



Sunshine Coast TSA Timber Supply Analysis Public Discussion Paper

Sunshine Coast District
Ministry of Forests, Lands and
Natural Resource Operations
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Cover photograph by W. Blake Fougère
Ministry of Forests, Lands and Natural Resource Operations

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Introduction

The Ministry of Forests, Lands and Natural Resource Operations regularly reviews the timber supply^a for all timber supply areas^b (TSA) and tree farm licences^c (TFL) in the province. This review for the Sunshine Coast TSA, examines the impacts of current forest management practices on the timber supply, economy, environment and social conditions of the local area and the province. Based on this review, the chief forester will determine a new allowable annual cut^d (AAC) for the Sunshine Coast TSA.

According to Section 8 of the *Forest Act* the chief forester must regularly review and set new AACs for all 38 TSAs and 34 TFLs in the Province of British Columbia.

The objectives of the timber supply review are to:

- examine relevant forest management practices, environmental and social factors, and input from First Nations, forest licensees and the public;
- to provide the chief forester with information to use when making AAC determinations; and
- identify information to be improved for future timber supply reviews.

This public discussion paper provides a summary of the results of the timber supply analysis for the timber supply review of the Sunshine Coast TSA. Details about the information used in the analysis are provided in a April 2011 data package. The timber supply analysis should be viewed as a “work in progress”. Prior to the chief forester’s AAC determination for the TSA, further analysis may need to be completed and existing analysis reassessed as a result of inputs received during this review process.

Timber supply review in the Sunshine Coast TSA

The chief forester last determined the AAC on December 20, 2001, setting it at 1 143 000 cubic metres effective January 1, 2002. In June of 2004 he postponed the next AAC determination to no later than December 31, 2011 under Section 8(3.1) of the *Forest Act*. In February 2007, to account for land added to the TSA from TFL 10 by order under Section 3(2) of the *Forest Revitalization Act*, the chief forester increased the AAC by 54 949 cubic metres. The current AAC now stands at 1 197 949 cubic metres.

In July 2010, a data package documenting the information requirements and assumptions for the timber supply analysis was released for public review and to assist with First Nations’ consultation. This public discussion paper is being released to provide an overview of the timber supply review process and to highlight the results of the timber supply analysis, including harvest forecasts for the Sunshine TSA.

**Throughout this document, an asterisk after a word or phrase indicates that it is defined in a box at the foot of the page.*

^a **Timber supply**

The amount of timber that is forecast to be available for harvesting over a specified time period, under a particular management regime.

^b **Timber supply areas (TSAs)**

An integrated resource management unit established in accordance with Section 7 of the Forest Act.

^c **Tree farm licences (TFLs)**

Provides rights to harvest timber and outlines responsibilities for forest management in a particular area.

^d **Allowable annual cut (AAC)**

The rate of timber harvest permitted each year from a specified area of land, usually expressed as cubic metres of wood.

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Before setting a new AAC, the chief forester will review all relevant information, including the results of the timber supply analysis, socio-economic information, and input from government agencies, the public, licensees and First Nations. Following this review, the chief forester's determination will be outlined in a rationale statement that will be publicly available. The actual AAC that is determined by the chief forester during this timber supply review may differ from the harvest projections presented in this analysis, as the chief forester must consider a wide range of information including the social, economic and environmental implications associated with a given harvest level. His considerations are ultimately a professional judgement based on the legal requirements set out in Section 8(8) of the *Forest Act*.

Once the chief forester has determined the new AAC, the Minister of Forests, Lands and Natural Resource Operations will apportion the AAC to the various licence types and programs. Based on the minister's apportionment, the regional executive director will establish a disposition plan that identifies how the available timber volume is assigned to the existing forest licences and, where possible, to new opportunities.

Description of the Sunshine Coast TSA

Located on the south coast of British Columbia, approximately 100 kilometres north of the City of Vancouver, the Sunshine Coast TSA is part of the South Coast Region and is administered by the Sunshine Coast District of the Ministry of Forests, Lands and Natural Resource Operations. This TSA extends from Howe Sound in the south to the head of Bute Inlet in the north.

The total area of the TSA is 1 560 926 hectares of which about 425 863 hectares is productive forest land managed by the Crown. Of the total TSA area about 222 894 hectares (14%) is available for timber harvesting and is referred to as the timber harvesting land base (THLB) or harvestable area.

