Quatam Landscape Unit Plan

For Old Growth Management Areas

Ministry of Forests, Lands and Natural Resource Operations

South Coast Region

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Executive Summary

The Quatam Landscape Unit Landscape Unit is situated on the northern side of Pryce Channel and eastern side of Toba Inlet and is located on the Southern Mainland Coast. The Landscape Unit covers a total of 39,484 hectares (ha) and is within into two ecosections[1]. The majority of the coastal portion of the Landscape Unit is within the Outer Fjordland Ecosection. The remaining portion of the LU is within the Central Pacific Ranges Ecosection. Both ecosections are within the Pacific Ranges Ecoregion (Demarchi 1996). The Landscape Unit includes the Coastal Western Hemlock (CWH) and Mountain Hemlock (MH) Biologeoclimatic Ecosystem Classification (BEC) zones and natural disturbance types 1 and 2 (NDT1 and NDT2)[2]. The Quatam Landscape Unit has been assigned an Intermediate Biodiversity Emphasis option (BEO). Old seral forest representation targets are based on a percentage of productive forest by BEC unit. Old seral representation targets have been achieved through the spatial delineation of Old Growth Management Areas (OGMA) that are a combination of old forest and recruitment forest.

The old seral forest representation target for the CWH dm is 787 ha and 800 ha have been delineated in OGMAs.

The old seral forest representation target for CWH vm1 is 658 ha and 667 ha have delineated in OGMAs.

The old seral forest representation target for CWH vm2 is 646 ha and 656 ha have been delineated in OGMAs.

The old seral forest representation target for the MH mm1 is 783ha and 839 ha have been delineated in OGMAs.

The amount of old forest retained is based on a percentage of the amount of forested area existing in a specified BEC variant in a Landscape Unit.

To mitigate potential negative impacts on the future timber supply, areas with potential future harvest opportunity were identified. Ungulate Winter Ranges (UWR) for mountain goats were established for the Sunshine Coast Timber Supply Area in 2012. An effort was made to reduce the impact on the future timber supply by collocating OGMAs with these UWR areas were suitable forest exists. Areas identified as Class 1, 2 or 3 marbled murrelet habitat, both in the THLB and in the non-contributing (NC) were also given high priority for inclusion as OGMAs.

[1] Demarchi, D. 1996. An introduction to the ecoregions of British Columbia. Wildlife Branch, Ministry of Environment, Lands and Parks, Victoria. Ministry of Sustainable Resource Management. Update March 2004. British Columbia; Ecoregion Ecosystem Classification Units, Ver. 2.01.

[2] NDT1 encompasses those ecosystems with rare stand-initiating events. NDT2 includes ecosystems with infrequent stand initiating events. NDT5 is Alpine Tundra or other parkland ecosystems that are not considered forested. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

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1.0 Introduction

Landscape Unit (LU) plans are to provide direction on biodiversity particular to old forest retention at both the landscape and stand levels. Biodiversity is defined as: *the diversity of plants, animals and other living organisms in all their forms and levels of organisation, and includes the diversity of genes, species and ecosystems as well as the evolutionary and functional processes that link them*[3].

Planning for Old Growth Management Areas (OGMA) is recognized as a high priority for the province. Landscape Unit planning is an important component of the *Forest Range Practices Act* (FRPA) that provides the legal framework for legal establishment of objectives to address landscape and stand level biodiversity values. Implementation of this initiative is intended to help maintain certain biodiversity values. Managing for biodiversity through retention of old growth forests is considered important not only for wildlife, but also provides important benefits including the protection of water quality, soils, and ecosystem processes. Although not all elements of biodiversity can be, or should be managed on every hectare, a broad geographic distribution of old growth ecosystems is necessary to help sustain the genetic and functional diversity of native species across their historic ranges

The Quatam Landscape Unit has been assigned a Biodiversity Emphasis Option (BEO) rating of intermediate. This report describes the biodiversity conservation management strategy for the Quatam Landscape Unit and associated OGMA objectives consistent with priority biodiversity as outlined in the Landscape Unit Planning Guide.

Reference material on government policy, planning processes and biodiversity concepts associated with Landscape unit planning include:

Ministry of Sustainable Resource Management, Coast Region, Lower Mainland: Landscape Unit Planning Standards, March 2004

1995 Biodiversity Guidebook
http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htm

1999 Landscape Unit Planning Guide
http://ilmbwww.gov.bc.ca/lup/srmp/background/lup_landscape.html

Sustainable Resource Management Planning Framework: A Landscape-level Strategy for Resource Development
http://ilmbwww.gov.bc.ca/lup/srmp/doc/SRMPl-May1-Final-Web1.pdf

1999 Vancouver Forest Region Landscape Unit Planning Strategy, Vancouver Forest Region Landscape Unit Planning Document, Nanaimo, BC

