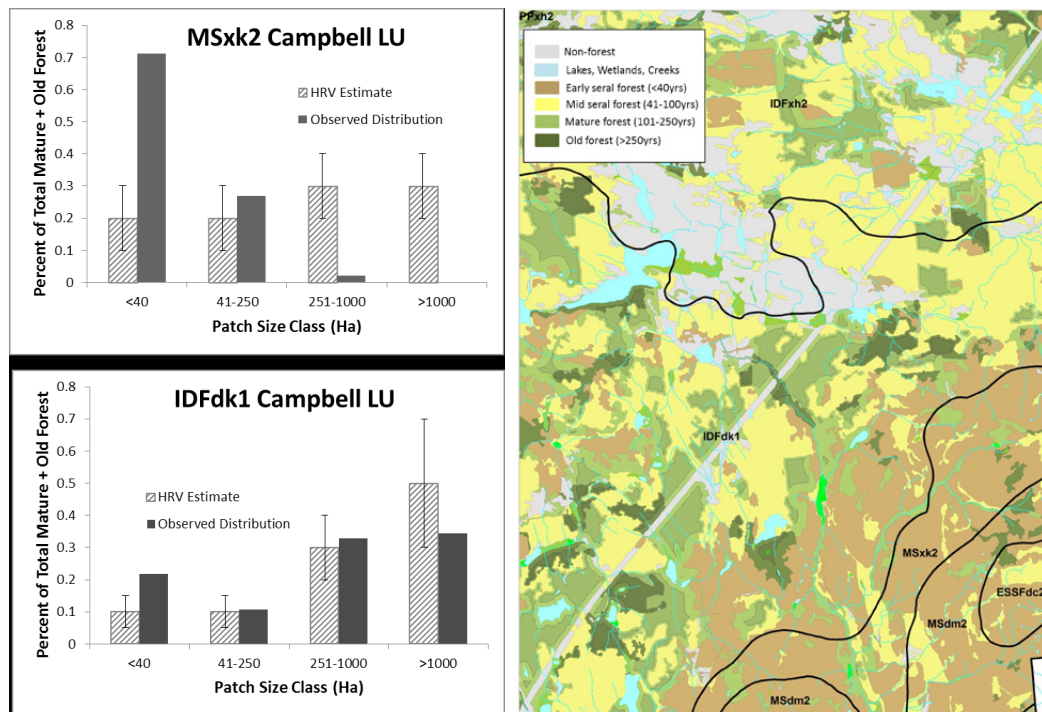
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## Habitat Connectivity Loss Hazard Overview

The *Habitat Connectivity Loss Hazard* rating is an estimate of the likelihood that mature and old forest habitats are more sub-divided and isolated than what would have occurred historically. Habitat connectivity among different patch sizes and types is important for species movement throughout the landscape (Hudson 1991, Voller and Harrison 1998). Connectivity is important for species that move easily, but also for slowly dispersing species that need habitat to grow in, reproduce in, and gradually disperse through a landscape. Where habitat connectivity is affected by land use change or natural disturbance, patch isolation can occur disrupting different species' ability to move at different spatial and temporal scales (Lindenmayer and Franklin, 2002).

The *Habitat Connectivity Loss Hazard Rating* is based on the *Patch Size Distribution Indicator*. This indicator is derived by using forest age to define a forest patch, with forests of similar ages (within 20 years) considered part of the same patch. Patch Size distribution refers to the proportion of total area of similarly aged forests that occur on a landscape in different sized patches of 0-40 hectares (ha), 41-250 ha, 251-1,000 ha, and greater than 1,000 ha in size.<sup>1</sup>

The CEF Forest Biodiversity assessment focuses on the patch size distribution of mature and old forests due to concern over subdivision and isolation of mature and old forests into small patches. These conditions can limit species' movements and dispersal in landscapes. The *Habitat Connectivity Loss Hazard Rating* is derived from the *Patch Size Distribution Indicator* by calculating the difference between the current observed patch size distribution and an expected patch size distribution based on a historic natural disturbance regime. The greater the difference



**Figure 1:** A comparison of the observed and expected or natural patch size distribution for the Montane Spruce very dry cold (MSxk2) and Interior Douglas-fir dry cold (IDFdK1) biogeoclimatic variants in the Campbell Landscape Unit southwest of Kamloops, B.C. The MSxk2 falls in natural disturbance type (NDT3) and the IDFdK1 in the NDT4, so the expected natural estimates of mature and old forest in larger patches differs. The large amount of early forest and small patches of mature and old in the MSxk2 result in a very different current observed patch size distribution compared to the natural estimate in the IDFdK1.