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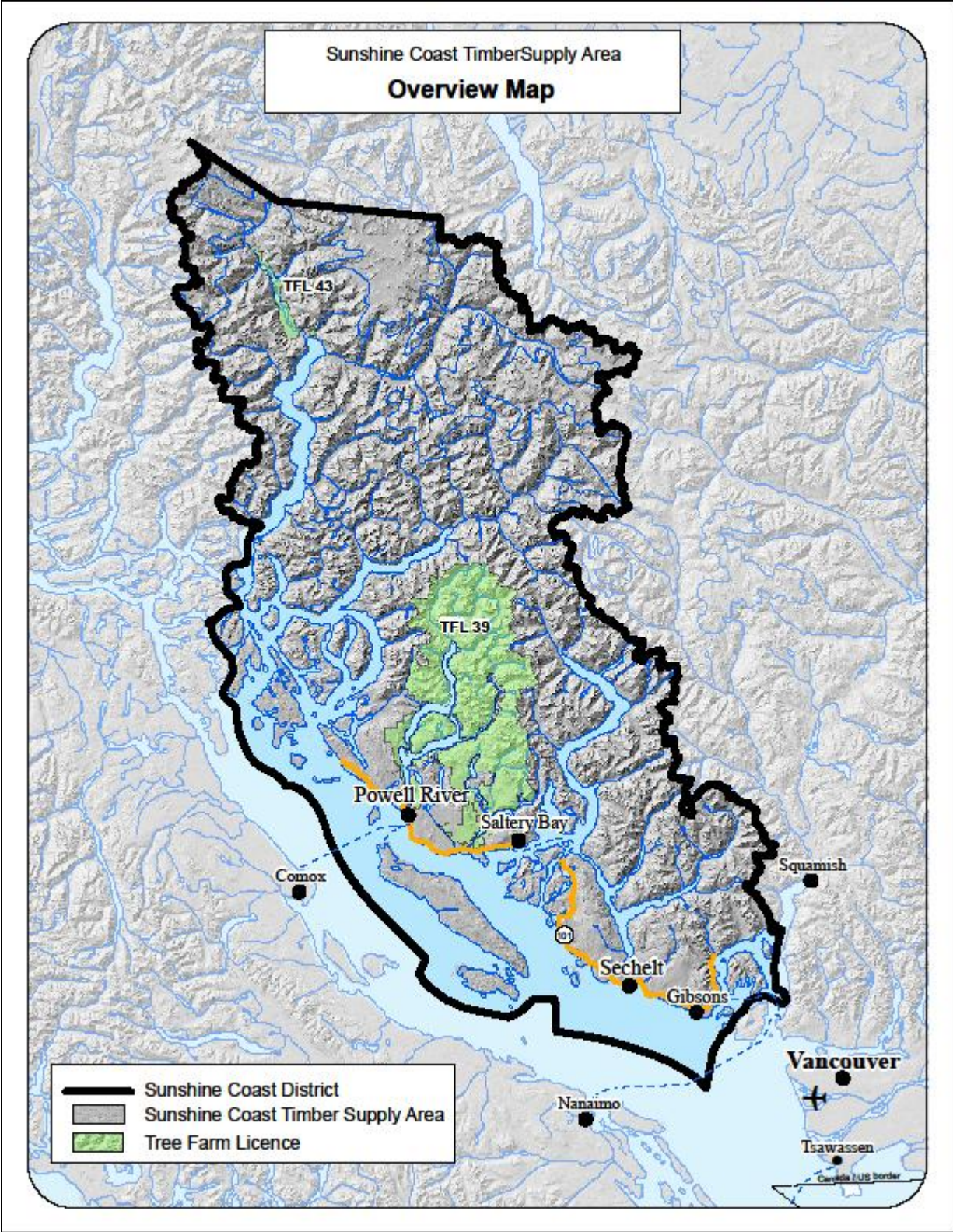


Figure 1. Sunshine Coast TSA map.

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Natural resources

The forests of the Sunshine Coast TSA provide a wide range of forest land resources, including forest products (timber and non-timber, such as wild mushrooms), recreation and tourism amenities, and a variety of fishery and wildlife habitats.