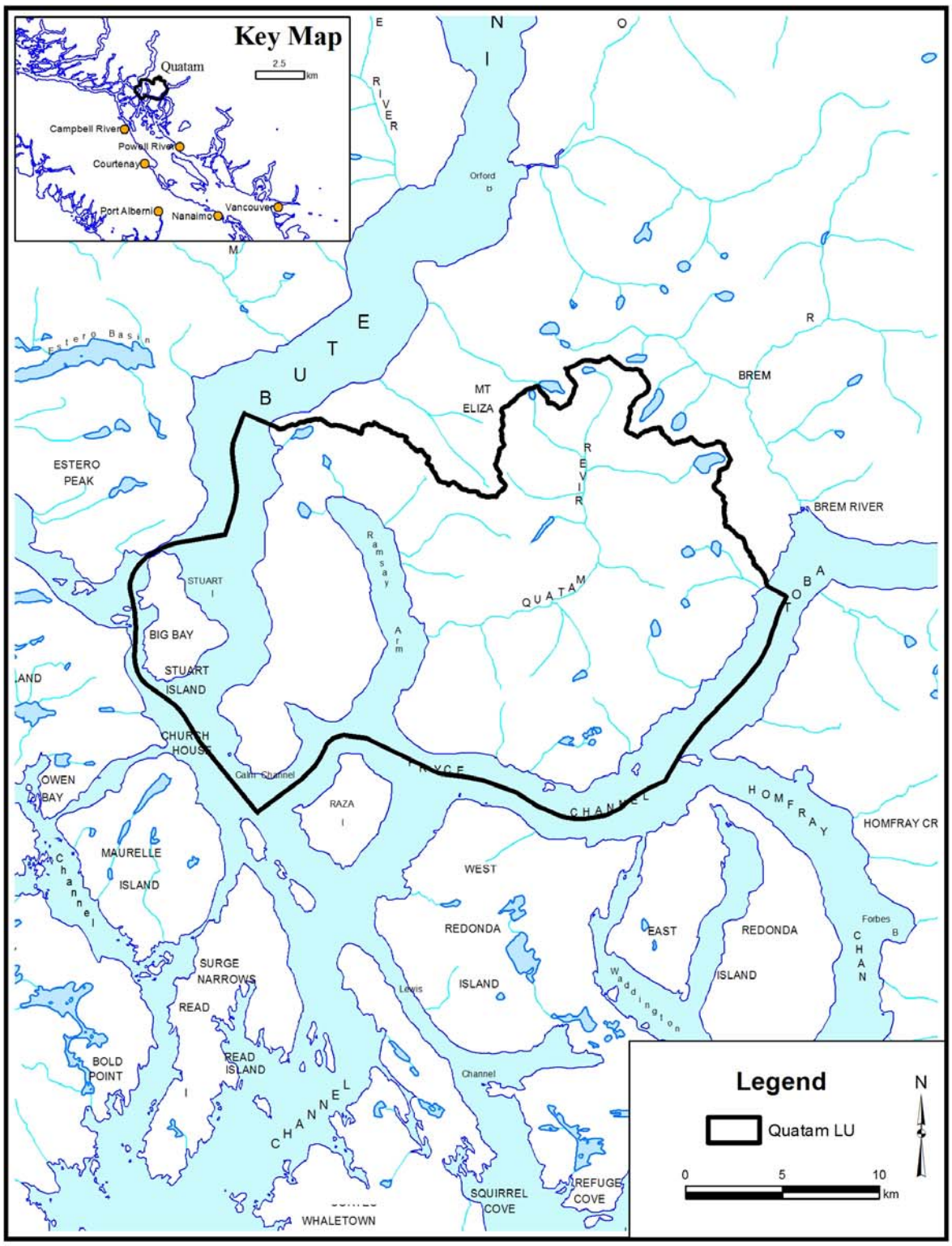
[3] from BC Ministry of Forests and BC Environment. 1995. Biodiversity Guidebook.

2.0 Quatam Landscape Unit Description

The Quatam Landscape Unit is situated on the northern side of Pryce Channel and eastern side of Toba Inlet (see Figure 1). The Landscape Unit covers a total area of 39,484 ha and includes the Quatam River watershed and several smaller stream systems. The Landscape Unit is characterized by rugged topography with steep mountainous terrain, deep river valleys and marine coastline along Toba Inlet, Bute Inlet, Pryce Channel and Ramsay Arm. A large portion of this Landscape Unit is undisturbed due to its steep, rugged terrain while the lower elevations are characterized by early mature stands, created by fire and harvesting history.

Of the total area, 22,943 ha (58%) are within the Crown Forested Land Base (CFLB) with 11,391 ha in the Timber Harvesting Land Base (THLB) and 11,551 ha in the Non-Contributing Land Base (NCLB). The remaining 16,541 ha (42%) of the Landscape Unit are classified as non-forested or non-Crown (rock, alpine tundra, water, private land, etc.) and have been excluded from OGMA target calculations. There are some instances where portions of OGMAs are within areas incorrectly classified as non-forested.

FIGURE 1. Location of the Quatam Landscape Unit



QUATAM LANDSCAPE UNIT

2.1 Biophysical

The Landscape Unit is separated into two ecosections. The majority of the coastal portion of the Landscape Unit is within the Outer Fjordland Ecosection. The remaining portion of the LU is within the Central Pacific Ranges Ecosection. Both ecosections are within the Pacific Ranges ecoregion[4]. Predominantly, its climate is maritime, with warm, dry summers and wet, mild winters. The majority of precipitation occurs in the fall and winter, which at higher elevations creates a snow pack that feeds the Landscape Unit stream network.

There are four Biogeoclimatic (BEC) subzones or variants, which fall within two natural disturbance types (NDTs)[5]. The Coastal Western Hemlock Zone – submontane very wet maritime variant (CWH vm1) and montane very wet maritime variant (CWH vm2) as well as the Mountain Hemlock Zone – windward moist maritime variant (MH mm1) fall within NDT 1. The Coastal Western Hemlock Mountain Hemlock zones – dry maritime subzone (CWH dm) lies in NDT 2.

In the lower elevation variants, within NDT1 and 2, the Quatam Landscape Unit has sustained substantial levels of disturbance. Forested stands on lower elevation productive sites (typically on slopes with low to moderate gradient) have been disturbed by forest fires and past timber harvesting. The relatively low levels of age class 9 old seral forest (specifically age class 9) remaining within these BEC variants reflects this disturbance history. A significant portion, 39%, of the forest within the Landscape Unit is comprised of stands that are between 40 and 100 years old.

