

SUNSHINE COAST COMMUNITY FOREST

Operational Plan Guidelines



SUNSHINE COAST COMMUNITY FOREST



**Sechelt Community Projects Inc.
Community Forest K3F**

**Operational Plan Guidelines
for the
SUNSHINE COAST COMMUNITY FOREST**

FEBRUARY, 2011

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PREFACE

Input has been significant. It has been impossible to track individual input into specific sections of the guidelines because numerous changes to previous changes have occurred.

To date, input into the CFOP guidelines has been received from:

- The Community Forest Advisory Committee
- Members of the public
- Other forest industry licensees
- Forest professionals in the community
- Local interest groups
- Local government
- Sechelt Community Projects Inc. board members
- Ministry of Forest and Range Protection Branch

Thank you to all who took the time to provide input into the final 2011 CFOP guidelines document.

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Preamble

Sechelt Community Projects Inc. (SCPI) is a company incorporated pursuant to the laws of the Province of British Columbia. The sole shareholder of SCPI is the District of Sechelt. SCPI is the Agreement Holder and licensee of the Probationary Community Forest Agreement.

The Sunshine Coast Community Forest (SCCF) produces the Community Forest Operational Plan (CFOP), which includes guidelines and maps to provide the public with a practical explanation of how and where we will manage our local forests for variety of forest values, economic benefits, and compliance with the laws, policies, and regulations of the federal and provincial governments. The CFOP guidelines and maps are posted on the website at www.SCCF.ca.

The CFOP is updated every three years or whenever management deems appropriate, considering changes in forest conditions, regulations, or harvesting-operations volume.

The CFOP is not a requirement of government! It is a proactive process for the community to participate in the operational planning of the SCCF. The Sechelt Indian Band (SIB), with whom the SCCF has a Forestry and Cultural Protocol Agreement, participates through that process.

The SCCF is an Area Based Tenure (ABT) with defined boundaries in the general area around Sechelt. This means that we only harvest, after net downs, whatever we grow “sustainably.”

The SCCF is one of several tenures under the Forest Act providing for the licensee the right to harvest a certain amount of timber also known as an Allowable Annual Cut (AAC). It does not give the licensee any ownership rights to the land described in the area assigned and it has to manage the area according to all the provincial laws of general application pertaining to the forestry operations.

The SCCF manages our local forest for many community values that are economically, environmentally, and socially beneficial to our community. The forest can provide a range of timber and non-timber forest products.

The SCCF tenure is being administered for extended rotation, which will produce a variety of timber products over time as compared to other management strategies that produce commodity timber products. Local value-added users require both second and

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old-growth timber for their products. Extended rotation enables the SCCF to provide a range of timber products for all local users.

Harvesting and planting is contracted to local contractors whenever possible. Planting is done soon after harvesting.

Purpose of Operational Plan Guidelines

In addition to adhering to all provincial legislation, regulations, and the licensee tenure agreement, the purpose of the CFOP is, to guide the planning operations of the SCCF in harmony with the values of the community. At the same time, the CFOP provides the public with a comprehensive means of reviewing the planned operations of the SCCF in clear and understandable language. The CFOP consists of written guidelines and maps, providing information regarding:

- Resources, resource values, and their locations that are being managed;
- the locations of planned harvesting operations;
- types of harvesting, silviculture, and other activities that will be carried out within the SCCF tenure area;
- types of forest products the SCCF will produce and provide; and
- guidelines regarding the development, harvesting, and management of timber and non-timber resources.

It is important for the community to understand that the CFOP guidelines are just that—*guidelines*. While they set the intended general direction for planning harvesting, site conditions and/or other information as determined by our professionals may necessitate changing course to meet other provincial objectives or policies. In such cases, the rationale will be provided and documented in the Site Plans.

Economics for all operational considerations are taken into account during the planning stages and are not included in the CFOP guidelines. Many of the economic variables that are considered in forest operations change very fast, may be speculative, and are confidential business information.

Public Input and Operational Plan Revision

Obtaining Public Input

Our Probationary Community Forest Agreement was awarded on May 31, 2006, and the first-draft Community Forest Operational Plan was developed to provide public discussion and input into operational procedures for the management of the SCCF.

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The CFOP describes the basic scope of forest management activities that may be used within the SCCF, and the intent is to answer operational questions asked by the public. It provides a framework on which to build on the values expressed in the community.

The Community Forest Advisory Committee (CFAC) was formed in October 2006 and spent considerable time reviewing the first CFOP guidelines document and providing many recommendations for revisions. A public open house was held to allow community input prior to production of the final draft.

Timing of Revisions

The CFOP will be revised every three years, or sooner in the event that SCCF management deems revisions to be necessary. Revisions could result from changes in a) provincial legislation, b) in the tenure area, or c) in the timber profile.

SCCF Advisory Committee Review

Any proposed revisions would be referred for discussion with CFAC, and field trips would be undertaken where necessary. The public would also be invited to attend the discussions and field trips. Recommendations to the revisions would be made to the Operations Manager and staff for consideration and final approval by the SCPI Board of Directors. All changes to the operational plan would be posted on the SCCF website.

Public Input Opportunities

Although the CFOP will be officially updated every three years, which will include a public review period, it may be reviewed and commented upon at any time by any member of the public. These comments will be considered during the next review period.

Revisions to Be Signed by the Professional Forester

Changes to the CFOP will be signed and sealed by a Registered Professional Forester contracted by the SCCF Operations Manager.

Sechelt Indian Band Cultural Protocol Agreement

SCPI has signed a Forestry Protocol Agreement with the SIB. This agreement describes how the SCCF operations will consider SIB cultural-heritage management strategies, respecting the SIB areas of cultural significance.