The mountainous topography and associated high rainfall in the Sunshine Coast TSA produce a diverse climate and ecology. The landscape ranges from rocky shorelines and coastal plains to rugged ice-capped mountains. The Coast Mountains dominate the TSA, with nutrient-rich, moist floodplains in valley bottoms and alpine meadows at higher elevations. Several significant coastal fjords, most notably Bute, Toba and Jervis inlets, also occur in the TSA.

Within the land base currently considered available for timber harvesting, Douglas-fir, hemlock and balsam are the major tree species, while western redcedar, yellow-cedar, spruce, pine, red alder, cottonwood and maple also occur (Figure 2). Douglas-fir, hemlock, western redcedar and yellow-cedar are the tree species most commonly used by the forest industry in the area. The TSA has a long history of harvesting activity, resulting in younger forests on better quality, more accessible growing sites, and older forests on the poorer and less accessible areas. Most forest stands are younger than 150 years. Older stands between the ages of 150 and 350 years occurring in harvestable areas make up just six percent of the Crown forest land base (Figure 3).

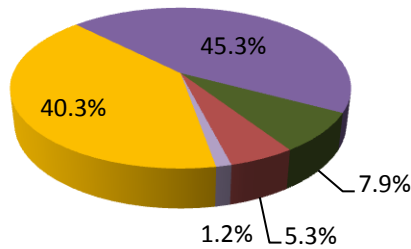
The forests and landscapes of the Sunshine Coast TSA are home to a wide variety of wildlife species, including grizzly and black bear, black-tailed deer, Roosevelt elk, mountain goat, cougar and wolf, as well as isolated populations of moose. Provincial legislation outlines a process for identifying species at risk that require special management. Currently, eight species identified as at risk may be found in the Sunshine Coast TSA, including the Northern goshawk, marbled murrelet and Keen's long-eared myotis.

Residents and visitors make extensive use of the forests of the TSA for recreational activities. Parks, recreation sites and trails, and roaded and non-roaded areas in the TSA provide opportunities for numerous outdoor activities such as hiking, camping, skiing, mountain biking, horseback riding, mountaineering, angling, hunting, canoeing and kayaking, as well as more passive activities such as wildlife or forest viewing.

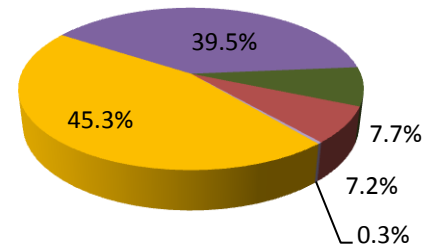
About 27 percent of the Sunshine Coast TSA land base is considered productive Crown forest land managed by the Ministry of Forests, Lands and Natural Resource Operations (approximately 426 000 hectares). The majority of the rest of the TSA land base is considered non-forest or non-productive forest (67%). Forests in parks and ecological reserves or forests outside the management unit make up the remaining area.

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Leading species on the Crown forested land base



Leading species on the timber harvesting land base



- Douglas-fir
- Hemlock/Balsam/Spruce
- Cedar & Cypress
- Deciduous
- Other

Figure 2. Proportion of leading species for the Crown forested land base and timber harvesting land base^e of the Sunshine Coast TSA.