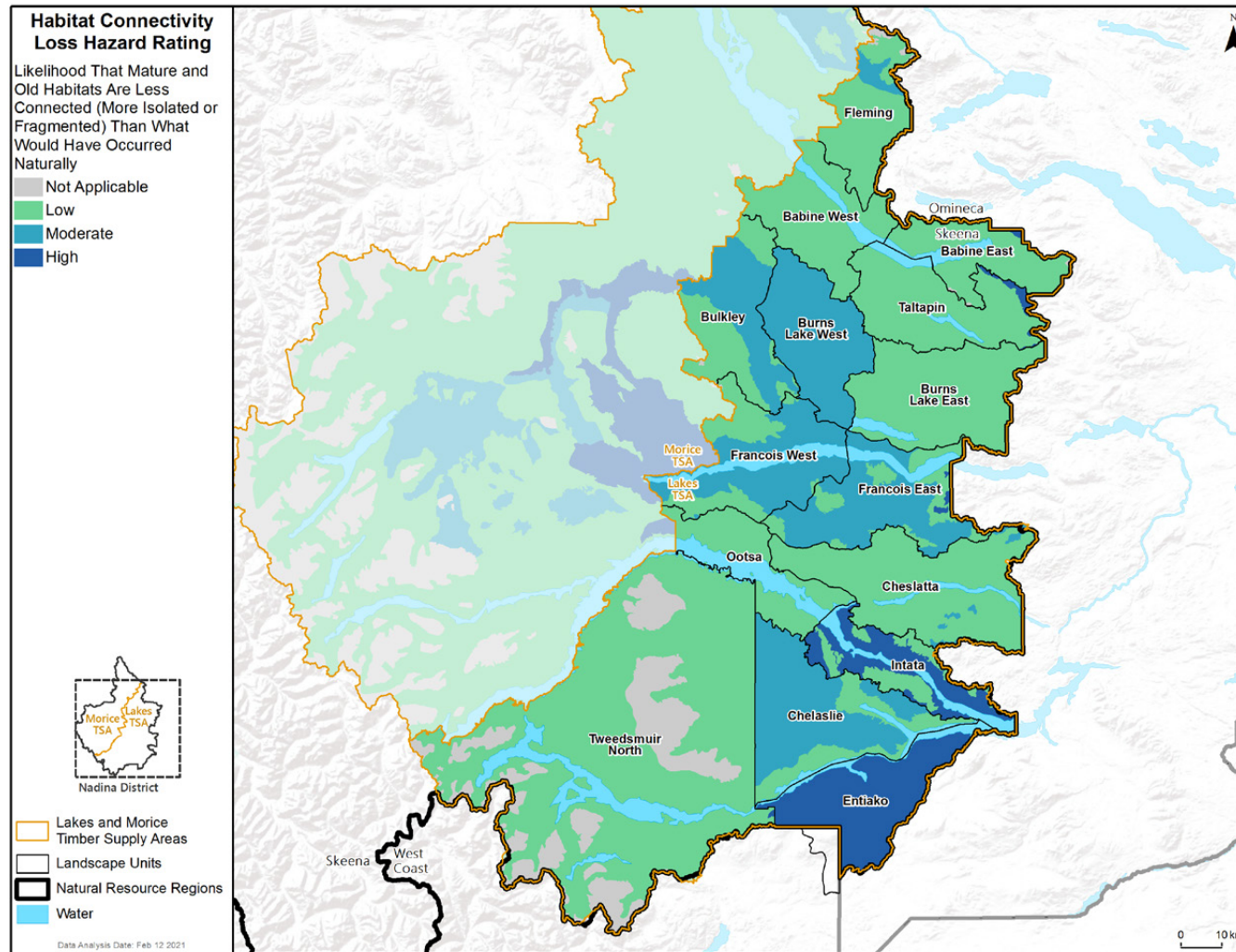
<sup>1</sup> This should not be confused with the frequency distribution of different sized event patches. A single large (>1,000 ha) early seral patch contains more proportion of total area than 100 small 10 ha patches.

in the distribution of current observed forest patches from natural levels, the more likely that current mature and old forests are more subdivided and isolated than what would have occurred historically.