The Quatam Landscape Unit has several complex ecosystems including wetlands, numerous avalanche tracks providing herbaceous forage, and natural meadows. Seasonal back-channels of the Quatam River provide salmonid rearing habitat when inundated with water. River dynamics change seasonally and annually, and extensive erosion of riverside areas can occur subsequent to annual freshets.

[4] Demarchi, D. 1996. An introduction to the ecoregions of British Columbia. Wildlife Branch, Ministry of Environment, Lands and Parks, Victoria. Ministry of Sustainable Resource Management. Update March 2004. British Columbia; Ecoregion Ecosystem Classification Units, Ver. 2.01.

[5] NDT1 encompasses those ecosystems with rare stand-initiating events. NDT2 includes ecosystems with infrequent stand initiating events. NDT5 is Alpine Tundra or other parkland ecosystems that are not considered forested. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

2.2 Summary of Land Status

Land status within the Quatam Landscape Unit is summarised in Table 1. There are 562 ha of private land and 44 ha of Indian Reserve within the Quatam Landscape Unit which has been excluded from the OGMA selection process.

TABLE 1. Land Status of the Quatam Landscape Unit

Code	Ownership Class	Total Area (ha)	Total of LU (%)	Crown Forested Land Base (ha)
40N	Private	562.3	1.5%	0
50N	Federal Reserve	0.7	0	0
52N	Indian Reserve	44.4	0.1%	0
62C	TSA or PSYU	38,634.2	97.8%	22,733.4
70	Timber Licenses	241.8	0.6%	209.3
Totals		39,483.5	100%	22,942.7

Table 1 includes area that is not reported on in subsequent tables because it does not contribute to OGMA targets. This excluded land base primarily consists of non-Crown, non-forest, and non-productive forest.

TABLE 2. Land Status using Crown Forest Land Base Classification within the Quatam Landscape Unit

BEC Unit	Total Area (ha)	Crown Forested Land Base (ha)	Timber Harvesting Landbase (Ha)	Non-Contributing Landbase (Ha)	Excluded Land Base
CMAunp	3,598.4	42.6	0	42.6	3,555.8
CWH dm	10,201.7	8,746.3	5,737.8	3,011.4	1,455.5
CWH vm 1	6,010.7	5,057.7	2,770.4	2,284.3	953.1
CWH vm 2	7,550.0	4,970.9	2,099.0	2,871.8	2,579.2
MH mm 1	12,112.2	4,122.3	784.	3,338.3	7,989.9
MH mm 2	10.4	3.0	0	3.0	7.5
TOTAL	**39,483.6**	**22,942.7**	**11,391.3**	**11,551.4**	**16,540.9**

note: differences in totals (≤1 ha) are due to rounding

Table 2 provides a summary based on biogeoclimatic ecosystem classification (BEC) variant. Old seral representation targets (which are the basis of OGMA's) described later in this report (Table 3) are applied by BEC variant to ensure the OGMA's are distributed across each BEC variant thereby ensuring adequate protection of each variant. Targets are determined and applied based on the crown forest area in each BEC variant.

Table 2 also describes land base classification used in Timber Supply Review 3. These classifications attempt to estimate the amount of forest area that is expected to contribute to timber supply – this is the area frequently referred to as the Timber Harvesting Land Base

(THLB). THLB information is used in Landscape Unit planning and OGMA delineation to minimize impacts on timber supply. It is important to note, however, that operationally the harvestable area does not correlate one-to-one with the THLB. While the THLB and the actual harvestable area would ideally be the same, the reality is that the inventories and assumptions used to identify the THLB area are not always accurate and/or correct at an operational scale. This problem is further compounded by the economics of timber harvesting which change often and can vary significantly from one year to the next. This makes the process of identifying Old Growth Management Areas that have the least impact on timber supply challenging. There is usually some harvesting of forest that did not contribute to timber supply forecast used in the last AAC determination. In the Quatam Landscape Unit approximately 25% of the harvest came from land base outside the THLB. As a result it is possible that OGMA delineation can have an impact on timber supply greater than that anticipated based on a "THLB impact" assessment.

CMAunp is included in Table 2 to account for all area in the Landscape Unit. Old growth targets are not set for this ecotype as it is predominantly non-forest and does not make up part of the productive forest land base. However, it is possible that small forested areas may be captured in the alpine, and where analysis determines that they are suitable for biodiversity conservation may be selected as OGMAs.

3.0 Key Resource Tenure Holders

The planning process included the identification of other key resource(s) tenure holdings including those administered by agencies such as the Ministry of Forests Lands and Natural Resource Operations (FLNR) and the Ministry of Energy and Mines.

3.1 Forest Tenure Holders

The majority of the Quatam Landscape Unit's Crown forested land base is subject to Forest Licenses held by International Forest Products Limited, A&A Trading Limited and Northwest Hardwoods.

The OGMAs described in this report were selected to minimize OGMA placement in areas identified as future harvest opportunities by major tenure holders operating within the Landscape Unit.

3.2 Mining Tenure Holders

There are mineral tenures within the Quatam Landscape Unit. Exploration and development activities are permitted in OGMAs. The preference is to proceed with exploration and development in a way that is sensitive to the old growth values of the OGMA; however, if exploration and development proceeds to the point of significantly impacting old growth values, then a suitable replacement OGMA will be identified.