Periodic meetings are held with SIB representatives to discuss forestry-planning issues, cultural heritage site surveys, and other current issues. These meetings are part of the SCCF's proactive approach to addressing forest management issues.

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Management of Resources

Water

Water resources within the SCCF include lakes, wetlands, and streams. They provide the following values:

- Domestic water supply under provincial water licenses
- Aquatic ecosystems supporting biodiversity
- Aesthetics, scenery, and community setting
- Recreation uses such as swimming, fishing, and boating
- Salmon and resident fish-bearing streams

SCPI considers water to be one of the highest-value resources in the SCCF area and will therefore comply with provincial regulations as a minimum and, subject to wind-firm, safety, and other operating requirements, will consider additional options including:

- leave small-(10-20cm)-diameter trees alongside S6 streams,
- leave wider riparian areas where required to maintain stream bank integrity,
- incorporate retention areas adjacent to stream channels to provide greater protection to water quality.

Community Watersheds

There are three Community Watersheds that overlap with the Sunshine Coast Community Forest chart area:

- Milne Creek (Trout Lake)
- Chapman Creek
- Gray Creek

The SCPI Board of Directors has decided that no harvesting will take place within the Chapman Creek Community Watershed for the 25-year term of the SCCF. This decision has been made to address the following concerns:

- The Chapman Creek watershed was heavily harvested in the past and needs to hydrologically recover to a condition approved by management
- Past harvesting and road construction resulted in some slope instability resulting in landslides. Many roads and slopes may be still unstable and without detailed studies, new operations could exacerbate these problems. These studies will be undertaken to provide current information about the Chapman Creek Community Watershed before any operations are planned.

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Forestry operations will occur within the Gray Creek and Milne Creek Community Watersheds. As required, these plans will be referred to the SCRCD and the public will have an opportunity for input into those plans.

The CFOP covers only indirect water-management activities—those designed to maintain water quality and aquatic ecosystems by minimizing the impact of other resource uses. There are no plans to provide or license water-based products.

The existence of domestic water licences on a stream does not preclude other resource uses such as timber harvesting. However, any planned activities upstream of the intake will be undertaken in a manner that minimizes potential negative effects on water users. Provincial acts, regulations, and other agencies guide the legal requirements for these activities in community watersheds.

The need for, and sizes of, riparian reserve and management zones will be determined in the field by professionals as stated in the SCCF Forest Stewardship Plan (FSP). The intention is to avoid past prescriptive approaches that often resulted in management zones not extending to the top of gullies or not including adjacent, unstable silt deposits.

The size of riparian reserves on streams is specified in Forest Planning and Practices Regulation (FPPR), sections 47, 48, and 49. However, depending on site conditions, these reserves may be larger, as determined by a qualified professional who will consider the following:

- (i) the need to buffer the aquatic ecosystem of the stream, wetland, or lake from the potential introduction of materials that are deleterious to water quality or fish habitat;
- (ii) the need to conserve the riparian habitat for biodiversity and wildlife habitat management purposes;
- (iii) the need to protect the integrity of the reserve zone by buffering with retention in the management zone;
- (iv) the effect of trees and understory vegetation on water quality or fish habitat;
- (v) the need to maintain stream bank and stream channel integrity;
- (vi) the relative importance and sensitivity of different riparian classes of streams, wetlands, and lakes;

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- (vii) the type, timing, or intensity of forest practices that are to be carried out;
- (viii) worker safety; and
- (ix) other factors determined by the professional in the Site Plan.

Biodiversity

Biodiversity management by the SCCF takes into consideration the Landscape Level and extends beyond the SCCF tenure area to include Old Growth Management Areas (OGMAs) and seral stage (forest-stand age) distribution. OGMAs and Wildlife Tree Patch (WTP) retention are implemented within the SCCF tenure area thereby providing additional biodiversity and future old-growth recruitment. The following measures will further maintain biodiversity within harvested areas:

- Large snags will be retained within wildlife tree patches where operational safety allows.
- Under-represented tree species, such as Sitka spruce and western yew, will be retained within wildlife tree patches.
- Natural rhododendron patches will be retained.
- Veteran trees will be retained wherever it is operationally feasible.
- Only native tree species will be used for reforestation of timber crops.

Areas other than OGMAs may be designated for retention to maintain specific high-biodiversity values.

Identified Wildlife Management

The only species listed in the Ministry of Environment's Identified Wildlife Management Strategy that exists within the SCCF tenure area is the Marbled Murrelet. There is potential for Northern Goshawk in the area but there have been no recorded observations to date.

Marbled Murrelet nesting habitat has been identified and mapped within the SCCF and approved by the Ministry of Forests and Range (MoFR). Suitable nesting habitat of classes 1,2, and 3 has been set aside as reserves and excluded from the Timber Harvesting Land Base.

Elk and Deer Management

Large numbers of elk and deer (ungulate) populate the forest in, and surrounding, the SCCF. Habitat areas such as sites of high deer use for winter browse and warming (south-

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aspect open forest) have been identified and mapped. Continuous forestry operations will open up forest canopies to allow more natural browsing within these forest stands. Stand harvesting and rehabilitation (spacing and thinning) will provide a mosaic of browse areas across the landscape to be used by these and other animals.

Deer and elk populations do not require intensive management in this area. The low elevation sites with mild winter climates and extensive areas of browse supply their needs well.

Elk and deer impact forestry plantations and add a significant cost to silviculture. They spend much of their time in plantation areas because of the increased availability of food in the newly formed shrub and herbaceous layers that grow following harvesting. Unfortunately, deer and elk often eat the new seedlings and damage young trees as they rub the velvet off their antlers. Mesh enclosures or cones are often required to protect the seedlings.

