

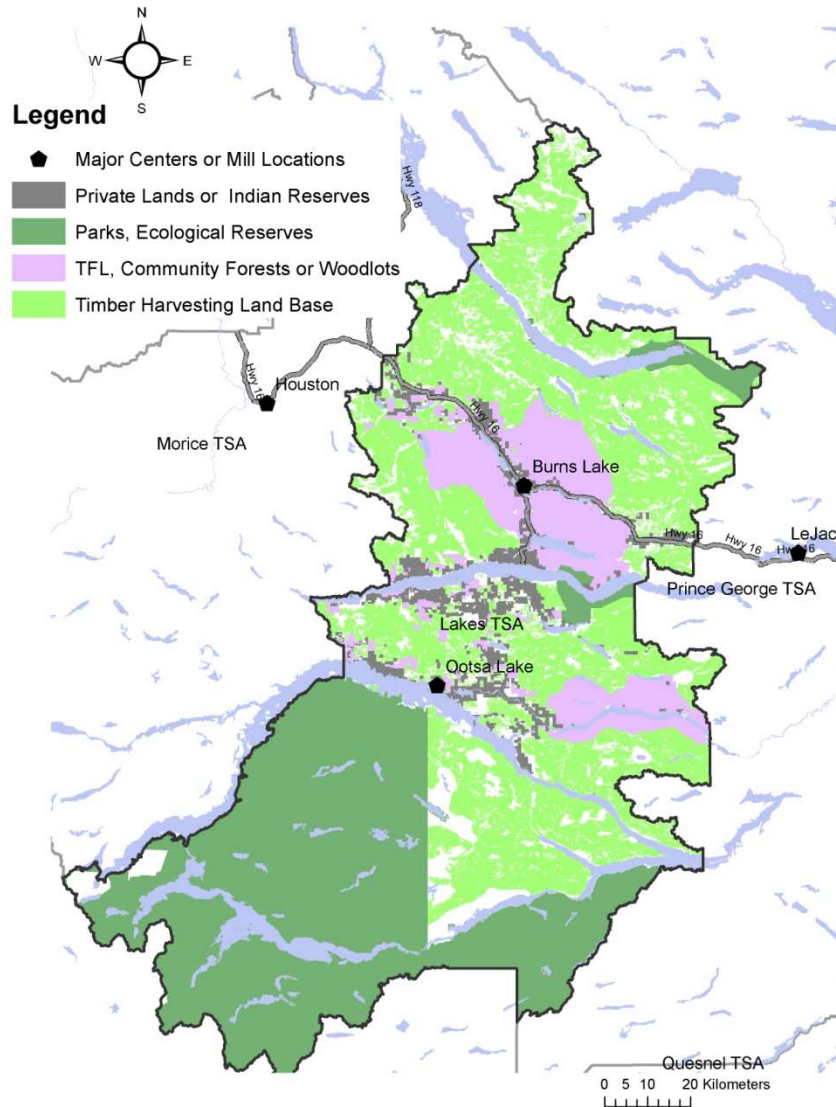


Mid-Term Timber Supply

June 8, 2012

Lakes Timber Supply Area

Background



The Lakes Timber Supply Area covers 1.1 million hectares, and for the reference forecast described below:

- 72% is considered Crown productive forest (Indian Reserves, private lands, woodlot licence areas, community forest agreement areas and non-forested areas are excluded).

- 35% of the productive forest is not available for timber harvesting – reserved for riparian areas, protected areas, old growth management areas providing ecosystem representation, wildlife tree patches, sites too poor to grow trees quickly, deciduous stands, roads and problem forest types.
- The current timber harvesting land base is 524,000 hectares; 46% of the timber supply area or 67% of the Crown productive forest area.

Communities: Burns Lake, Decker Lake, Francois Lake, Grassy Plains

First Nations

The following First Nations (including tribal councils and associations) have communities in the timber supply area: Cheslatta Carrier Nation, Lake Babine Nation, Burns Lake Band, Wet'suwet'en First Nation, Skin Tyee Nation, Nee Tahi Buhn Band.