4.0 Significant Resource Values

4.1 Wildlife and Fisheries

The Identified Wildlife Management Strategy (2004) includes a list of 85 wildlife species and subspecies that are considered to be at risk. These species require special management of critical habitat to maintain or restore populations or distributions. The primary mechanisms for protecting this habitat are through the designation of Wildlife Habitat Areas (WHA) or Ungulate Winter Ranges (UWR) established under the Government Actions Regulation. Not all 85 of these species have a range that is within the geographic area covered in this plan. Wildlife resources of primary management concern in the Southgate LU include marbled murrelet (*Brachyramphus marmoratus*), mountain goat (*Oreamnos americanus*), grizzly bear (*Ursus arctos*) and Northern Goshawk (*Accipiter gentilis laingi*)

Potential marbled murrelet nesting habitat was mapped within the Quatam Landscape Unit consistent with the *Standard Methods for Identifying Marbled Murrelet Habitat in British*

Columbia Using Air Photo Interpretation and Low-level Aerial Survey[6]. Stands suitable for marbled murrelet nesting habitat have attributes that also make them suitable for selection as OGMA's. They are typically old growth stands or mature stands that have old growth attributes. Overlap with wildlife habitat such as marbled murrelet is a coarse filter consideration in OGMA delineations and where appropriate it has occurred.

The Quatam Landscape Unit is also an important area for mountain goats and Columbia black-tailed deer (*Odocoileus hemionus columbianus*). Winter range habitat for mountain goats was legally established as Ungulate Winter Range (UWR) in 2012. Established UWRs containing stands suitable for old forest representation were considered for selection as OGMAs to maximise conservation benefits while minimising overall impacts.

The Quatam River system supports populations of resident cutthroat trout (*Oncorhynchus clarki clarki)*, rainbow trout (*Oncorhynchus mykiss)*, Dolly Varden char (*Salvelinus malma)* and both summer and winter steelhead (*Oncorhynchus mykiss)* trout runs. Anadromous salmon also spawn in the Quatam River, including coho (*Oncorhynchus kisutch*), chinook *(Oncorhynchus tshawytscha)*, pink *(Oncorhynchus gorbuscha)* and chum *(Oncorhynchus keta)* salmon. Current regulations applicable to riparian areas under the Forest Planning and Practices Regulation (FPPR) along with Forest Stewardship Plan (FSP) riparian results and strategies will manage for the effectiveness and function of the riparian values associated with these and other riparian areas within the Landscape Unit. OGMAs have been delineated in or adjacent to riparian areas where suitable forest stand structure exists.

4.2 Timber Resources

The THLB in the Quatam Landscape Unit is estimated at 11,391 ha. Removals from the productive forest land base include inoperable terrain, avalanche tracks, riparian reductions and Wildlife Habitat Areas (WHA). Despite the history of timber harvesting and fire disturbance, harvesting opportunities still exist and are complemented as second growth timber harvesting becomes more prevalent.

Tree species in the Quatam Landscape Unit include Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), lodgepole pine (*Pinus contorta*), amabilis fir (A*bies amabilis*), subalpine fir (*Abies lasiocarpa*), sitka spruce (*Picea sitchensis*), yellow-cedar (*Chamaecyparis nootkatensis*), mountain hemlock (*Tsuga mertensiana*) and deciduous species [such as bigleaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*)].

[6] Burger, A.E. 2003. Standard methods for identifying and ranking nesting habitat of Marbled Murrelets in British Columbia using air photo interpretation and low-level aerial surveys. Ministry of Water, Land and Air Protection Biodiversity Branch, Victoria B.C.

4.3 Water Quality

The Harbott Community Watershed (CWS) is the only designated CWS within the Quatam Landscape Unit. It is 47 hectares and is located on the southern end of Stuart Island. A portion of OGMA # 89 is located within this community watershed.

4.4 Recreation

Recreation opportunities within the Quatam Landscape Unit are limited by the remote location; however because its close proximity to Desolation Sound, it is a popular destination for boaters. Recreation opportunities include, but are not limited to rock-climbing, mountaineering, angling, hunting, kayaking, sailing and wildlife viewing.

4.5 Mineral Resource Values

Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are valuable to the province, but are difficult to characterize. Exploration and development activities related to mineral and gas extraction are permitted in OGMAs and therefore establishment of OGMAs will not impact the status of these permits or tenures.

5.0 Existing Higher Level Plans

Landscape Unit plan objectives must be consistent with direction in established higher level plans applicable to the plan area. There currently is no designated higher level plan for the Sunshine Coast Forest District that pertains to the Quatam Landscape Unit.

6.0 First Nations

The Quatam Landscape Unit is located within the traditional territory of the Homalco and Klahoose First Nations and the consultation area of the Nanwakolas Council[7]. These First Nations have been consulted with regarding this Landscape Unit Plan and associated Order and OGMAs.

Establishment of OGMAs will not affect First Nations Aboriginal rights and title, or affect traditional cultural activities.

There are two Indian Reserves in the Landscape Unit; one at the mouth of the Quatam River and one at Church House.

[7] The Nanwakolas Council includes the Kwiakah, , We Wai Kai and Wei Wai Kum First Nations.

7.0 OGMA Methodologies

7.1 Selection of OGMAs

The Landscape Unit Planning Guide (LUPG), dated March 1999 provides direction for selecting suitable OGMA candidate stands which maximizes their value to biodiversity conservation. Ecological suitability, managing Identified Wildlife species, ungulate winter range and ecosystem representation are priority selection criteria. An important part of the OGMA selection process, is to ensure that separate planning processes complement each other.