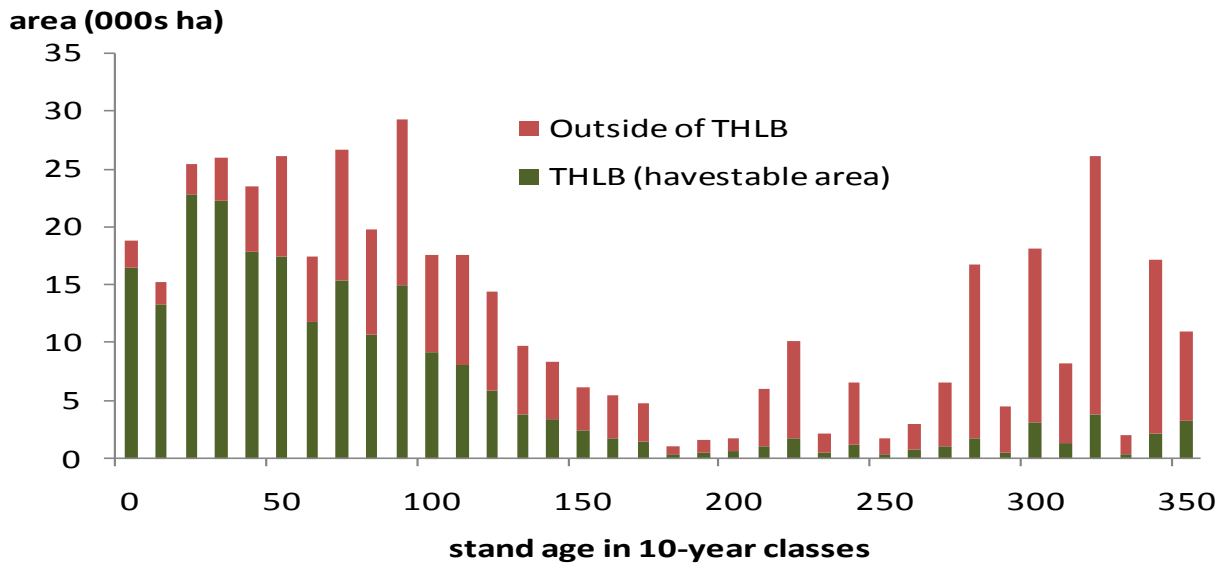


Figure 3. Age class distribution of the Crown forested land base.

^e **Timber harvesting land base (THLB)**

The portion of the CFLB that is managed for timber supply by the Ministry of Forests, Lands and Natural Resource Operations where timber harvesting is considered both acceptable and economically feasible, given objectives for all relevant forest values, existing timber quality, market values and applicable technology.

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First Nations

Thirteen First Nations have asserted traditional territory in the Sunshine Coast TSA. Five of the First Nations also have reserve lands (the *shíshálh* Nation, the Sliammon First Nation, the Xwémalkwu First Nation, the Klahoose First Nation and the Squamish Nation). The other eight First Nations with traditional territory are the We Wai Kai First Nation, Wei Wai Kum First Nation, Kwiakah First Nation, the Snaw'Naw'As First Nation, Qualicum First Nation, Líl'wat First Nation, Tsleil-Waututh First Nation, and the Ulkatcho First Nation. The K'ómoks, Kwiakah and We Wai Kai First Nations are all signatories to the Nanwakolas Strategic Engagement Agreement and have been consulted in compliance with the structure described in the agreement. The Wei Wai Kum, We Wai Kai and Kwiakah First Nations are also part of the Laich-Kwil-Tach Treaty Society and the Treaty Society has been forwarded copies of all consultation correspondence.

The *shíshálh* Nation are a self-governing First Nation and their traditional territory, which covers Jervis, Sechelt, Narrows and Clowhom inlets as well as the Sechelt Peninsula, includes former Indian Reserves which are now held by the *shíshálh* Nation as 'Sechelt Band Lands'. The majority of the members reside in Sechelt. The Sliammon First Nation has six reserves and traditional territory extending from Lang Bay in the south to Desolation Sound in the north and inland through the Stillwater Valley and up Powell Lake to the headwaters of the Daniels and Powell Rivers, with most of their members residing in the community of Sliammon, north of the City of Powell River. The Klahoose First Nation has a reserve and office in Squirrel Cove on Cortes Island and other reserves and traditional territory extending up Toba Inlet into the Toba River Valley. The Squamish Nation has reserves and traditional territory in Howe Sound, the Squamish valley and the lower mainland with their offices located in North Vancouver. These five First Nations have a combined population of over 4800 people located both on and off their various reserves.

Participation in the forest industry by the First Nations, whose asserted territories are overlapped by the Sunshine Coast District, encompasses a variety of tenures including woodlots, community forest agreements and several timber sale licences across the timber supply area.

The Ministry of Forests, Lands and Natural Resource Operations has been communicating with the First Nations whose territories are overlapped by the Sunshine Coast Timber Supply Area and will continue to fulfill its legal obligations to consult with First Nations in conjunction with the release of the Public Discussion Paper.

Land use plans

No new land use plans have come into effect in the Sunshine Coast TSA since TSR II was completed in 2001. However, the establishment of old-growth management areas has been completed on five more landscape units. Once the five corresponding landscape unit plans come into effect, this will bring the total number of approved landscape units within the Sunshine Coast District to 13 out of 25. Work continues at various levels on the remaining 12 units.