First Nations (including tribal councils and associations) with interest but located outside of the timber supply area include: Office of the Wet'suwet'en, Stellat'en First Nation, Nadleh Whut'en Band, Ulkatcho Band, and Yekooche First Nation.

Status of Land Use Plans

- Lakes District Land and Resource Management Plan (approved in 2000)
- Lakes South Sustainable Resource Management Plan (approved in 2003)
- Lakes North Sustainable Resource Management Plan (approved in 2009)

Past Allowable Annual Cut

- 1.5 million cubic metres between 1982 and 2000
- Increased to 3.0 million cubic metres in 2001 in response to the beetle epidemic
- Increased to 3.2 million cubic metres in 2004
- Currently 2.0 million cubic metres (set July 12, 2011), with 350,000 cubic metres attributable to non-pine species

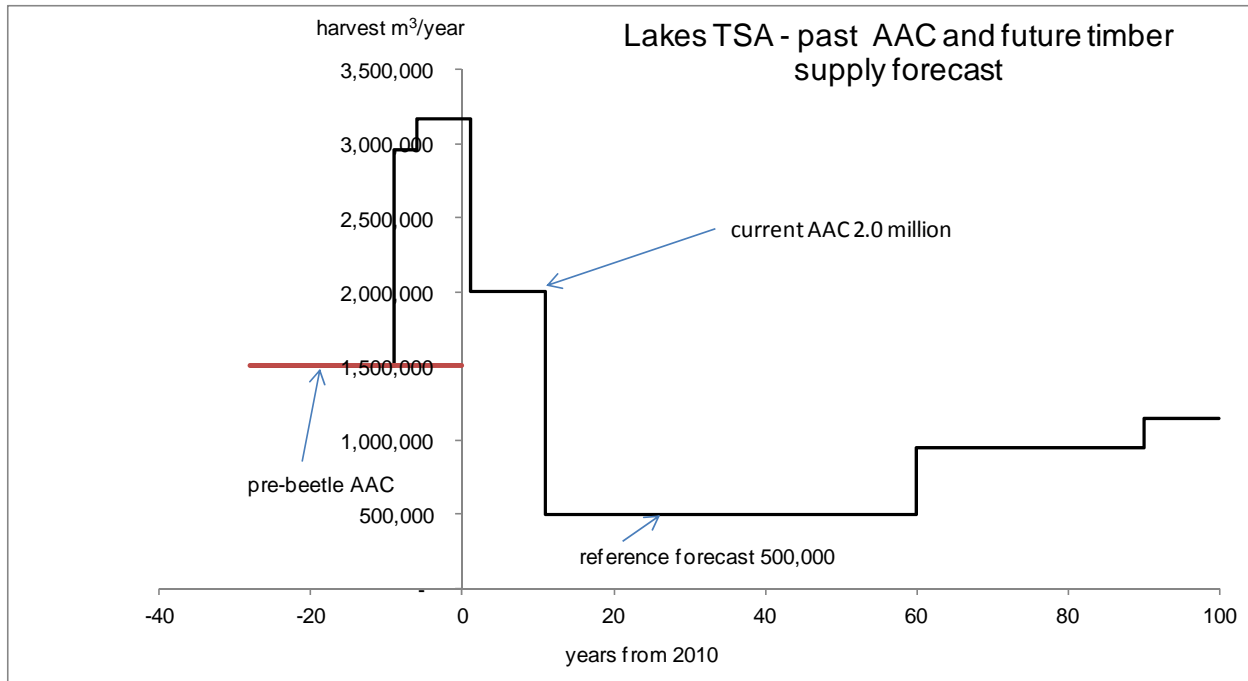
From 2006 to 2010, an average of 67% of allowable annual cut was harvested; about 78% pine.