In addition to including areas with specific habitat requirements, other factors, such as patch size, distribution and connectivity were considered during OGMA delineation. Due to the fragmented nature of the Quatam landscape at higher elevations, opportunities to recruit larger patches to provide for forest interior conditions were favoured over smaller patches. Specific efforts were made to ensure OGMAs were distributed throughout the Landscape Unit.

Recruitment:
In order to provide long term temporal and spatial distribution of OGMAs across the landscape recruitment areas were selected. For example, there are no old forest stands on Stuart Island; therefore suitable recruitment stands were selected as OGMA.

In the lower elevation biogeoclimatic zones, such as CWH dm and CWH vm1, the past disturbance history required a recruitment strategy to be developed. The majority of the remaining old growth exists on the steep, dry slopes along the marine coastline. In the low, flat valley bottom habitat types important to many wildlife species, little old growth is available. To mitigate this situation, a recruitment strategy was developed to incorporate this biologically valuable habitat into OGMA. For example, OGMAs # 75 and 80 are located along the Quatam River estuary which captures an ecosystem that offers a great deal of biological diversity but that is rarely retained because of easy access and land ownership status. These two OGMAs also incorporate portions of WHA # 2-232 and 2-233 that have been established for grizzly bear. This recruitment strategy enhances the diversity by incorporating younger stands that display old growth characteristics but also includes high value bear and marbled murrelet nesting habitat that could be otherwise harvested.

Although connectivity is not a primary objective in biodiversity planning (see *Landscape Unit Planning Guide*), it was considered when delineating OGMAs in the Quatam. Connectivity opportunities from lower to higher elevations may only exist in a few areas due to the contiguous lower elevation disturbance history. Also, the inaccessible and higher elevation areas are largely old growth. With the inclusion of the younger aged stands in the constrained forest, such as within riparian reserve zones, the connectivity between lower and higher elevation OGMAs will be maintained and improve over time.

An analysis was completed to identify stands that were greater than 200 years old. These stands although not characterized as old growth from an inventory perspective, tend to have

attributes that are consistent with old growth. These attributes may be exhibited as veterans, secondary layers or as smaller subunits that are a mosaic of different age classes (B. Smart, 2008). Based on the high biodiversity value of these stands, they were considered equal conservation value to old forest stands for the purposes of OGMA selection. Where OGMAs include stands greater than 200 years old, this information is provided as part of the rational in Appendix 1.

Wildlife:
Certain wildlife species are particularly susceptible to mortality in winter and connecting or aggregating OGMAs may help facilitate movement.

Ungulate Winter Ranges (UWRs) for mountain goat were established for the Sunshine Coast in 2012. Although a large portion of these areas are currently classified as part of the THLB, once UWRs are established, these areas will no longer be available for timber harvesting. In order to reduce the impact on the future timber supply, stands suitable for selection as old forest representation within proposed UWR areas were delineated as OGMAs.

Areas identified as Class 1, 2 or 3 marbled murrelet habitat, both in the THLB and in the non-contributing portion of the land base were also given high priority for inclusion as OGMAs. One WHA has been designated for marbled murrelet in the Quatam Landscape Unit (WHA # 2-021). OGMAs 32 and 34 overlap with the portion of this WHA that is suitable for biodiversity conservation.

The Quatam Landscape Unit supports a population of grizzly bears. Six WHAs (WHA# 2-232, 2-233, 2-234, 2-235, 2-236 and 2-237)) have been designated for grizzly bear to provide high value foraging and security habitat. A portion of these WHAs set aside for grizzly bear is suitable for old forest representation and has been selected as OGMA to contribute to the old forest targets.

Efforts have been made to collocate OGMAs with WHAs and UWRs in order minimize the impact on timber supply.

OGMA 54 has been anchored around a goshawk nest that was identified in the field by Interfor staff on Stuart Island. This OGMA provides a unique opportunity to utilize younger stands of forest that provide a high conservation value to contribute to achieving the old growth targets.

Timber Supply Impacts:
To mitigate substantial effects on the future timber supply, timber that is viewed as operationally uneconomical for timber harvesting due to its high accessibility cost and low timber value located within the THLB was targeted for inclusion in OGMAs. OGMAs were selected, where ecologically suitable, to overlap with areas that are otherwise unavailable for timber harvesting such as within or adjacent to established WHAs, proposed ungulate winter range, or high value marbled murrelet habitat. This resulted in larger patches which then allows for greater opportunity to maintain connectivity between adjacent patches and provide movement corridors to allow wildlife dispersal and minimize the impacts to the timber supply.

By incorporating on the ground knowledge, old growth targets were easily achieved in the CWH vm2, and MH mm1. Most of these OGMAs were delineated to be contiguous with OGMAs in the adjacent lower elevation CWH vm1 variant. These OGMAs in these BEC variants significantly increases the biological value of this plan by increasing OGMA patch size, connectivity and distribution over the Landscape Unit.

7.2 Boundary Mapping

Forest cover polygons were found to be too inaccurate to be used for Landscape Unit planning purposes. Forest cover polygons, when overlaid with satellite images and TRIM data were seen to include large areas of non-forested land, and the forest polygon boundaries were not aligned properly. The misalignment was not due to a GIS projection or coordinate shift. Data associated with these forest cover polygons was, therefore, not spatially correct and will not represent the contents of the delineated OGMA polygons.

OGMA boundaries were delineated using satellite imagery, ortho imagery and TRIM-based mapping. OGMA boundaries were mapped to natural features (i.e. streams, slides, etc.) as well as edges of forest stands wherever possible to ensure they could be located on the ground. OGMAs were also delineated to include complete forest stands wherever possible to reduce operational uncertainty and increase ease of OGMA mapping.