Forest management

Current forest management must be consistent with the requirements of the *Forest and Range Practices Act* (FRPA) and associated regulations, which are designed to maintain a range of biodiversity and wildlife values. All forested lands, whether they contribute to timber supply or not, help to maintain critical habitats for many species. The timber supply analysis includes constraints or forest cover requirements for biodiversity, visual quality, wildlife habitat, community watersheds, recreation features, riparian management and protection of environmentally sensitive areas. These requirements are applied to the Crown forested land base (CFLB).

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The productive forest land base in the Sunshine Coast TSA is 425 863 hectares. Of this area, about 9.4 percent is not available for timber harvesting because it occurs in, wildlife retention areas, old growth management areas, or on unstable terrain. Another 34.6 percent is excluded from harvesting because it is occupied by non-merchantable species, uneconomic or otherwise unsuitable for timber harvesting; however, this land continues to provide for other values. The timber harvesting land base (THLB) is estimated to be 222 894 hectares, which is approximately the same size the THLB was in the previous timber supply analysis.

Land base and forest management changes since TSR II

The last AAC determination occurred December 20, 2001. Since then, several changes have occurred to the land base and forest management information that are reflected in the timber supply analysis. The major changes are:

- improved (spatial) modelling of: landscape-level biodiversity requirements, riparian areas, known archaeological and cultural use areas, and roads;
- implementation of *Government Actions Regulation* (GAR) order for establishing Karst landforms as resource features;
- establishment of numerous Wildlife Habitat Areas (WHAs) for grizzly bear, marbled murrelet;
- use of improved productivity estimates (site index adjustments) for second-growth stands;
- establishment of four new Woodlots (W2034, W2049, W2062, W2058);
- establishment of four Community Forests (Sliammon, Sechelt, Powell River and Klahoose);
- elimination of one Tree Farm Licence (TFL 10-Toba) part of which became TSA area;
- change from *Forest Practices Code Act of BC* to *Forest and Range Practices Act*; and
- construction of several new hydro power line corridors associated with new Independent Power Production facilities.

Timber supply analysis

For the AAC determination, the chief forester reviews many sources of information, including a timber supply analysis that models the development of the forest through time and its response to harvesting while respecting government's many timber and non-timber objectives. This section highlights some of the important findings from the timber supply analysis.

The base case

A timber supply analysis provides an assessment of the existing land base and forest management information. This assessment includes a timber supply forecast that Ministry of Forests, Lands and Natural Resource Operations staff believe reflects the best available data and current forest management practices. This timber supply forecast is called the base case. The base case is not an AAC recommendation, but rather one of many sources of information the chief forester will consider when setting the AAC. The AAC determined by the chief forester may be greater or less than the initial level forecasted in the base case.

The base case harvest forecast (Figure 4) shows a harvest level of 1 650 000 cubic metres per year for the next 400 years. This level is 38 percent higher than the current AAC. In the forecast a portion of the total harvest comes from deciduous-leading stands. Harvesting of deciduous stands is maintained at 98 000 cubic metres per year for the first 40 years of the forecast, declining afterwards to 60 000 cubic metres per year for the remainder of the forecast. The base case assumes 12 650 cubic metres per year is lost to catastrophic events such as insect epidemics, fires, wind damage or other agents, and in the forecast shown in Figure 4 this amount has been subtracted off the total harvest.

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In the first 50 years of the base case harvest forecast, the average area of forest stands harvested in the Sunshine Coast TSA is about 2671 hectares per year, at an average of 155 years of age and an average volume of 618 cubic metres per hectare. Through the remainder of the harvest forecast, the average area of forest stands harvested is 2196 hectares per year, at an average 93 years of age and an average volume of 751 cubic metres per year.