The expected or natural distribution of mature and old forest patches varies based on the natural disturbance type (NDT). Landscapes that experience more frequent large-scale disturbance events (e.g., NDT3 ecosystems) will have more mature and old forest in smaller patches and so species are better adapted to these conditions. In areas that experience less frequent large-scale disturbances (e.g., NDT1 and NDT2 ecosystems) more of the mature and old forest tends to be in large patches (greater than 1,000 ha to 10,000 ha).

|                              |  |
|------------------------------|--|
| <b>Indicator Description</b> | <i>Patch Size Distribution indicator</i> is used to describe the proportion of total forest area of comparable age (within 20 years) that is present on the landscape in different patch sizes (0–40 ha, 41–250 ha, 251–1,000 ha, and more than 1,000 ha).   |
| <b>Rating Description</b>    | The <i>Habitat Connectivity Loss Hazard Rating</i> uses the current patch size distribution in a landscape to estimate the likelihood that mature and old forest habitats are more sub-divided and isolated than what would have occurred historically.  |
| <b>Interpretation Key</b>    | <p><b>[L – Low] [Unlikely]</b> Habitat Connectivity Loss hazard is <i>Low</i> – The current patch size distribution is <i>unlikely</i> to be different than what was historically on the land base and habitat connectivity has been maintained over time.</p> <p><b>[M – Moderate] [May]</b> Habitat Connectivity Loss hazard is <i>Moderate</i> – The current patch size distribution <i>may</i> differ from natural patch sizes and habitat connectivity. Mature and old forest habitats may be fragmented into smaller patches than historically and may have less connectivity, possibly affecting biodiversity.</p> <p><b>[H – High] [Likely]</b> Habitat Connectivity Loss hazard is <i>High</i> – The current patch size distribution is <i>likely</i> to differ from the historic conditions. Mature and old forest habitats are <i>likely</i> fragmented into smaller patches than historically and have less connectivity, likely affecting biodiversity.</p> |

## Habitat Connectivity Loss Hazard Rating: Lakes TSA



**Figure 2: Habitat Connectivity Loss Hazard Rating in the Lakes Timber Supply Area.**

Note: the patch size distribution indicator and Habitat Connectivity Loss Hazard rating were calculated based on 2019 forest inventory and do not include the effects of 2018 wildfires.

**Table 1:** Habitat Connectivity Loss Hazard Rating and Mature and Old Forest Patch Size Distribution by Landscape Unit, Biogeoclimatic (BEC) Subzone Variant, and Natural Disturbance Type (NDT) for the Lakes Timber Supply Area.