7.3 Assessment and Review

OGMAs were selected in the Quatam Landscape Unit based on a review of stand attributes in an effort to maximize their value from a biodiversity standpoint while minimizing timber supply impact. Spatial distribution throughout the Landscape Unit was also a selection criterion. Satellite images, aerial photography and input from field staff with a great deal of local knowledge were used to designate OGMAs to verify the presence of desirable old seral characteristics. Structural attributes of the stand were used to determine its sufficiency as OGMA rather than forest cover information. Specific rationale for the selection of each OGMA is in Appendix 1.

7.4 Amendment Policy

A FLNR Coast Region policy provides direction to forest tenure agreement holders when applying for amendments to OGMA legal objectives. Amendment procedures cover such things as minor or major amendments for resource development (e.g. roads, bridges, boundary issues, rock quarries and gravel pits), or relocation of OGMAs. The policy also discusses acceptable management activities and review procedures. The amendment policy forms an integral part of this plan.

In general, most OGMA boundaries are not 'permanently fixed', they can be moved over time so long as biodiversity objectives are maintained. Replacement OGMAs are required to be equivalent or better than the original. As stand succession proceeds, some currently unsuitable forests may become good OGMA candidates and as such periodic assessment or revision to the OGMAs may occur.

8.0 OGMA Mitigation of Timber Supply Impacts

During delineation of OGMAs it was a priority to avoid short and long-term impacts on timber supply. OGMAs were delineated first in the forest least likely to be harvested. Where this component of the forest did not satisfy the requirements to address suitable representation of old forest, portions of the harvestable land base which includes THLB were assessed and included as OGMAs. Generally, more harvestable land base was required in the lower elevation variants due to greater disturbance history. In some circumstances younger stands were selected over older ones where the conservation value was assessed and determined to be equal or greater than that of the older stands. This recruitment strategy was instrumental in mitigating the future impacts to the timber supply while meeting the biodiversity objectives in the Quatam Landscape Unit.

To mitigate loss or isolation of future timber supply access corridors were left out of OGMAs. Old forest stands that were approved for harvesting on Forest Development Plans (FDP) were excluded from candidate OGMAs following direction outlined in the *Landscape Unit Planning Guide*.

9.0 OGMA Analysis

The Quatam Landscape Unit was ranked as an Intermediate biodiversity emphasis through the biodiversity value ranking process completed[8]. This intermediate designation along with the BEC variant determines the percentage of the Crown forest land base that will be designated as OGMA.

A rationale for OGMA designation for the Quatam Landscape Unit is provided in Appendix 1. The location of proposed OGMAs is identified in the maps that are a part of this plan.

Table 3 outlines the total amount of OGMA required in each variant and from which biogeoclimatic zone. The OGMAs delineated as part of the Quatam Landscape Unit Plan meet the old growth targets consistent with those targets specified in the Landscape Unit Planning Guide. The table illustrates that only 1.9 % of the OGMAs delineated in the plan are located in the THLB. Part of the reason for this apparent low impact is that Table 3 is derived from the most recent Timber Supply Review (TSR3) data which excluded the draft OGMAs from the THLB. The OGMAs delineated in this LUP are very similar to the draft OGMAs used in TSR3.

TABLE 3. Old Growth Management Areas: Targets and Established

				OGMA in THLB		OGMA in NCLB & Excluded	
BEC	**Old Growth Target (%)**	**Old Growth Target (ha)**	**Established OGMA (ha)**	**(ha)**	**(%)**	**(ha)**	**(%)**
CWH dm	9%	787.4	799.7	47.5	5.9	752.2	94.1
CWH vm 1	13%	657.5	666.9	7.2	1.1	659.7	98.9
CWH vm 2	13%	646.2	655.9	2.7	0.4	653.2	99.6%
MH mm 1	19%	783.2	838.5	0.1	0	838.4	100
MH mm 2	19%	0.6	10.4	-	0	10.5	100
Total		2,874.9	2,971.4	57.5	1.9%	2914.0	98.1

Note: Differences in totals (1 ha) are due to rounding.