Sensitive Ecosystem Inventory

A Sensitive Ecosystem Inventory (SEI) was completed by the Ministry of Environment for the lower biogeoclimatic zones of the Sunshine Coast—areas considered to be rich in biodiversity. It is not a listing of recommended protected areas, but an acknowledgement that specific biodiversity values exist in these areas. The SEI areas are identified primarily by using air photo interpretation with ground surveys for accuracy.

This SEI information is used to help establish riparian and other retention areas, as well as to plan ecosystem-appropriate forest management operations. Consideration of the SEI will be documented within the Site Plan, specifically, within the Forest and Range Practices Act (FRPA) Checklist.

More information regarding the SEI can be found at: www.env.gov.bc.ca/sei.

Timber

Timber harvesting is the main financial opportunity and obligation for the SCCF.

For the five-year probationary period, the AAC is determined to be 20,000 cubic metres (m³) per year. SCPI Board policy and direction to management is to fulfil the AAC terms of the tenure in order to:

- maintain an economic contribution from the forest to the local Sunshine Coast and provincial economies;
- provide sustainable local employment;

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- continue to rehabilitate unproductive or low-productivity, unmanaged, and diseased stands naturally regenerated from past logging.

The AAC will be harvested using a range of retention-harvesting methods suited to the area's ecosystems. Timber harvesting will be planned and conducted to produce a variety of forest products, some of which are key to local Sunshine Coast value-added customers. Marketing of timber products will be determined prior to annual harvesting to ensure that the best value and use of the timber is achieved.

Timber products that support the local forest products manufacturing industry will be given the highest sales priority. Considerations will vary depending on the specific customer and forest product, and may include harvesting of timber and production of logs that:

- are of specific species, size, and grade;
- require sensitive harvesting techniques to preserve their appearance and grade;
- are of manageable volumes for customers; and
- suit the manufacturing schedule of local value-added industry.

The timber from the SCCF will be sold at market prices or better. Requests from local customers for specific forest products will be given priority. This will include special harvesting plans and timing to accommodate these requests.

Salvage opportunities will be managed on an individual basis, and salvage proposals will be developed in conjunction with annual harvesting plans.

Soils

Maintaining soil integrity is vital to managing future forest resources. All harvesting and other forestry activities will be planned in such a way as to minimize soil disturbance.

Measures to maintain soil integrity include:

- deactivation and reforestation of non-permanent road systems or those that are no longer required;
- grass-seeding of exposed mineral soil;
- minimizing new road construction by incorporating old roads into the block designs;
- surveying for soil compaction following any ground-based harvesting;
- avoiding broadcast burning of slash, leaving organic debris on site for decomposition.

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Forest Recreation, Trails, and Sites

The SCCF areas include a wide spectrum of outdoor recreational opportunities. Local residents greatly value forest-based recreation, which is also a tourist attraction for some visitors to the Sunshine Coast. The extensive network of trails in the Sechelt area is a particularly valuable resource. They are mostly used for hiking, biking, horses, motorcycles, and ATV's; access for harvesting of non-timber resources; and cross-country skiing. The existence of trails does not preclude the use of other resources, such as for timber or vegetation harvesting. Harvesting of timber on or near trails may occur and the management of those trails may include:

- moving the trail,
- inclusion in retention of buffer zones,
- redesigning the block,
- restoring the trail following harvesting,
- minimizing damage by fall-away-yard-away, or
- variations of post-harvest retention density.

The management of trails will occur on a site-specific basis rather than by one broad policy applied to all situations.

The appropriate management of recreational resources is a goal of the SCCF. A recreational resource is a landscape feature with the potential to be used for a specific recreational activity. This potential must be recognized and options for continued future use considered in forest management planning.

The SCCF will continue to develop an inventory of recreation values and implement specific planning over time. This inventory lists natural and historical features for any recreational use within the SCCF tenure area; it will be used to ensure that areas of high recreation value are recognized and managed so as not to decrease their value. Karsts are a natural feature that may be found in the Community Forest. The SCCF will manage those sites according to Provincial policy. Planning will consider significant karst features with the objective of protecting them. To date, the SCCF has mapped known trails in and around the SCCF tenure area. Some trails have been GPS mapped by CFAC members and we greatly appreciate this information. This trail inventory will record types of usage, specific recreational or ecological importance, and other information regarding appropriate management techniques for the trail area.

Sechelt Heritage Forest

The Sechelt Coast Heritage Interpretive Forest Site is the only provincially designated recreation area that exists within the Community Forest. The Sunshine Coast Forest District has a Co-operative Management Agreement with the District of Sechelt for maintaining the Sechelt Heritage Forest recreation site, and the SCCF is not involved in

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the management. Objectives for the Sechelt Coast Heritage Interpretive Forest Site, set by the District Manager, Ministry of Forests, Sunshine Coast Forest District, recreation project 16660-6206—locally known as the Sechelt Heritage Forest—are as follows:

The objectives are to manage the Sechelt Coast Heritage Interpretive Forest Site, for a road accessible, non-motorized recreation experience. Opportunities for forest education, interpretive walking, and exploring activities will be available. Natural and social history of the Sandy Hook area shall be provided through the educational and interpretive component of the management of the site.

The Sechelt Heritage Forest is also designated as an OGMA and is excluded from timber harvesting as described in the Chapman Landscape Unit Plan.