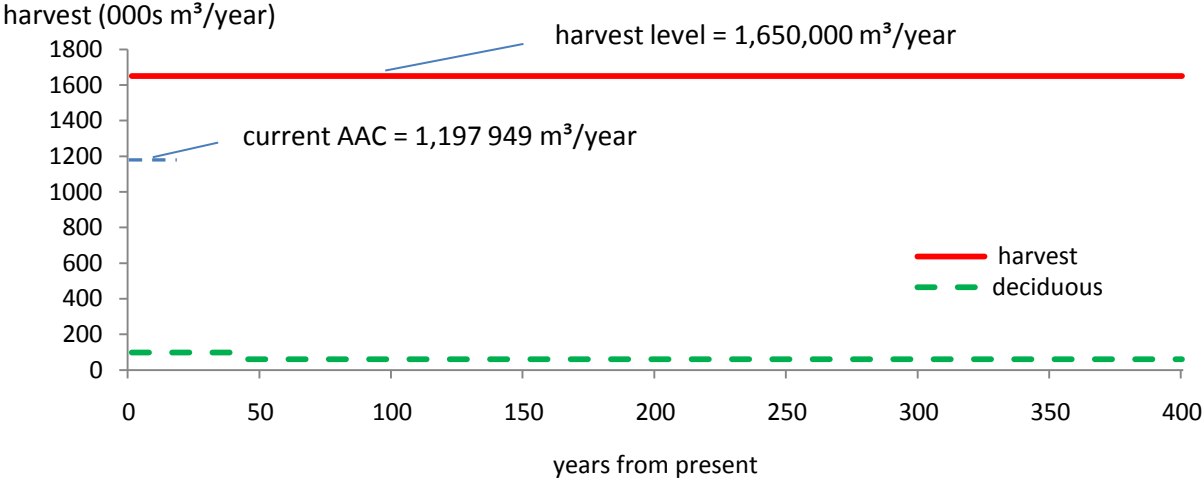


Figure 4. Base case timber supply forecast for the Sunshine Coast TSA, 2011.

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Historic harvest performance

A comparison between the stand types contributing to the base case harvest levels and the historic harvest in the TSA, based on information from the Ministry of Forests, Lands and Natural Resource Operations Harvest Billing System, indicates that during the 10-year period 2001-2010 an average of 85 percent of the AAC was harvested. The average contribution to the total harvest from the major species based on billed volume for the 10-year period 2001-2010 was 25 percent from cedar, 39 percent from Douglas-fir and 32 percent from hemlock or balsam, respectively (Table 1). Mostly red alder and other deciduous types contributed to the remaining four percent of the total harvest (Figure 5).

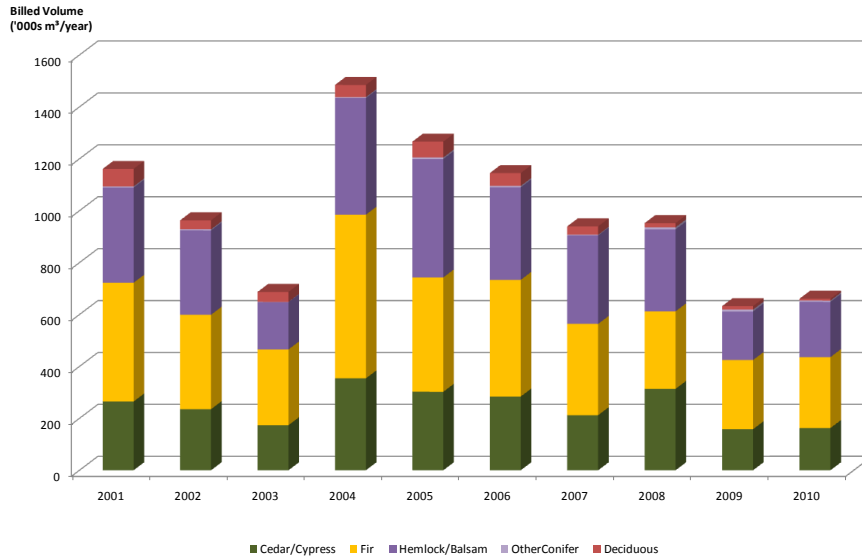


Figure 5. Actual timber volume harvested between 2001 and 2010 from the Sunshine Coast TSA, 2011.