[8] see the *Vancouver Forest Region Landscape Unit Planning Strategy*, 1999

APPENDIX 1. OGMA Summary and Rationale

OGMA Number	Total Area (ha)	Comments
1	18.6	Old forest representation, MAMU 4
2	19.9	Old forest representation
3	2.7	Old forest representation
4	10.0	Old forest representation, MAMU 4
5	2.1	Old forest representation, age 249
6	9.7	Age class 8 greater than 200 years old, MAMU 4, recruitment
7	2.9	Old forest representation, MAMU 4
8	16.4	Old forest representation, MAMU 3 and 4
9	15.7	Old forest representation, MAMU 4
10	2.5	Old forest representation, proposed MAMU WHA, MAMU 5
11	16.1	Age class 8 greater than 200 years old, MAMU 4
12	11.8	Old forest representation
13	80.3	Old forest representation, proposed MAMU WHA, MAMU 2 and 4, WHA 2-236, some excluded area is identified as MAMU habitat, excluded area checked and is forested & considered suitable
14	4.8	Old forest representation, proposed MAMU WHA, MAMU 1, WHA 2-236
15	4.0	Old forest representation, proposed MAMU WHA, excluded areas checked and are forested
16	16.2	Old forest representation, proposed MAMU WHA, MAMU 1, 2, and 4
17	8.1	Old forest representation, proposed MAMU WHA, MAMU 5, excluded areas checked and are forested & considered suitable
18	25.1	Old forest representation, proposed MAMU WHA, MAMU 1, 2, and 4, WHA 2-236, excluded area checked and is forested & considered suitable
19	15.0	Old forest representation, proposed MAMU WHA, MAMU 2 and 4, WHA 2-237, excluded areas area checked and is forested & considered suitable
20	4.9	Old forest representation, proposed MAMU WHA, MAMU 2 and 4, WHA 2-237, excluded area checked and is MAMU2 and is forested & considered suitable
21	19.6	Old forest representation, proposed MAMU WHA, MAMU 3 and 4
22	13.4	Old forest representation, proposed MAMU WHA, MAMU 2 and 4, WHA 2-237, excluded area checked and is forested & considered suitable
23	7.0	Old forest representation, proposed MAMU WHA, MAMU 2 and 5, WHA 2-237
24	33.5	Old forest representation, MAMU 4, excluded area checked and is forested & considered suitable
25	25.6	Old forest representation, proposed MAMU WHA, MAMU 1, 2, and 3, WHA 2-236, excluded areas checked and are forested & considered suitable
26	7.5	Old forest representation, proposed MAMU WHA, MAMU 2, WHA 2-237, excluded areas checked and are forested & considered suitable
27	5.5	Old forest representation, MAMU 3
28	18.8	Old forest representation, MAMU 4
29	24.0	Old forest representation, MAMU 4, excluded area checked and is forested & considered suitable
30	8.8	Old forest representation, MAMU 4, excluded area checked and is forested & considered suitable
31	55.7	Old forest representation, MAMU 2, 3, and 4, Draft UWR, Interior Forest Condition (IFC), excluded area is in habitat identified as MAMU habitat & has been confirmed as forested & considered suitable
32	319.8	Old forest representation, MAMU 2, 3, and 4, WHA 2-021, Age class 8 greater than 200 years old, IFC, excluded area checked and is in MAMU WHA, & considered suitable
33	7.7	Old forest representation, MAMU 4
34	8.9	Old forest representation, WHA 2-021
35	19.4	Old forest representation, proposed MAMU WHA, MAMU 1, 2, and 3, excluded areas checked: some in MAMU 1 & 2, remainder is forested & considered suitable
36	15.3	Old forest representation, proposed MAMU WHA, excluded area checked and is forested & considered suitable
37	25.3	Old forest representation, proposed MAMU WHA, MAMU 3 and 4, excluded area is forested & considered suitable
38	4.0	Old forest representation

OGMA Number	Total Area (ha)	Comments
39	4.0	Old forest representation, proposed MAMU WHA, excluded area is MAMU 3 and is forested
40	5.4	Old forest representation
41	13.9	Old forest representation, proposed MAMU WHA, MAMU 1 and 3, some excluded area is MAMU 1 & 3, remainder is forested and considered suitable
42	24.4	Old forest representation, MAMU 5, Draft UWR, excluded area checked and is forested, UWR & considered suitable
43	19.2	MAMU 3 and 4, recruitment, excluded area is MAMU3 and is forested & considered suitable
44	22.6	Old forest representation, MAMU 4, excluded area checked and is forested & considered suitable
45	22.5	Old forest representation, MAMU 4, excluded area checked and is forested & considered suitable
46	6.9	Old forest representation, excluded area is checked and is forested
47	11.9	Old forest representation, MAMU 4 and 5, excluded area is forested
48	29.1	Old forest representation, MAMU 4
49	63.0	Old forest representation, MAMU 3 and 4, Draft UWR, excluded area is forested & considered suitable
50	9.9	MAMU 3 and 4, recruitment, excluded area is MAMU and UWR habitat, forested and considered suitable
51	4.4	Old forest representation, recruitment
53	85.4	Old forest representation, Age class 8 greater than 200 years old, MAMU 4, Draft UWR, IFC
54	73.8	Old forest representation, Age class 8 greater than 200 years old, MAMU 3 and 4, Draft UWR, goshawk nest, excluded area is forested & considered suitable
55	28.8	Old forest representation, MAMU 4, excluded area checked and is forested & considered suitable
56	7.1	Old forest representation, lakeshore, recruitment
57	70.7	Old forest representation, proposed MAMU WHA, MAMU 2, 3, and 4, Draft UWR, excluded area checked and is forested & considered suitable
58	15.3	Lakeshore, recruitment
59	12.6	Old forest representation, Age class 8 greater than 200 years old, excluded area checked and is forested & considered suitable
60	5.8	Old forest representation, MAMU 3
61	6.9	Age class 8 greater than 200 years old, shoreline, recruitment, excluded area checked and is forested & considered suitable
62	8.5	Age class 8 greater than 200 years old, shoreline
63	4.3	MAMU 4, Draft UWR, recruitment
64	6.8	Old forest representation, MAMU 4
65	27.7	Age class 8 greater than 200 years old, Draft UWR
66	4.4	Old forest representation, MAMU 4 and 5, Draft UWR
67	46.2	Goshawk Nest, recruitment
68	30.9	Old forest representation, MAMU 3 and 4
69	60.4	Old forest representation, MAMU 2 and 4, Draft UWR, excluded area is forested & considered suitable
70	35.6	Old forest representation, Age class 8 greater than 200 years old, shoreline, excluded area checked and is forested & considered suitable.
71	13.0	Recruitment
72	135.2	Old forest representation, MAMU 4, shoreline, connectivity, IFC, excluded area checked and is forested & considered suitable
73	75.2	Old forest representation, proposed MAMU WHA, MAMU 2, 3, and 4, Draft UWR, excluded area checked and is MAMU habitat and is forested & considered suitable
74	22.6	WHA 2-233, riparian, recruitment
75	32.2	WHA 2-233, estuary, riparian, recruitment
76	11.8	Draft UWR, MAMU 4, recruitment
77	3.4	Old forest representation, MAMU 3
78	128.6	Old forest representation, proposed MAMU WHA, MAMU 2, 3, and 4, Draft UWR, Age class 8 greater than 200 years old, IFC, excluded areas checked and are MAMU habitat & confirmed to be forested & considered suitable
79	15.4	Old forest representation, excluded area checked and is forested & considered suitable
80	24.0	WHA 2-233, estuary, riparian, recruitment
81	4.8	Old forest representation, MAMU 4
82	68.9	Old forest representation, proposed MAMU WHA, MAMU 3 and 4, Draft UWR, Age class 8 greater than 200 years old