Mid-Term Timber Supply Forecasts

Timber supply forecasts were prepared by a technical working group to examine scenarios for mid-term timber supply mitigation. Mitigation scenarios were compared to a reference forecast, which is based on similar assumptions used for the current performance base case in the timber supply review process that leads to allowable annual cut determinations. These assumptions include, for example, accounting for all existing land-use decisions and non-timber constraints, focusing harvesting in pine-leading stands, and assuming pine will have economic value for 20 years after death. The initial harvest level was set at

the current allowable annual cut, so the resulting forecasts differ slightly from those used to support the 2011 timber supply review.

The reference forecast indicates that, without mitigation, timber supply in the Lakes Timber Supply Area is projected to decline by 67% in the mid-term – from 1.5 million cubic metres a year (pre-epidemic) to 500,000 cubic metres a year.



- Maintains the current allowable annual cut of 2.0 million cubic metres for 10 years
- Then falls to 500,000 cubic metres a year, and remains at that level for 50 years
- Gradually increases to a long-term level of 1.15 million cubic metres a year
- Part of the decline from the pre-epidemic level in the above graph is due to two Community Forest Agreements issued after the epidemic started, with a current total allowable annual cut of 103,000 cubic metres. The Community Forest Agreement areas no longer contribute to the timber supply of the Lakes Timber Supply Area.

The reference forecast does not necessarily reflect today's conditions, which have been seriously affected by the economic downturn since 2008. As harvest forecasts project timber supply over a long timeframe, "current performance" is generally assumed to reflect performance during a market cycle, including both market highs and lows. The current prolonged economic downturn makes it increasingly uneconomic to harvest deteriorating dead pine. Other components of the timber supply, such as hard-to-access stands and small green wood, especially if they are located at long haul distances from the mills, are included in the timber supply projections, but harvesting them under current economic conditions would result in a loss. If these conditions persist, licensees have indicated there may be timber supply shortages in early 2014.

During the mid-term, harvesting in the Lakes Timber Supply Area will depend on existing non-pine stands, older pine plantations, and surviving pine stands.

Mountain Pine Beetle Forecast

Version 6 of Provincial-Level Mountain Pine Beetle Model, used to predict the current and future pine mortality for the Lakes Timber Supply Area mid-term analysis, predicted that 54.1 million cubic metres in the timber supply area would be killed by 2021, which is 76% of the mature pine that was on the timber harvesting land base in 1999. The latest version of the Mountain Pine Beetle Model (BCMPB ver.9) showed no change.

Current Practices/Silviculture Investments

- Target harvest in pine – accounting for about 78% of total harvest.
- Fertilize young plantations under Land-Based Investment Strategy:
 - Since 2006, 1,566 hectares of spruce-leading stands have been fertilized.
 - In next 10 years, an additional 4,000 hectares per year are expected to be fertilized.
- Review of licensee and BC Timber Sales operating areas underway so harvesting opportunities can be equitably distributed when new forest tenures are issued after the infestation.

Economic Profile in the Lakes Timber Supply Area

The Lakes Timber Supply Area and the Morice Timber Supply Area are located in the Nadina District. The report *2006 Economic Dependency Tables for Forest Districts* does not contain information solely for the Lakes Timber Supply Area so information for the Nadina District is provided here.

- In the Nadina District, the forest sector accounts for 46% of basic employment – the single most important sector. The forest vulnerability index¹ for the Nadina District is 100, one of the highest in the province.
- Employment for other sectors in the Nadina District: public sector (29%), mining and mineral production (3%), agriculture and food (5%); tourism (11%); construction (5%) and other (1%).

Workforce Considerations

- 1,572 person-years of total, direct and induced employment in 2000 before the uplift (and before two Community Forest Agreement Areas were taken out of the timber supply area).
- Employment increased to 1,737 person-years at the peak of actual harvest; had the allowable annual cut been harvested, it would have amounted to 2,746 person-years of employment.

¹The magnitude of the forest vulnerability index indicates the vulnerability of each local area to potential downturns in the forest sector – a community is vulnerable if its forest sector dependence is high and its diversity is low. It is worth emphasizing that a high index value does not mean that the wood-based manufacturing facilities in that area are more likely to shut down than in other areas. Rather, a high value means that if forest sector activity in the area declines then the area will experience greater economic difficulties than other areas in the province would under the same circumstances.