Hidden Grove

Hidden Grove has been designated a high-value recreational area on the urban interface. It is managed by the Hidden Grove Legacy Committee in cooperation with the SCCF. It consists of approximately 60 ha of forest along the east side of Sechelt Inlet Road, across from the Sandy Hook Road intersection. Many excellent trails have been built to enable people of varying abilities to view a wide range of old- and second-growth forest ecosystems. Work continues on these trails in order to improve access and to lead to additional natural and managed forest features. The Hidden Grove website can be viewed at: www.hiddengrove.net

Non-Timber Forest Products

The SCCF contains valuable vegetation that may have the potential to be commercially harvested in the future for products such as:

- decorative foliage,
- edible mushrooms and other fungi,
- natural oils,
- medicinal ingredients,
- food, and
- branch furniture components.

The harvesting of non-timber forest products (NTFP's), such as those listed above, is unregulated within the province at this time. It has been found difficult to license, plan, enforce, and monitor in BC because there are no provincial policies in place. There are no SCCF operational or management plans for these resources at the present time, except to identify and map any exceptional resource areas. In the event that there are commercially viable proposals, management strategies would be added to the Forest Management Plan.

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The SIB harvests many non-timber resources for traditional uses as food and for producing baskets, tools, and other art and craftwork. The SIB has the opportunity to provide input through the Forestry Protocol Agreement and through our various meetings during the year. The SIB also reviews every block for cultural significance prior to harvesting.

Personal Harvest of Food and Craft Supplies

As with commercial vegetation harvesting, personal gathering and use of food and craft supplies products is not currently managed, and there are no plans to manage these items at this time. The public can go out and harvest any non-timber forest products wherever they desire.

Aesthetics

The forest surrounding Sechelt provides a beautiful setting for the community as both a scenic backdrop and at the forest-stand level. Timber harvesting has a temporary potential to change the viewscape of the SCCF wherever visible from Sechelt. The result of harvesting could be either unattractive colour changes (such as a solid brown colour) or too angular a shape. These views are short-lived, as the vegetation comes back quickly as the seedlings get taller. Within five years, the view again takes on a green colour.

Visual Quality Objectives (VQOs) have been set by the MoMFL for the SCCF area. These VQOs are, however, general in nature, and more detailed assessments of the visual effects of harvesting may be required on a block-by-block basis.

Harvesting operations are planned to minimize their visual impact, not by attempting to make harvesting invisible, but by utilizing landscape design techniques to blend in the harvesting pattern with the natural forest landscape mosaic. This is accomplished by utilizing tree retention, following irregular-shaped natural features for harvest boundaries, and by minimizing the size of road right-of-ways. Potentially visible blocks planned in highly visible areas will have visual impact assessment images produced to assist in their visual landscape design.

Wildfire Management

This risk of a wildfire from a harvesting operation is low. Additionally, if a fire were to start, the risk of spreading into the community is also low because of the fire protection services found at the Sechelt Airport and the availability of fire fighting aircraft locally, on the Island and Abbotsford. Planning of the harvesting blocks, and the management of slash will be to reduce fire risk. This includes stacking of wood pieces for public firewood cutting, which reduces the number of slash piles and the amount of burning required.

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Timber Management

The Timber Resource

Age Class Distribution

The vast majority of the SCCF tenure area is second-growth forest of either post-logging or post-fire origin. Harvesting began in the Sunshine Coast about a century ago and has been almost continuous ever since. Some old-growth forest remains in higher elevations as stands that were not chosen for harvesting due to their quality and the economics of the stands. Very few patches of old growth remain in the lower elevations of the SCCF, and those that do have been set aside as OGMAs or as SCCF conservation areas.

Harvesting rates increased during the 1930s through the 1950s, and then again in late 1980 until the present. Subsequent to this harvesting history, the SCCF tenure is stocked with a somewhat irregular age class distribution that impacts our cut rate today. The current cut rate of 20,000m³/year is sustainable and below the Mean Annual Increment (MAI), or actual growth rate of the tenure.

As the large area harvested in the 1960s and beyond becomes mature, a higher AAC may be supported as those stands mature.

Species Distribution

The lower-elevation areas of the SCCF are almost entirely coniferous stands, consisting mostly of Douglas fir, western red cedar, and western hemlock with smaller amounts of western white pine, lodge pole pine, Sitka spruce, red alder, and big leaf maple. Further up, in the Gray, Chapman, and Angus Burnett areas, other coniferous species occur, including amabilis fir, Pacific silver fir, yellow cedar and mountain hemlock. Other species, such as Pacific yew and bitter cherry, exist in these areas but are not considered to be part of the timber inventory. The species breakdown within the timber-harvesting land base of the SCCF tenure area is as follows:

Species	% Occurrence
Western and mountain hemlock	35
Douglas –fir	30
Western red cedar	15
Amabilis and silver fir (commonly referred to as balsam)	15
Yellow cedar, or cypress	5

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Lower-elevation stands are generally most well suited for reforestation with Douglas fir and red cedar, which are the predominant species planted. Some sites where root rot is present may be stocked with western white pine or red cedar. Western hemlock invariably regenerates naturally and makes up a small component of a managed stand. Higher-elevation sites will most likely be planted with red cedar, yellow cedar, and amabilis fir, while mountain hemlock will naturally seed itself and be accepted.

Old Growth

Figures in this section are approximate, based on 1990 inventory data.

In the tenure area, the amount of old-growth forest over 250 years old is 2,450 hectares. Of this, 1750 hectares is in the non-timber-harvesting land base and 700 hectares is within the timber-harvesting land base. In the 1880s, the most accessible timber was harvested first, and harvesting progressed through the old growth upwards on the slopes. The majority of the current old forest is in higher elevations in the CWHvm2 and Mhmm1 biogeoclimatic zones, adjacent to and in the Tetrahedron Park.

Most of the remaining old-growth timber is of very poor timber quality, set aside in OGMA's, and will not be harvested. There are some opportunities for single-tree selection harvesting of high-quality timber for specialty markets, which would be a small proportion of any stand.