| Landscape Unit  | BEC     | NDT  | LU/BEC Area (ha) | HFLB Area (ha) | Percent Mature plus Old Forest Patches 0 to 40 ha (%) | Percent Mature plus Old Forest Patches 41 to 250 ha (%) | Percent Mature plus Old Forest Patches 250 to 1000 ha (%) | Percent Mature plus Old Forest Patches >1000 ha (%) | Habitat Connectivity Loss Rating |
|-----------------|---------|------|------------------|----------------|---|---|---|---|----------------------------------|
| Babine East     | ESSFmc  | NDT2 | 3,307            | 3,287          | 6.8   | 2.2   | 0.0   | 91.7  | L                                |
|                 | ESSFmv1 |      | 8,701            | 8,674          | 3.7   | 4.8   | 11.5  | 80.1  | L                                |
|                 | SBSdk   | NDT3 | 21,749           | 15,173         | 15.4  | 15.5  | 12.6  | 56.5  | L                                |
|                 | SBSdw3  |      | 519              | 468            | 100.0   | 0.0   | 0.0   | 0.0   | H                                |
|                 | SBSmc2  |      | 18,308           | 18,013         | 19.8  | 19.4  | 21.9  | 38.5  | L                                |
| Babine West     | ESSFmc  | NDT2 | 14,467           | 13,563         | 6.3   | 9.5   | 6.7   | 77.6  | L                                |
|                 | ESSFmv1 |      | 1,693            | 1,681          | 1.0   | 5.7   | 0.0   | 93.3  | L                                |
|                 | SBSdk   | NDT3 | 12,156           | 7,700          | 13.5  | 25.8  | 6.2   | 54.5  | L                                |
|                 | SBSmc2  |      | 42,607           | 39,543         | 19.2  | 22.2  | 16.8  | 41.7  | L                                |
| Bulkley         | ESSFmc  | NDT2 | 17,355           | 16,104         | 7.0   | 17.5  | 15.8  | 59.7  | L                                |
|                 | SBSdk   | NDT3 | 41,139           | 35,375         | 37.2  | 34.7  | 14.6  | 13.2  | M                                |
|                 | SBSmc2  |      | 18,998           | 18,168         | 21.4  | 29.8  | 20.1  | 28.6  | L                                |
| Burns Lake East | ESSFmc  | NDT2 | 10,757           | 10,526         | 27.8  | 28.6  | 0.0   | 44.2  | L                                |
|                 | ESSFmv1 |      | 1,181            | 1,165          | 38.8  | 60.8  | 0.2   | 0.2   | L                                |
|                 | SBSdk   | NDT3 | 47,192           | 41,283         | 26.1  | 34.5  | 27.6  | 12.1  | L                                |
|                 | SBSdw3  |      | 7,302            | 7,011          | 41.0  | 59.1  | 0.0   | 0.0   | L                                |
|                 | SBSmc2  |      | 31,187           | 30,307         | 31.9  | 21.9  | 18.4  | 28.0  | L                                |
| Burns Lake West | ESSFmc  | NDT2 | 1,803            | 1,737          | 13.5  | 27.6  | 58.8  | 0.0   | M                                |
|                 | SBSdk   | NDT3 | 49,700           | 45,023         | 37.2  | 31.5  | 18.2  | 13.0  | M                                |
|                 | SBSmc2  |      | 20,724           | 20,184         | 25.5  | 20.3  | 43.2  | 10.7  | M                                |
| Chelaslie       | ESSFmc  | NDT2 | 32,852           | 31,147         | 5.1   | 4.5   | 13.0  | 77.3  | M                                |
|                 | SBSdk   | NDT3 | 31,599           | 23,263         | 24.4  | 28.4  | 12.9  | 33.5  | L                                |
|                 | SBSmc2  |      | 45,955           | 42,505         | 11.0  | 10.2  | 14.4  | 64.3  | M                                |



APPENDIX 6: Habitat Connectivity Loss Hazard Rating and Mature-plus-Old Forest Patch Size Distribution in the Lakes Timber Supply Area (TSA)