- Employment is expected to drop to 434 by 2020 without mitigation/521 with mitigation scenarios described below (the Community Forest Agreements are expected to contribute about 80 additional person-years).
- About 30% of the employment is involved with harvesting and silviculture, 42% in timber processing and 28% indirect plus induced jobs generated by the forest sector.

Mills (2009):

- Mills in the Lakes Timber Supply Area: Babine Forest Products sawmill (destroyed by fire in January 2012) had annual capacity of 900,000 cubic metres; Decker Lake Forest Products sawmill (annual capacity 350,000 cubic metres), Pinnacle Renewable Energy Group pellet plant (annual capacity 700,000 cubic metres), Tahtsa Pellets Ltd. pellet plant (annual capacity 40,000 metric tons).
- Lakes Timber Supply Area also supplies Fraser Lake Sawmill, Pacific Inland Resources in Smithers, Canfor Houston, Houston Forest Products, L&M Lumber in Vanderhoof.

Projected Mill Impacts

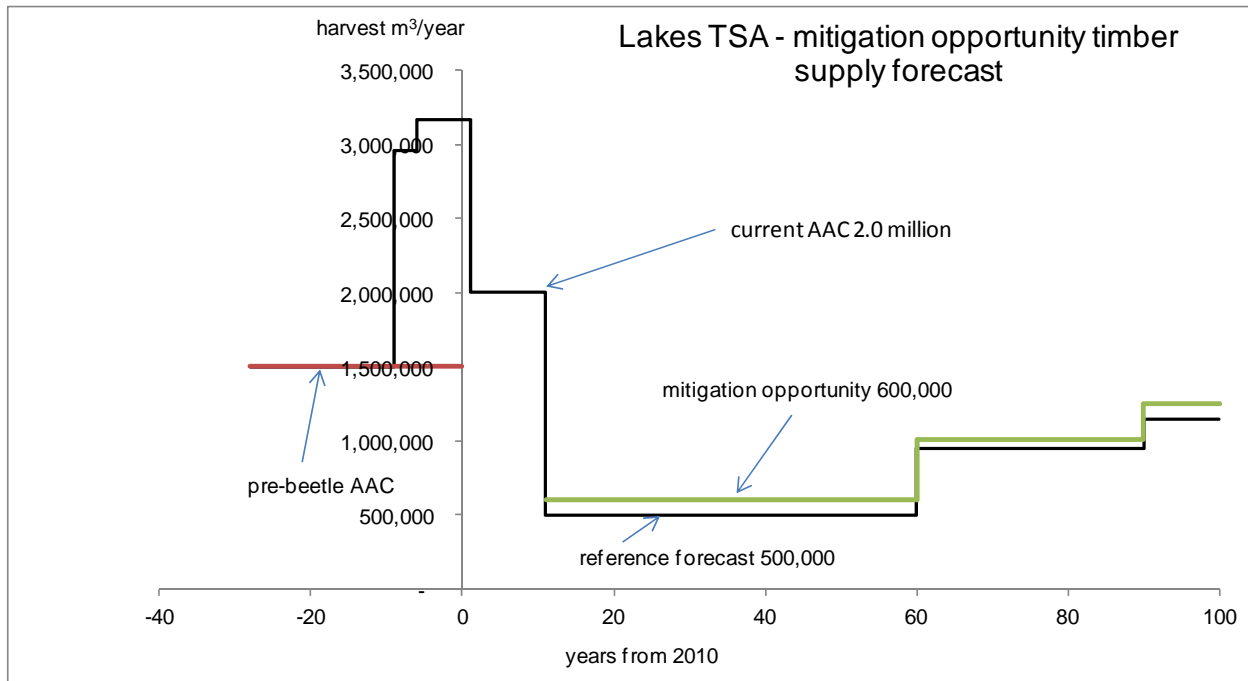
- Assuming lumber remains the dominant product, the number of mills operating may be dependent on capacities and efficiencies at individual mills. If larger-capacity sawmills were to be the focus of future milling activity, fewer mills are likely to be in operation than if production were to be spread out over smaller mills.