Most small patches of lower-elevation old growth were included in OGMA's and as part of the Chapman Landscape unit plan. Additional patches have been discovered during our field work and by community members, and these have been removed from the Timber Harvesting Land Base (THLB) because of their importance for biodiversity.

Overall, approximately 35% of the SCCF tenure area is in the non-timber harvesting land base, and these forested areas will continue to age, with the younger stands eventually becoming old growth.

Unmanaged Second-Growth Stands

Many stands were harvested in the past and were left to regenerate naturally and now comprise a large proportion of today's mature forest. Unfortunately, the quality of these forests is questionable due to their unmanaged state. Some have regenerated very well into stands of healthy mature Douglas-fir-dominated stands of good value. Other stands were left and grew into what the SCCF has come to call "silvicultural slums" of mostly poor hemlock. These stands may contain varying amounts of the following attributes:

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- old surviving cedars damaged by the original logging that continued to grow in very poor form and partially decayed due to old scarring or infestation of powder worm;
- old-growth hemlock of the previous understory infected with hemlock mistletoe and/or rot from scars;
- over-mature and decaying hardwood species of little to no value;
- Douglas fir trees that have grown leaning away from competing deciduous and other coniferous trees, resulting in irregular sweeping form;
- stands of irregular spacing resulting in many small, marginally merchantable stems and a high volume of waste, and some large trees with very large branches and knots as a result of growing in wide open areas;
- species occupying sites to which they are not well-suited. This is common of western hemlock in drier, low-elevation stands and Douglas fir in higher, wetter, colder areas of high snowpack.

The presence of these stand attributes lowers the value of the overall forest and also reduces the number of management options available.

Managed Second-Growth Stands

Starting in the mid-1960s, planting became the normal reforestation method and stands were managed to varying degrees of intensity, including spacing, fertilization and, in the 1990s, some pruning. Some of these planted stands are now maturing and are uniform in appearance, as they are well-spaced and close in size; the canopy is even and high. The stands that were spaced in the 1970s and 1980s are even more uniform. These stands will be very profitable for the Community Forest, as they will yield a high proportion of merchantable volume, easy to harvest, and require very little manufacturing and sorting.

Silvicultural Systems

Silvicultural systems are systematic treatments of a particular forest site undertaken to grow specific species and forest products, and to produce specific forest attributes. A silvicultural system is not only a type of harvesting system; it also includes the subsequent strategy to grow the next stand of trees through to rotation or to meet stand-attribute objectives. As legally required, the SCCF will be reforesting harvested sites with species suitable to the area's biogeoclimatic subzone and site series, and as per regulations respecting stocking standards. Suitable silvicultural systems will be applied

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for the natural disturbance type of site in order to regenerate a forest with a higher degree of natural attributes.

The lower areas of the SCCF are within the Coastal Western Hemlock very dry maritime (CWHxm1) and the Coastal Western Hemlock dry maritime (CWHdm) biogeoclimatic units. These areas are very well suited for the growth of Douglas fir, cedar, alder, and big leaf maple. In order to fully utilize the productive capacity of the majority of these sites, growing the species listed above using even-aged management is favoured. This does not mean widespread clear-cutting, but even-aged management systems following natural disturbance patterns that have been studied in the past. The main strategy is to provide near full-light exposure to the new crop when it is established.

Not all harvesting is intended to regenerate a new even-aged crop. Some partial harvesting may leave trees to continue growing to produce specialty forest products. Some stands within the SCCF are fully stocked and their added increment between now and a final harvest would be minimal. This provides an opportunity to utilize the growing potential of these fully stocked stands that are far past maximum increment. They can be partially harvested now and they will grow back some of the harvested volume in time for a final harvest. The volume removed on the partial cuts will grow back in volume on the remaining trees, in higher value, until final harvest.

Variable Retention

Variable retention is a general term used to describe harvesting that retains a variable amount of the previous stand across the harvested area or areas. Where we are able to apply this concept, the result is a stand with older attributes. The SCCF will apply variable retention techniques on all suitable harvesting blocks according to the characteristics of the stand, biological features, safety, economics, and terrain. Harvested areas within variable retention areas will regenerate even-aged stands and the increased light levels on the ground will allow vigorous growth of the newly reforested areas.

Trees are left within a variable retention system to meet a number of objectives:

- Large veteran trees are kept for biodiversity reasons.
- Large older trees with scarring or evidence of wildlife use may be left as wildlife trees, individually or in patches.
- Unusually shaped trees that are interesting for recreational viewing or ornamental use may be preserved.
- An even distribution of large high-quality trees may be retained to continue growing for an additional rotation to provide large, high-quality logs for value-added industry.

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- Small understory cedars may be left after harvesting to continue growing to become crop trees in the next rotation; retained for commercial thinning time or for First Nations use.
- Selected trees may also be preserved as riparian buffers or as part of visual-quality strategies.
- Where possible, small cedars are left along S6 and ephemeral creeks to enhance the riparian ecosystem.

When selecting trees for retention, it is necessary to evaluate their potential to withstand wind. In all retention systems, loss of retained trees from blowdown is to be expected.

Clear-Cutting and Even-Aged Management

Clear-cutting, defined as the removal of all trees within a prescribed area, will be used only in small patches, as part of a mosaic resembling natural disturbance patterns and will constitute part of the variable-retention silvicultural system. Ecologically, this is an appropriate silvicultural system for most parts of the SCCF timber harvesting land base. Conifer crop trees of Douglas fir and cedar require high levels of light to grow productively.

Selective Logging

Selective logging is a general term used to describe any harvesting that selects some trees and retains others.