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Table 1. Actual volume harvested per year compared to AAC and species composition of actual volume harvested (source FLNR Harvest Billing System – June 2011)

| Year | AAC (m ³) | Volume harvested (m ³) | Percent AAC harvested | Cedar- or cypress volume harvested % total | | Douglas-fir volume harvested % total | | Hemlock or balsam volume harvested % total | |
|---------|-----------------------|------------------------------------|-----------------------|--|------------------|--------------------------------------|------------------|--|------------------|
| | | | | (m ³) | (%) ¹ | (m ³) | (%) ¹ | (m ³) | (%) ¹ |
| 2010 | 1,197,949 | 660,931 | 55 | 162,746 | 25 | 273,209 | 41 | 212,858 | 32 |
| 2009 | 1,197,949 | 632,245 | 53 | 158,170 | 25 | 266,423 | 42 | 187,041 | 30 |
| 2008 | 1,197,949 | 952,214 | 79 | 313,672 | 33 | 298,704 | 31 | 315,710 | 33 |
| 2007 | 1,197,949 | 939,835 | 78 | 212,319 | 23 | 351,555 | 37 | 340,612 | 36 |
| 2006 | 1,143,000 | 1,145,009 | 100 | 284,162 | 25 | 449,383 | 39 | 356,553 | 31 |
| 2005 | 1,143,000 | 1,266,164 | 111 | 302,419 | 24 | 440,576 | 35 | 456,147 | 36 |
| 2004 | 1,143,000 | 1,484,551 | 130 | 354,086 | 24 | 630,584 | 42 | 449,277 | 30 |
| 2003 | 1,143,000 | 687,073 | 60 | 173,618 | 25 | 291,859 | 42 | 182,124 | 27 |
| 2002 | 1,143,000 | 963,079 | 84 | 235,311 | 24 | 363,864 | 38 | 324,846 | 34 |
| 2001 | 1,143,000 | 1,161,050 | 102 | 264,967 | 23 | 457,643 | 39 | 366,465 | 32 |
| Average | | 989,215 | 85 | 246,147 | 25 | 382,380 | 39 | 319,163 | 32 |

1. Percentages of cedar/cypress, Douglas-fir and hemlock/balsam do not always sum to 100% due to volume contributions from other species to actual volume harvested.

According to the species composition of the timber harvesting land base based on standing inventory volume cedar and cypress volume accounts for 16 percent, Douglas-fir accounts for 35 percent and hemlock and balsam account for 41 percent. Hemlock and balsam-leading stands also occupy near 40 percent of the timber harvesting land base (Figure 2). Comparing this species composition information to the average species contribution harvested annually between 2001 and 2010, it appears that over the last 10 years the undercut portion of the AAC was mainly in hemlock and balsam stand types.

Figure 6 shows the harvest profile by major stand type for the base case forecast. The harvest level projected for cedar-leading stands during the first 10 years is near the average harvest of the past 10 years. However, between 10 and 30 years from now cedar's share of the harvest profile drops from 25 percent to six percent in order to maintain the total harvest of 1.65 million cubic metres per year. Hemlock- and balsam-leading stands and Douglas-fir-leading stands make up the difference in the total harvest.

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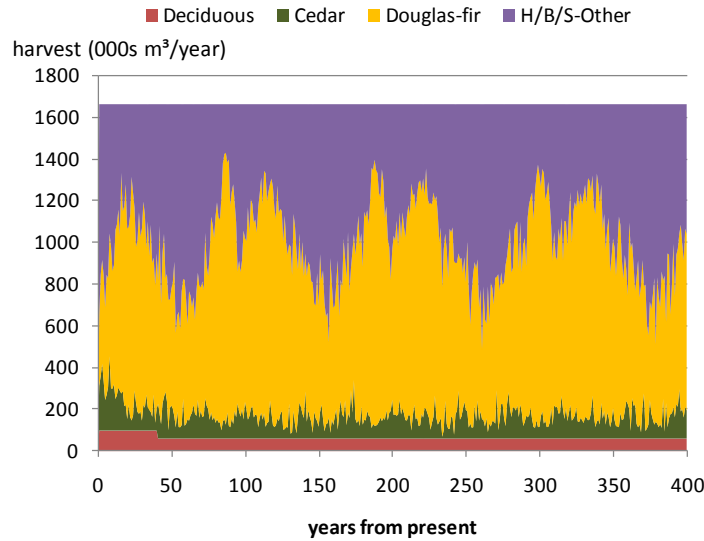


Figure 6. Base case harvest profile by major stand type.

Sensitivity analysis

The base case uses a specific set of available data and forest management assumptions that attempts to capture current forest composition and management. Sensitivity analysis is used to examine the effect on timber supply of uncertainty or known differences in the assumptions used in the base case.