OGMA Number	Total Area (ha)	Comments
83	2.1	Old forest representation, MAMU 5, Draft UWR
84	23.3	Age class 8 greater than 200 years old, Draft UWR
85	5.1	Age class 8, Draft UWR
86	9.7	MAMU 4, recruitment, excluded area checked and is forested & considered suitable
87	3.5	Age class 8 greater than 200 years old
88	26.1	MAMU 4
89	28.0	Inside Harbott Watershed, recruitment
90	32.0	Recruitment
91	13.1	Age class 8, Draft UWR
92	29.8	Old forest representation, excluded area checked and is forested & considered suitable
93	66.8	Age class 8, Draft UWR
95	16.2	MAMU 4, partial age class 9, some recruitment
96	24.1	Old forest representation, MAMU 3, riparian, recruitment
97	21.8	Old forest representation
98	60.4	Old forest representation, Recruitment is age class 8, MAMU 4 & 5
100	14.3	Old forest representation, riparian
101	5.1	Old forest representation
102	20.8	Old forest representation, MAMU 4 and 5
103	36.1	Age class 8 greater than 200 years old, MAMU 4, shoreline
104	46.2	Partial age class 9, partial recruitment
105	6.2	Age class 8 greater than 200 years old, MAMU 4
106	27.6	Recruitment
107	44.1	Age class 8 greater than 200 years old, MAMU 4, old forest representation
108	14.9	Island, shoreline, recruitment
109	17.7	Island, shoreline, recruitment
110	11.4	Age class 8 greater than 200 years old
111	7.8	Old forest representation, excluded area checked and is forested & considered suitable
112	27.4	Old forest representation, MAMU 4
113	2.8	Old forest representation, proposed MAMU WHA, MAMU 4, WHA 2-237
114	17.2	Old forest representation, proposed MAMU WHA, MAMU 2, WHA 2-234
115	2.9	Proposed MAMU WHA, WHA 2-234, riparian, MAMU 2, recruitment
116	23.4	Old forest representation
117	3.3	Old forest representation, proposed MAMU WHA, Draft UWR, Draft MAMU WHA, excluded area checked and is forested & considered suitable
118	5.7	Old forest representation, MAMU 2 & 3
119	7.4	Old forest representation, UWR
121	20.8	Recruitment
122	14.2	Old forest representation, recruitment
123	21.9	Old forest representation, recruitment, riparian
Grand Total	**2971.4**	

APPENDIX 2. Public Consultation Summary

Advertising was placed in the following publications: BC Gazette (December 24, 2013), Campbell River Mirror (December 20, 2013), Powell River Peak (December 20, 2013), Sechelt Reporter (December 20, 2013). The public consultation period was set for December 20, 2013 to February 18, 2014. This period was extended until March 20, 2014 at the request of the Sunshine Coast Conservation Association. Copies of the Order, LU Plan and maps were made available on the internet as well as paper copies at the MFLNRO offices at Powell River and Campbell River. At the request of the Sunshine Coast Conservation Association, paper copies were also made available at the Provincial Parks office in Sechelt.

Date	Received From	Comment Summary	Reply
Jan. 16, 2014	Billy Griffith Egmont, BC	Support establishment of OGMAs.	Acknowledgement and thanks.
Feb. 17, 2014	Sunshine Coast Regional District	Recommendation to include overlays of areas designated for harvesting, a summary of OGMAs in Parks and "unharvestable" areas. Plan does not consider Grizzly Bear or Wolf Habitat.	Acknowledgement and thanks.
Feb. 18, 2014	Ken WU Ancient Forest Alliance	Support for expansion of OGMAs on the Sunshine Coast. Encourages establishment of OGMAs in lower elevations. As well as in yellow cedar stands such as Dakota Bowl (not part of these 5 LUs).	Minister's Response Letter: Acknowledgement and thanks. Explanation of OGMA Targets. Informing of recent establishment of 2 new OGMAs in the Dakota Bowl area.
Mar. 3, 2014	Dwight Yochim, RPF Truck Loggers Association	Working Forest already constrained. What is target for OGMAs? Is the OGMA coming from THLB or existing protected areas?	Explanation of the OGMA targets. Advised we have worked very closely with the licensees in order to meet the required targets without unduly reducing the timber supply. Advised OGMAs have been co-located in other constrained areas.
Mar. 20, 2014	Lannie Keller & Eve Flager Discovery Islands Ecosystem Advocacy	Extensive review comments largely on policy and procedures issues. A request to be advised if and when Draft plans will be revised.	Acknowledgement and thanks. Advised that revisions to Draft LUPs as a result of their comments not anticipated.
Mar. 20, 2014	Jason Herz Sunshine Coast Conservation Association	Extensive review comments largely on policy and procedures issues. Some Specific recommendations on Salmon LU.	Acknowledgement and thanks. Advised that revisions to Draft LUPs as a result of their comments not anticipated.