Salvage

Salvage of blow down or other dead and down timber will be managed on a site-specific basis. Persons wishing to salvage specific pieces of timber may apply to the SCCF for a salvage permit or contract. Salvage activities on harvested blocks may occur following normal harvesting operations, but must be approved and coordinated with the Operations Manager.

Standing snags are not to be cut down in salvage operations unless there is a specific safety hazard covered by WorkSafe BC or only with the approval of the Operations Manager.

Single-Tree Selection

Single-tree selection is the harvesting of specific individual trees within a stand and removing them, leaving the majority of the stand intact. This system may be used in certain types of stands of varying age classes within the SCCF and may not be appropriate for all stands and species. Ecosystem dynamics over the long term must be fully considered whenever using any silvicultural system in meeting the obligations and requirements of provincial legislation.

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Extended Rotation Management

In order to produce high-value products that will have the most potential to support local value-added industry, trees must be grown in a manner that will provide the appropriate fibre for these opportunities. Short-rotation forestry, producing a maximum amount of fibre per hectare, yields lower-value sawlogs suitable for highly mechanized mills producing commodity products, engineered panel fibre, and pulp; short rotation may not be supportive of specialty and value-added products.

To support the local production of specialty forest products and value-added opportunities on the Sunshine Coast, future trees may be grown under an extended rotation management regime to produce large, higher-quality logs that produce higher-value products. Such higher-quality products include:

- cedar and fir house logs;
- large-construction/timber-frame timbers;
- “free of heart centre” (FOHC) timber-framing beams;
- clear lumber for siding, fencing, and fascia;
- poles and pilings;
- high-grade veneer peeling logs;
- large sawlogs for specialty-cut sawmills;
- hardwood sawlogs removed at intermediate harvest;
- lumber for doors and moulding material.

Along with the production of these products comes a smaller proportion of lower-value pulpwood and waste.

As an area-based tenure (ABT)—unlike a volume-based tenure with an undefined area—the SCCF can only log inside our own defined area. In other words, we harvest what we grow, meaning that we are sustainable.

Volume maximization forestry provides the best return on investment based solely on log sales. The inclusion of community values, local economy spin-off effects, niche marketing, and community use of profits, however, changes the calculations in the justification for undertaking this approach.

Extended rotation management can be applied at the lower level CWHxm1 and CWHdm biogeoclimatic subzones. The generally lower productivity of higher-elevation sites, along with the lower relative values of higher-elevation species, does not offer the same opportunities.

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Current Age-Class Distribution Challenges for Extended-Rotation

The present age-class distribution of the SCCF timber profile may make the wide scale implementation of extended rotation difficult for the first two decades. The new timber inventory, described below, will provide information needed to plan extended rotation to the greatest possible extent, yet still achieve SCCF objectives.

Extended Rotation Management Harvesting Strategies

There are two main approaches to the extended rotation strategy being applied in the Community Forest now: (i) increase in rotation age and (ii) stand-level tree retention.

The Community Forest is currently cutting an AAC that is significantly below the productivity or Mean Annual Increment (MAI) of the tenure. The result is that the overall volume of timber on the tenure is increasing, and the average age and size of timber is increasing. This provides the option for future SCCF managers to choose an AAC that retains a higher average stand age or to increase the cut and harvest more volume. This decision will be required about 20 to 30 years from now. An overall increase in rotation age results in a higher percentage of forest in later seral stage, providing related biodiversity benefits, as well as aesthetic and recreational opportunities.

Stand-Level Tree Retention

Stand-level tree retention, as the name indicates, is the retention of some of the trees in a harvested stand, allowing them to continue growing. The strategy is to gain high value increments as the retained trees form large logs that can be used for a wider range of products supporting the local specialty and value-added industry. Not all stands are suitable for this approach, and the following points must be considered prior to implementing stand-level extended rotation:

- Is the overall stand value high enough to be able to afford harvesting without harvesting the potential extended rotation trees? Many stands, such as unmanaged second growth, would not qualify.
- Are the trees wind-firm or are they susceptible to blowdown? Attempts to retain cedar understory trees to be an extended rotation crop of house logs may not be successful in all situations.
- Is the site good enough to allow the trees to grow to be large, high-grade logs in one more rotation? Some poor-to-medium sites will not grow large enough trees to make stand-level retention worthwhile. Small peeler logs may be more profitable on such sites.

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- The density of retained trees must not be too great or the light levels may not be sufficient for the regenerating new trees. Research trials have shown negative effects of overstory shading on Douglas fir. The crowns of the retained trees may double in size in 10 years (as did those in the Roberts Creek BC Timber Sales demo block), so what may look sparse at the time of harvest will fill in significantly.
- Is the volume needed now? The standing timber inventory supports the 20,000 m³/year AAC. Leaving trees behind in every stand may require more hectares be harvested.

Blowdown Management

When utilizing partial harvesting systems, it is inevitable that some leave trees will blow down. This must be considered during the planning of harvesting and stand-management prescriptions. Some leave trees selected may become veterans or veteran recruits while others displaying good form have the potential for and potential for higher value if left to grow larger.

Retention prescriptions should expect blowdown and leave additional trees to ensure that the retention target is maintained. Blowdown should be utilized whenever possible. This can be facilitated by leaving the majority of trees close to roads and on easily accessed terrain, with lower-density retention areas further in the block and on difficult terrain. Retention prescriptions should anticipate some blowdown and leave additional trees to ensure that the retention target is met. In the case where additional trees are left and none are lost to wind, a small-scale harvest opportunity may exist.