Opportunities for Diversification

- A proposed 33-MW bioenergy power plant would provide up to 250 jobs during construction, and 120 when operating. The project was not successful in the most recent call for power from BC Hydro and is on hold.
- Expansion of the Endako molybdenum mine to extend the life to 2025 has created 400 jobs during construction, and created 70 new operating jobs (to 350 from 280).

Opportunities for Mitigation

The mountain pine beetle epidemic will result in a drastic decrease in timber supply in some areas, which is expected to have significant economic and social ramifications. Analyses were undertaken to explore opportunities for potentially mitigating this projected decrease in mid-term timber supply.



The mitigation opportunity forecast outlined above indicates that the mid-term harvest level for the Lakes Timber Supply Area can be increased by up to 100,000 cubic metres a year when a specific set of mitigation options is assumed – for a projected total of 600,000 cubic metres. This increase is projected to maintain 87 more direct, indirect and induced person-years of employment within the Lakes timber supply area.

The specific set of mitigation actions assumed in the above forecast is as follows:

- Harvest sites with the highest productivity first.
- Reduce application of cutblock adjacency requirements in the northern half of the timber supply area from now until 2040.
- Relax visual quality objectives in all areas from now until 2040.
- Replace spatial old growth management areas in most areas with aspatial targets based on current old growth requirements.
- Lower the definition of old forest (from 250 years to 140 years in higher-elevation areas and from 140 years to 120 years in lower-elevation areas).
- In the southern half of the timber supply area, eliminate patch size requirements from now to 2040.
- In connectivity corridors, allow the harvest of stands with more than 70% pine now, and allow the harvest of non-pine after 2018.
- Drop early seral requirements until 2070.
- Reduce seral stage distribution target for caribou habitat by 20% from now until 2070.
- Eliminate all management requirements for moose.

These scenarios were designed to illustrate the potential magnitude of timber supply affected by these objectives. This information is intended to inform the discussion on whether to initiate a process to review and/or amend objectives. It is anticipated that any decision to revise the objectives will need to be supported by transparent public dialogue and by consideration of the full spectrum of social, economic and environmental values and other effects.

Administrative Implications:

- Amendments needed under the *Land Act* to the Lakes South and Lakes North Sustainable Resource Management Plans to repeal patch size distribution, to amend requirements for old growth management areas and seral stage targets, and to modify requirements in connectivity corridors and the Chelaslie caribou migration corridor.
- *Government Actions Regulation* process would be needed to change visual quality objectives.
- *Forest Planning and Practices Regulation* amendments to address changes in moose management requirements.
- All of these changes would require public involvement and First Nations consultation, and would take at least a year to complete once started.

Additional analysis was conducted to test the effect on the timber supply of other mitigation strategies that involved different adjustments than in the scenario noted above. The factors adjusted include visual quality objectives, adjacency constraints, riparian areas and wildlife tree patches, old growth management areas, and wildlife habitat. The results of the analysis indicate that greater adjustments to these factors would not increase the mid-term harvest level by more than 100,000 cubic metres a year. The resulting harvest forecasts are included in the report located here:

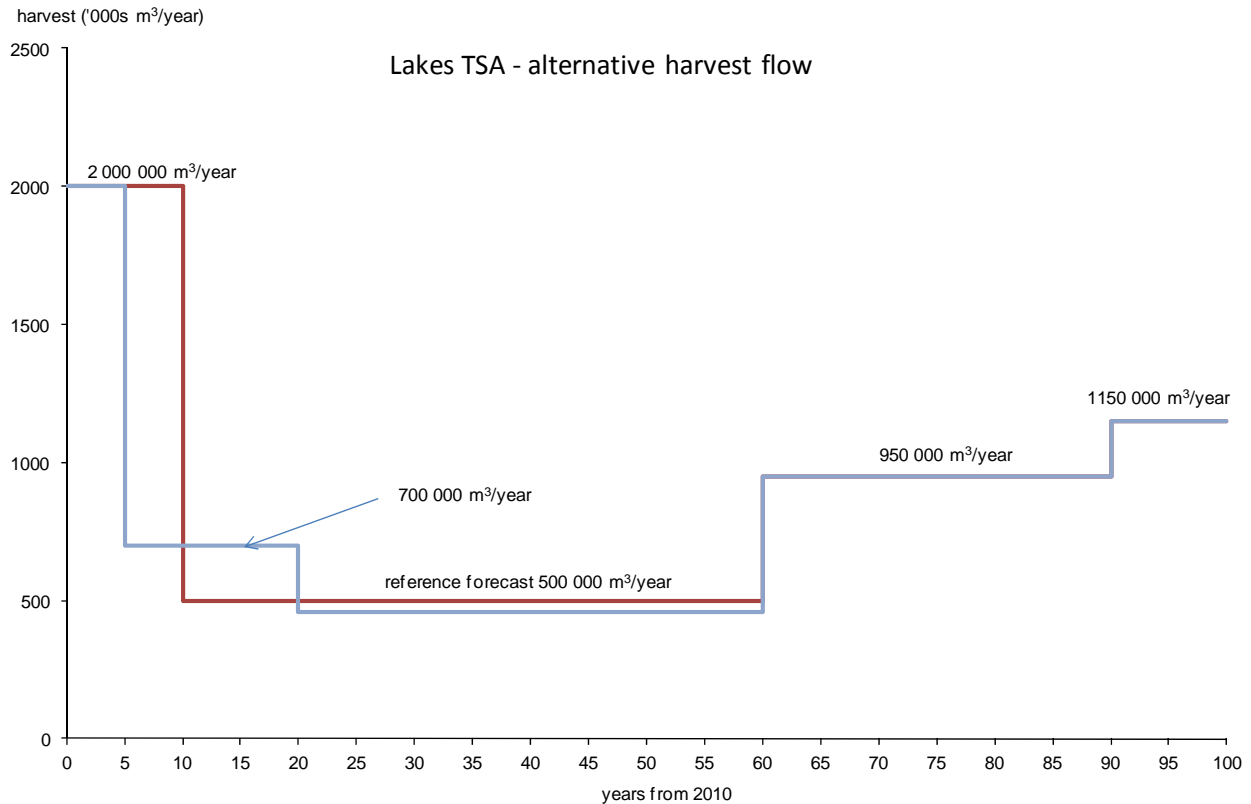
www.for.gov.bc.ca/hts/MPB_Mid_Term/Mid-Term-Timber-Supply-Report_Appendix-4.pdf

Experts in the fields of ecology, silviculture, hydrology and biology, identified an opportunity to make additional volume available by including old growth management areas in the timber harvesting land base, and introducing uneven-aged management.

- Although sensitivity analyses were not conducted for this option/scenario, the mid-term harvest levels could be increased by less than 100,000 cubic metres a year.
- 30% of the timber harvesting land base would be managed with uneven-age silvicultural systems, primarily in old growth management areas, connectivity corridors, the Chelaslie caribou migration corridor and scenic areas.
- This option would require additional investments such as for intensive silviculture, access for more regular entries in a larger portion of the timber harvesting land base, and strategic planning for access and management. An adaptive management approach would be needed.
- Amendments would be needed under the *Land Act* to the Lakes South and Lakes North Sustainable Resource Management Plans to allow intensive management and timber harvesting within old growth management areas, and possibly to realign existing old growth management areas with other spatial values (e.g. connectivity corridors). This would require consultation with the public and First Nations. Current management requirements and policy allow for the replacement of old growth management areas through amendments.

Timber Flow Options – Level of Risk/Benefit

- It is possible to harvest some of the forest contributing to the mid-term earlier. While this increases the amount of volume available for harvest at the beginning of the mid-term period, it also means there will be less volume available for most of the mid-term period. This timber flow option also means that the mid-term period would begin sooner than in the reference forecast.