The base case for this timber supply analysis projects that a harvest level of 1 650 000 cubic metres can be maintained indefinitely. This level is higher than the current AAC and higher than the base case prepared for the 2001 AAC determination. The higher harvest level is primarily attributable to the use of new site productivity information for managed stands.

Numerous studies throughout British Columbia have indicated that stand growth estimates based on inventory information from old-growth stands underestimate the productivity of second-growth managed stands. For this timber supply analysis the productivity of second-growth managed stands has been adjusted for Douglas-fir, cedar and hemlock on the basis of new site productivity information for the Sunshine Coast TSA.

In order to examine the effect on timber supply of uncertainty in the productivity of second-growth managed stands, yields for managed stands were recalculated using current inventory site index estimates which are significantly lower than the adjusted site index estimates (35 percent for Douglas-fir, 10 percent for cedar, 38 percent for hemlock). The results, summarized in Table 2, indicate that decreasing the productivity of second-growth stands significantly lowered the timber supply. Given the reduced timber supply, however, the current AAC of 1 197 949 cubic metres can be maintained for at least 20 years.

Table 2. Selected sensitivity analyses
Short = decades 1-2, Mid = decades 3-10, Long = decades 11-40

| What | Change | Percent difference from base case | | |
|--|--|-----------------------------------|------|------|
| | | Short | Mid | Long |
| Post harvest site index adjustments for Douglas-fir, hemlock and cedar stands. | No adjustment to inventory site index values (-38% Hw, -35% Fd, -10% Cw) | -27% | -35% | -36% |

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Socio-economic conditions

According to 2010 population estimates provided by Statistics BC, the approximate population for the Sunshine Coast TSA is 51 000 people. This is an increase of six percent in the last five years (2006= 47 600).

The Ministry of Forests, Lands and Natural Resource Operations reports that in 2010, approximately 1300 people were employed in direct forestry jobs in the Sunshine Coast TSA. Almost 1200 of these people worked in either, pulp, paper (70 percent), chip or lumber (30 percent) mills. An additional 100 people worked in forestry positions with forest licensees, government or private consultants. This figure is down approximately 20 percent from 2003 when over 1400 people were employed in the mills alone.

At present, the allowable annual cut for the Sunshine Coast TSA is 1.2 million cubic metres, while mill consumption is over 3.5 million cubic metres. Therefore, it takes a significant amount of timber and chip volume from outside this TSA to meet the needs of the local mills.

Of the 660 000 cubic metres harvested in this TSA in 2010, approximately 167 000 cubic metres or 25 percent was exported and 75 percent was processed in coastal BC mills.

Summary

The base case harvest forecast indicates that a harvest at the annual level of 1 650 000 cubic metres can be maintained for the next 400 years. This level is 38 percent higher than the current AAC (1 197 949 cubic metres) and higher than the base case level prepared for the 2001 AAC. This forecasted annual volume would be realized on approximately 2700 hectares per year for the first 50 years and then, moving to the more productive managed stands, 2200 hectares per year. The increase in the stability in the base case harvest over that seen in the previous timber supply review is primarily attributable to the use of new site productivity information for managed stands.

During the 10-year period 2001-2010 an average of 85 percent of the AAC was harvested which included a range of 130 percent at the high end in 2004 and 53 percent at the low end in 2009.

The provincial chief forester's AAC determination is a judgement based on his professional experience and his consideration of a wide range of information as required under Section 8 of the *Forest Act*. An AAC is neither the result of a calculation nor limited to the results of timber supply analysis; therefore, the new AAC may not be the same as any of the initial harvest levels depicted in any of the forecasts included in this document.

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Your input is needed

Public input is a vital part of establishing the allowable annual cut. Feedback is welcomed on any aspect of this public discussion paper or any other issues related to the timber supply review for the Sunshine Coast TSA. Ministry staff would be pleased to answer questions to help you prepare your response. Please send your comments to the district manager at the address below (via email if possible).

Your comments will be accepted until October 2, 2011.

You are reminded that responses will be subject to the *Freedom of Information and Protection of Privacy Act* and may be made public. If the responses are made public, personal identifiers will be removed before the responses are released.

For more information or to send your comments, contact:

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Further information regarding the technical details of the timber supply analysis is available on request by contacting Forests.ForestAnalysisBranchOffice@gov.bc.ca

Visit the Forest Analysis and Inventory Branch web site at <http://www.for.gov.bc.ca/hts/>