Riparian areas and wetland area soils are particularly susceptible to blowdown. Retention of canopy in riparian areas is often a requirement or part of a biodiversity management strategy. Planning of harvesting should avoid blowdown causing large upturned root systems to expose soils within the stream channel, which leads to siltation, erosion and potentially degrade the aquatic ecosystem. Riparian reserve and management zones will be designed to minimize blowdown; however, it is likely that some may occur. Where possible, retention areas can incorporate riparian zones for increased protection. When blowdown in riparian areas occurs, the fallen trees will provide value as coarse woody debris in the riparian area for both aquatic habitat and for terrestrial habitat for species such as amphibians; salvaging may also occur.

Canopy pruning treatments help to avoid blowdown in susceptible areas and may be undertaken where feasible.

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Small trees, such as cedar, are frequently left throughout blocks to grow into future crop trees. It is common for these trees to blow down because they were previously sheltered by the canopy.

Timber Inventory

One of the greatest long-term challenges for the SCCF is to develop an accurate timber inventory system for the SCCF. Standard Timber Supply Analysis (TSA)-level inventory information is not sufficient for the specific products and value maximization opportunities of the Community Forest. The TSA-level inventory provides a solid foundation on which to build a more accurate analysis. Local knowledge and resource management zonation must then be included to accurately define the timber-harvesting land base and subsequent AAC.

Typically, inventory describes species distribution, age, height, stocking volumes, and other such basic information. It is developed in order to produce a TSA-wide determination of the AAC, and is never expected to be accurate at the stand level. Acceptable stand level data errors for this type of inventory can be as high as +/- 50%, because these errors even out over a large area. This is not adequate for the specific needs and objectives of the Community Forest.

The SCCF needs a timber inventory that it can use to plan all aspects of forest-based resource management and, for timber, one that will provide information for addressing the following timber supply and operations management considerations:

- What is the sustainable rate of cut for the tenure?
- What is the rate of cut for the individual compartment areas of the tenure?
- What timber products can be harvested from which stands and when?
- What annual harvest of specific timber products can be expected.
- How much area will be harvested?
- How much road building is needed each year?
- How much road must be maintained by year?
- What silvicultural activities are scheduled—by year, by area?
- Where are non-timber values located and how do they affect planning our operations?
- What poor stand conditions exist and how can they be addressed?

The SCCF inventory must be based on very specific information on each stand. The inventory information must include:

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- a stand-based tally, estimating the volume of individual products that will be available and their expected harvest year;
- a schedule of required silviculture treatments to produce the desired products from each stand;
- access requirements similar to that of a total chance plan;
- the harvesting system required for the products being grown;
- site productivity estimates;
- non-timber values to be managed at the site level; and
- very accurate timber mapping using high quality ortho, satellite, or Lidar images in conjunction with Geographic Information System (GIS) mapping. Timber polygons must be mapped based on operational constraints as well as traditional forest typing.

This type of inventory will record the resources and values within the tenure area, the management values of the community, and the products the SCCF has potential to produce. It will also be used to facilitate the development of a stand-merchandising management regime. It is important to ensure that past silviculture investments are properly mapped and tracked and that treated stands are managed appropriately.

Inventory Work to Date

Current SCPI staff began working on inventory data prior to the issuance of the probationary SCCF tenure. Initial work used the latest Ministry of Forests and Range TSA forest inventory and applied local knowledge to better estimate the THLB and productivity. Since that time, the following tasks have been completed:

- Accurate inventory polygons have been developed for the entire SCCF tenure area. The polygons are forest and operationally based and mapped with GIS using ortho-images.
- A product and operational activity-based inventory database has been developed for the GIS application.
- Twenty years of timber have been identified and mapped, with detailed product information gathered for each stand.
- The 20 to 40 year timber supply has been identified and mapped based on a combination of local knowledge of stands and existing inventory information of stand age and past treatments.
- Silvicultural plans have been added to the inventory database

VRI Inventory

The Coast Forest Region has not been successful in producing a new Vegetation Resource Inventory (VRI) for the Sunshine Coast Forest District as was planned for

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completion in 2008. When it is completed, the AAC of the SCCF will be compared to the new information and will be revised accordingly.

Access Management

The existing SCCF road network is a permanent asset, reducing long-term costs and environmental impacts.

Roads built within the SCCF for timber harvesting will provide access for timber and non-timber resource uses. Each proposed road development must consider the influences it may have on the other values in the development area.

Access management will be an ongoing consideration and the protection of water quality and access structures is a requirement under FRPA. Planning this protection will include the following:

- Main haul roads will generally be left open after harvesting use, although they may be seasonally deactivated.
- Cross ditches will remain passable only to high-clearance 4x4 vehicles.
- Culverts may be removed and replaced by rock fill “Squamish” culverts.
- Roads may be closed during harvesting operations for the security or fire hazard conditions.
- Roads may be closed if garbage dumping or vandalism becomes a problem.
- Temporary roads may be de-built into trails and planted.
- Road use for non-timber resource access will be considered.
- Roads will also be retained for fire suppression access.
- Recreational access in high use areas will be considered in the planning process.

Currently, the roads are publicly owned and managed by the Ministry of Forests and Range. Some are still the responsibility of the previous licensees and some are private. Road use agreements must be signed with private road owners prior to the SCCF using the roads for timber hauling.

While the responsibility of a road may lie with another company or the Ministry, the SCCF will provide information regarding required maintenance for safety and environmental protection at any time. Such information can be directed to the Ministry of Forests and Range through the SCCF.