- The example above shows it is possible to maintain the current harvest until 2015 before declining to 700,000 cubic metres a year for the next 15 years. For the remainder of the mid-term period – 40 years – the harvest level is slightly lower than the 500,000 cubic metres a year level from the reference forecast.

Resource Value Implications

Visual Quality - Scenic areas and visual quality objectives (VQO) are established on the landscape in response to public input and land use plans. Harvesting is allowed but the VQO classes provide direction with respect to size and scale. Removal or relaxation of VQOs may decrease public acceptance of forest harvesting, and could significantly impact tourism and outdoor recreation opportunities.

Further details – Resource Values Assessment: Visual Quality

Water – Loss of forest cover allows more precipitation to reach the ground, reduces evaporative losses, increases soil moisture and, when forest cover loss is extensive, results in more water leaving the watershed. This can lead to more flooding and erosion, deterioration of aquatic habitat and water

quality, changes to plant communities and ecosystems, and risks to community safety, infrastructure and property, fish and fisheries.

Further details – Resource Values Assessment: Water

Riparian Management Areas: Riparian areas – lands next to wetlands or bodies of water such as swamps, streams, rivers or lakes – frequently contain the highest number of plant and animal species found in forest, and provide critical habitats, home ranges, and travel corridors for wildlife. Streamside vegetation protects water quality, stabilizes streambanks, regulates stream temperatures, and provides a continual source of woody debris to the stream channel. Reducing the size of riparian management areas can affect ecosystem resilience, lead to habitat fragmentation and reduce connectivity. Potential deterioration of terrestrial and aquatic habitat and water quality could increase risk to fish, fish habitat and listed species, and increase the instability of streams, putting infrastructure and productivity of forests at risk.

Further details: Resource Values Assessment: Riparian Management Areas; Resource Values Assessment: Water; Resource Values Assessment: Biodiversity

Old Growth – Old growth management areas retain/recruit the old-growth structure needed to conserve ecosystems and species biodiversity. They are difficult to reproduce once lost. Old growth enhances ecosystem resilience, which means it is better able to respond to changing environmental conditions, e.g. climate change, wildfire, pests. Old growth management areas provide habitat and connectivity; some species depend on old growth for survival.

Further details – Resource Values Assessment: Old Growth

Biodiversity – Measures to conserve biodiversity include coarse filter and fine filter approaches, and both are important to maintain ecosystem resilience and increase options to respond to changing environmental conditions. Coarse filter approaches, such as old growth management areas, preserve ecosystems within their native composition, structure, and function so they can better retain most of the species that evolved within them. Fine filter approaches, such as ungulate winter ranges, meet the needs of a specific species or ecosystem.

Further details – Resource Values Assessment: Biodiversity and Resource Values Assessment: Old Growth

Species at Risk – B.C. is Canada's most biologically diverse province. Species at risk are provincially and/or federally designated Red and Blue species, populations and ecological communities classified by the Conservation Data Centre as Endangered, Threatened or of Special Concern. These designations use science parameters to determine potential extinction or extirpation risks, and whether special attention is needed. Accelerated harvest, excessively large young openings, high road densities, reduced forest stand retention, and increased human access can all exacerbate the threat to species at risk.

Further details – Resource Values Assessment: Species at Risk

Wildlife – Conservation strategies aim to maintain the mix of landscape conditions necessary to sustain all species. Management tools include protected areas and old-growth management, wildlife habitat areas and ungulate winter ranges, wildlife tree patches, and landscape seral-stage targets. A full range of

ecosystems is needed because many potential impacts are poorly understood, such as changes in predator/prey dynamics or effects of invasive species and climate change. Simplifying ecosystems can reduce resilience; leading to greater risk of future catastrophic pest infestations, susceptibility to climate change and trend towards species generalists.

Further details – Resource Values Assessment: Wildlife

Ungulate Winter Range – Ungulate winter range is designated under the *Forest and Range Practices Act* as an area necessary for the winter survival of an ungulate species such as moose, deer, and caribou. Designations are based on best available science, local knowledge and other expertise, and supported by extensive consultation. A reduced area of suitable winter habitat would impact the abundance and distribution of ungulate species.