| Landscape Unit | BEC     | NDT  | LU/BEC Area (ha) | HFLB Area (ha) | Percent Mature plus Old Forest Patches 0 to 40 ha (%) | Percent Mature plus Old Forest Patches 41 to 250 ha (%) | Percent Mature plus Old Forest Patches 250 to 1000 ha (%) | Percent Mature plus Old Forest Patches >1000 ha (%) | Habitat Connectivity Loss Rating |
|----------------|---------|------|------------------|----------------|---|---|---|---|----------------------------------|
| Cheslatta      | ESSFmv1 | NDT2 | 3,811            | 3,792          | 30.6  | 58.8  | 10.7  | 0.0   | M                                |
|                | SBSdk   | NDT3 | 74,218           | 63,499         | 27.0  | 32.2  | 14.5  | 26.3  | L                                |
|                | SBSmc2  |      | 43,961           | 42,324         | 25.1  | 27.4  | 15.9  | 31.5  | L                                |
| Fleming        | ESSFmv3 | NDT2 | 10,733           | 10,644         | 2.1   | 3.8   | 0.9   | 93.0  | L                                |
|                | SBSdk   | NDT3 | 3,399            | 2,990          | 12.8  | 32.4  | 6.2   | 48.6  | L                                |
|                | SBSmc2  |      | 34,662           | 33,674         | 16.5  | 17.9  | 25.3  | 39.9  | L                                |
|                | SBSwk3  |      | 5,283            | 5,252          | 12.9  | 0.0   | 0.0   | 87.1  | M                                |
| François East  | ESSFmc  | NDT2 | 858              | 857            | 11.1  | 88.8  | 0.1   | 0.0   | L                                |
|                | ESSFmv1 |      | 1,196            | 1,169          | 5.1   | 17.8  | 77.1  | 0.1   | H                                |
|                | SBSdk   | NDT3 | 64,924           | 54,387         | 33.0  | 36.7  | 21.8  | 8.5   | M                                |
|                | SBSdw3  |      | 8,933            | 5,239          | 22.5  | 42.1  | 21.7  | 13.5  | L                                |
|                | SBSmc2  |      | 15,964           | 15,769         | 19.9  | 19.6  | 28.5  | 31.9  | L                                |
| François West  | ESSFmc  | NDT2 | 3,911            | 3,799          | 7.8   | 15.4  | 76.7  | 0.1   | L                                |
|                | SBSdk   | NDT3 | 66,766           | 51,455         | 43.5  | 27.4  | 26.2  | 3.6   | M                                |
|                | SBSmc2  |      | 24,286           | 23,708         | 19.9  | 16.6  | 36.6  | 26.6  | L                                |
| Intata         | ESSFmc  | NDT2 | 4,089            | 3,952          | 10.3  | 23.4  | 0.0   | 66.4  | H                                |
|                | ESSFmv1 |      | 103              | 103            | 100.0   | 0.0   | 0.0   | 0.0   | L                                |
|                | SBSdk   | NDT3 | 39,832           | 27,190         | 31.6  | 37.8  | 28.1  | 2.6   | H                                |
|                | SBSmc2  |      | 17,693           | 17,105         | 21.3  | 34.5  | 21.8  | 21.3  | L                                |
| Ootsa          | ESSFmc  | NDT2 | 2,633            | 2,587          | 17.9  | 42.0  | 28.9  | 11.2  | L                                |
|                | SBSdk   | NDT3 | 45,596           | 26,576         | 32.2  | 29.8  | 27.4  | 10.7  | L                                |
|                | SBSmc2  |      | 9,173            | 8,864          | 25.7  | 18.3  | 34.1  | 21.7  | L                                |
| Taltapin       | ESSFmc  | NDT2 | 17,474           | 17,251         | 6.1   | 11.4  | 7.2   | 75.3  | L                                |
|                | ESSFmv1 |      | 3,307            | 3,281          | 15.0  | 38.9  | 46.0  | 0.1   | H                                |
|                | SBSdk   | NDT3 | 6,784            | 3,612          | 16.2  | 36.3  | 47.2  | 0.0   | L                                |
|                | SBSmc2  |      | 52,928           | 47,336         | 21.4  | 25.1  | 26.9  | 26.4  | L                                |

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| Landscape Unit   | BEC     | NDT  | LU/BEC Area (ha) | HFLB Area (ha) | Percent Mature plus Old Forest Patches 0 to 40 ha (%) | Percent Mature plus Old Forest Patches 41 to 250 ha (%) | Percent Mature plus Old Forest Patches 250 to 1000 ha (%) | Percent Mature plus Old Forest Patches >1000 ha (%) | Habitat Connectivity Loss Rating |
|------------------|---------|------|------------------|----------------|---|---|---|---|----------------------------------|
| Tweedsmuir North | CWHws2  | NDT2 | 13,431           | 8,371          | 6.2   | 14.0  | 23.8  | 55.9  | L                                |
|                  | ESSFmc  |      | 148,755          | 138,944        | 2.7   | 1.6   | 1.4   | 94.4  | L                                |
|                  | MHm2    | NDT1 | 15,293           | 11,020         | 4.5   | 12.7  | 14.2  | 68.7  | L                                |
|                  | SBPSmc  | NDT3 | 214              | 212            | 10.2  | 0.0   | 1.5   | 88.3  | H                                |
|                  | SBSdk   |      | 9,710            | 8,891          | 20.1  | 10.2  | 22.7  | 47.3  | L                                |
|                  | SBSmc2  |      | 142,141          | 113,650        | 3.8   | 3.7   | 6.9   | 85.7  | L                                |
| Entiako          | ESSFmc  | NDT2 | 1,306            | 1,303          | *   | *   | *   | *   | H                                |
|                  | ESSFmcp |      | 1,650            | 165            | *   | *   | *   | *   | H                                |
|                  | SBPSmc  | NDT3 | 54,374           | 50,851         | *   | *   | *   | *   | H                                |
|                  | SBSdk   |      | 22,990           | 16,428         | *   | *   | *   | *   | H                                |

\* Note: at the time the assessment was completed, calculating wildfire impacts on forest patches in the Entiako LU were not completed as fire information was not available in the forest inventory. The rating is an estimate based on the large extent of existing mature and old forest that was impacted by wildfire and adjusted to early seral forest in this assessment.