Forestry Road Right of Ways

The right of ways for logging roads will be as narrow as they can practically be for safe operation. Clearing width will depend on the following factors:

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- Worker safety
- The type of operation being undertaken
- Location of ballast pits, landings, turnouts, and rock quarries
- Size of the equipment being used
- Soil conditions and materials available
- Slope
- Visual sensitivity
- Tree lengths being handled
- Visibility for traffic

Silvicultural Treatments

Silvicultural treatments are intensive stand-tending activities aimed at directing the growth of a stand to develop the desired size for a product or value. The following silvicultural treatments or practices may be undertaken within the SCCF tenure area:

Spacing

Spacing is the reduction of the number of trees growing on a site to provide final crop trees adequate space to grow as desired. These stands are typically up to twenty years of age. Very often more trees regenerate on a site than the site can support to maturity. If left unmanaged, the trees compete for light, nutrients, and water, leaving all trees smaller and suppressed. Spacing accelerates the hydrological recovery of stands and leaves individual trees with adequate nutrients, moisture, and sunlight for healthy growth.

During spacing, trees are manually cut down with a chainsaw and left on-site to decompose back into the soil. Thick spacing slash will be cleared off high use trails. Trees are chosen as crop trees according to a stand-tending prescription that lists the priority of species for crop trees. Trees of smaller size, close spacing, and poor physical form are thinned out. Thinning reduces inter-tree competition for light, nutrients, and moisture, and concentrates the productivity of the site on the growth of a smaller number of trees, producing larger, higher-quality timber.

Fertilization

Fertilization is used to increase the productivity of a site when the lack of nutrients is the limiting factor in the good growth of a stand. Nitrogen, in the form of aerially applied urea prills (round pellets resembling tapioca) is the most common forestry fertilization used on the BC Coast. Fertilization can be effectively used to increase the rate of growth on a site to reduce the time that a stand may be ready for harvesting.

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Fertilization will not be undertaken within the Gray and Chapman Creek Community Watersheds.

Brushing

Brushing is the removal of non-crop tree vegetation that is hindering the growth of the crop trees on a site. Brushing is usually undertaken using a chainsaw, circular brush saw, or Sandvik (similar to a machete). Herbicides will not be used for brushing within the SCCF unless a serious forest health incident compels that use.

Stand Rehabilitation

Stand rehabilitation is the treatment of a stand of trees that has not developed to the desired values that the site is capable of producing. Many such stands exist within the SCCF tenure area from natural reforestation that resulted in mistletoe-infected hemlock and small damaged cedar stands. Many of these stands are now stagnated due to disease, are of poor form and very low commercial value, and are not contributing to the productivity of the tenure.

Stand rehabilitation involves removing diseased trees, undesirable species, or trees of poor form. This can be done individually or by clearing the site entirely and then planting to the appropriate stand species. If the trees are large enough, harvesting may produce some commercial value, although not enough to offset the costs of the treatment. Such sites can be planned to be treated at the same time as economically viable harvesting of adjacent stands.

Commercial Thinning

Commercial thinning is the selective harvesting of trees within a thirty to fifty year old stand to provide better growing conditions for the remaining trees to develop desired stand attributes. Typically, trees are removed to provide optimum spacing for the remaining trees by removing stems of smaller dimensions, poorly formed trees, undesired species, closely spaced trees, and trees that have grown to the size of such products as cedar house logs and utility poles.

Pesticide Use

Pesticides will not be used for silvicultural purposes within the SCCF. Pesticides will only be considered as an option for treatment of forest health issues (insects or disease).

Site Preparation

Site preparation is used to prepare an area for planting that may have soil compaction from machines or deep accumulations of slash that cannot be planted. Most site preparation will be undertaken with an excavator, piling brush and scooping up soil to loosen it. This is most often completed as the final phase of harvesting.

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Slash Burning

Broadcast burning of harvested areas will not be undertaken unless required because of heavy slash loading that may result in a high fire hazard. Plantable spots for regeneration will be produced by machine or at time of planting.

Slash piles will be burnt for fire hazard reduction purposes and to ensure plantability to achieve stocking standards. Some piles may be left to decompose naturally within blocks if they are not considered to be a fire risk.

Ungulate Browse Protection

The SCCF tenure area hosts a large population of deer and elk, both of which find coniferous seedlings to be delicious. In order to prevent ungulate browsing, two popular methods are used locally: protective plastic panel-board cone or mesh tubing covers, or the application of “Plantskydd”-type repellents. The plastic covers are effective, but they are expensive and unsightly, and produce large amounts of plastic waste. Plantskydd repellent is a pork-blood-derived product that is sprayed onto the conifer foliage. It smells of blood, theoretically alarming the ungulates that predators may be dining in the area, and keeping them away from the plantation. It may be used on all seedlings or it may be effective if only used on the periphery of a plantation where browsing is concentrated.

Long-Range Planning

Adaptive Management

Adaptive management ensures that the SCCF is managed in a manner consistent with the community’s values. It is an integral part of forest management activities, and is undertaken by:

- Conducting post-harvesting field tours of harvesting to assess how the harvesting plan met the intentions of the planners in consideration of public input.
- Developing an understanding of how pre-harvesting plans affect operations and actual post harvesting site conditions and appearances to facilitate more accurate planning for all in the future.
- Assessing effectiveness of windthrow management techniques. Whenever trees are retained within a block they are susceptible to windthrow. Sites where retained trees have blown over will be studied to improve retention strategies in the future.
- Keeping in touch with changing values. All values, both social and economic, change over time. Constant public involvement and solicitation of public input is essential to ensure that forest resource management meets current and expected future needs.

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Firewood Availability

Firewood is an important resource for many coast residents, and access to firewood within the SCCF area is provided by our contractors piling firewood at roadside as part of the harvesting process. Firewood cutting opportunities will arise following harvesting and some silvicultural treatments.

Making firewood available helps to prevent illegal firewood cutting. Many trees are illegally cut down each year for firewood, often reducing a tree that is worth \$1000.00 to our local economy to \$150.00 worth of firewood for one individual.

Firewood-suitable pieces of wood will be separated from other slash piled at the side of a landing to allow people easy access to it.