Further details – Resource Values Assessment: Ungulate Winter Range

Wildlife Habitat Areas – A wildlife habitat area is designated under the *Forest and Range Practices Act* as an area that identifies necessary habitat for the survival of a species at risk. The largest wildlife habitat areas manage and protect woodland caribou habitat. Reductions in wildlife habitat areas are likely to result in negative population implications for species at risk, possibly resulting in locally and regionally depressed populations. In the worst case scenario, it could lead to compromised population status and possibly extirpation (long-term loss of the species from the area).

Further Details – Resource Values Assessment: Wildlife Habitat Areas; Resource Values Assessment: Species at Risk; Resource Values Assessment: Mountain Caribou; Resource Values Assessment: Northern Caribou

Mountain Caribou – Mountain caribou are a threatened species, and their recovery depends on a sustained supply of mature and old forest cover. Reduction of wildlife habitat areas or ungulate winter ranges for mountain caribou will decrease the supply of suitable cover and forage habitat, reducing the population stability. Clear-cut harvesting and more resource roads increase the effectiveness of predators, particularly wolves, and decrease the effectiveness of the habitat as it relates to forage.

Further details – Resource Values Assessment: Mountain Caribou

Northern Caribou – Northern caribou represent some of the largest caribou herds found in the province; and are provincially significant for species conservation and recovery. Removal of wildlife habitat areas or ungulate winter ranges is likely to result in negative population implications for this species at risk, possibly resulting in locally and regionally depressed populations. In the worst case scenario, removal of habitat protection could lead to compromised population status and possibly local extirpation (long-term loss of caribou from the area).

Further details – Resource Values Assessment: Northern Caribou and Resource Values Assessment: Mountain Caribou

Resource Roads – Resource roads needed for timber harvesting provide access for backcountry recreation and fire management but can have negative terrestrial and aquatic environmental impacts such as dispersion of invasive plant and animal species that can put biodiversity and native species at risk; loss of habitat or habitat fragmentation; injury or death from vehicle collisions; modified animal

behavior; more sediment in streams; increased predator effectiveness; and increased pressure on previously unmanaged fish and wildlife populations.

Further details – Resource Values Assessment: Access Management – Resource Roads

Recreation Sites and Trails – The provincial network of 1,319 recreation sites and 818 recreation trails on Crown lands outside parks and municipalities involve integrated management, with timber harvesting, range, commercial recreation, mining and other activities and uses. Overall, timber supply impacts are negligible because these represent a small part of the operable timber supply area. The public expects mature forest cover to be sustained in the few recreation sites and trails not affected by beetles, and there is greater demand for sites with forest cover.

Further details – Resource Values Assessment: Recreation

More information:

Mid-Term Timber Supply Project

www.for.gov.bc.ca/hfp/mountain_pine_beetle/#whatsnew

Lakes Timber Supply Area Technical Working Group Report (November 2011)

www.for.gov.bc.ca/hfp/mountain_pine_beetle/Mid-Term-Timber-Supply-Report_Appendix-4.pdf

Forest Analysis: Lakes Timber Supply Area

www.for.gov.bc.ca/hts/tsa/tsa14/index.htm

Land-Based Investment Strategy (Lakes Timber Supply Area)

<http://lbis.forestpracticesbranch.com/LBIS/node/46>

Nadina Forest District

www.for.gov.bc.ca/dnd/

Omineca Beetle Action Coalition

www.ominecoalition.ca/

Lakes District Land and Resource Management Plan

<http://www.ilmb.gov.bc.ca/slrp/lrmp/smithers/lakes/index.html>

Lakes North Sustainable Resource Management Plan

www.ilmb.gov.bc.ca/slrp/srmp/north/lakes_north/index.html

Lakes South Sustainable Resource Management Plan

www.ilmb.gov.bc.ca/slrp/srmp/north/lakes_south/index.htm