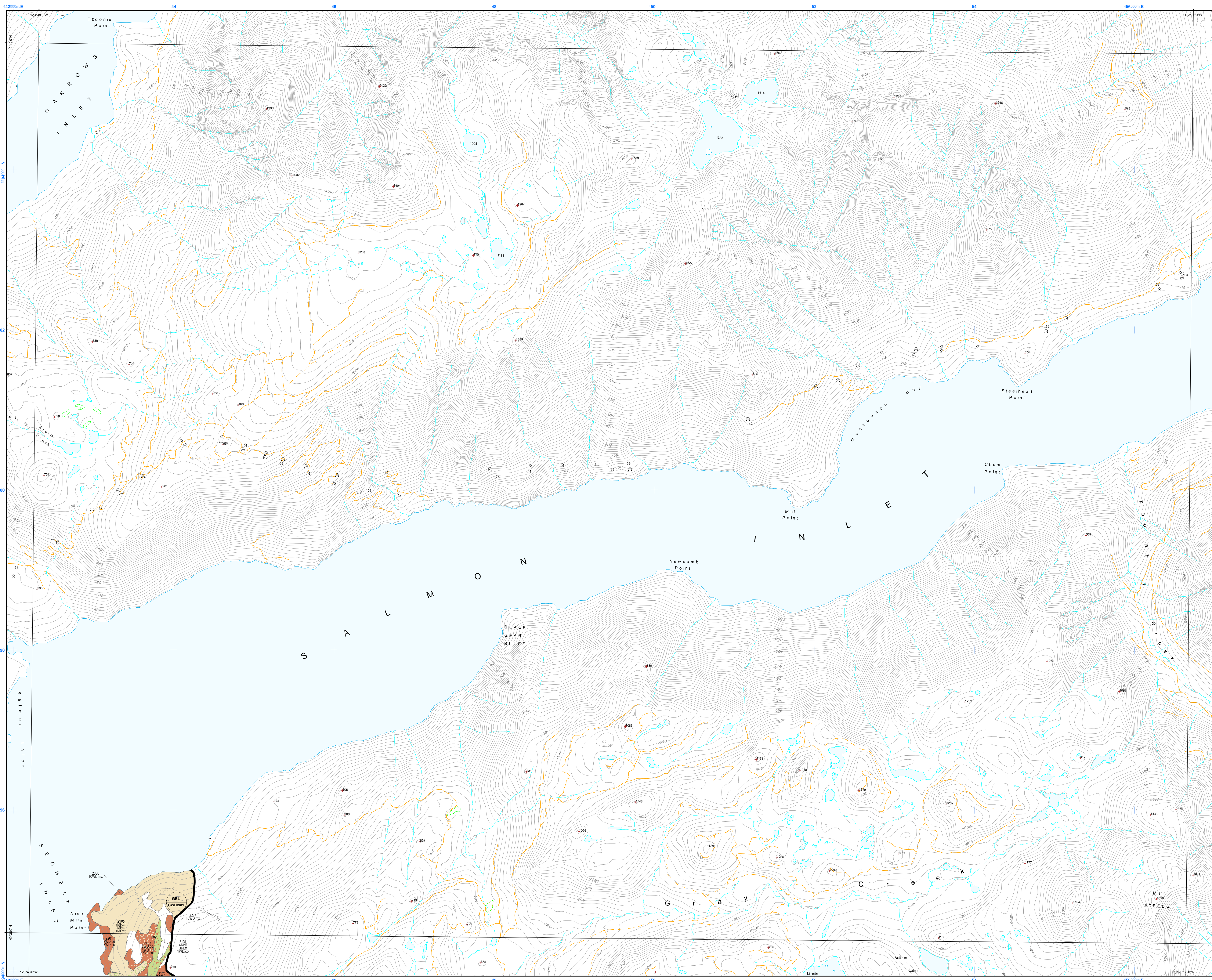




Sensitive Ecosystems Inventory of the Sunshine Coast and Adjacent Islands



Sensitive and Terrestrial Ecosystems Label

Structural Stages¹

Structural Stage	Subclass	Subclass Description
1	1a	1a.1 - 1a.2
2	2a	2a.1 - 2a.2
3	3a	3a.1 - 3a.2
4	4a	4a.1 - 4a.2
5	5a	5a.1 - 5a.2
6	6a	6a.1 - 6a.2

Terrestrial Ecosystem Map Codes and Site Unit Names

Code	Site Unit Name	Code	Site Unit Name
1a	1a.1	1a	1a.2
2a	2a.1	2a	2a.2
3a	3a.1	3a	3a.2
4a	4a.1	4a	4a.2
5a	5a.1	5a	5a.2
6a	6a.1	6a	6a.2

What is a Sensitive Ecosystem?

For the purpose of this study, an ecosystem is considered to be a portion of the landscape with relatively uniform dominant vegetation.

Sensitive ecosystems are those which are fragile and/or rare, or those ecosystems which are ecologically important because of the diversity of species they support.

Rationale

Ecologically significant lands and important wildlife habitats are fast disappearing throughout the lowlands surrounding the Strait of Georgia. Intense development pressures fuelled by population and economic growth have fragmented and degraded many terrestrial ecosystems. A high proportion of these ecosystems are now designated as "at risk". Sensitive ecosystems typically have high biological diversity and are a vital part of the landscape. They provide ecosystem services for a healthy economy and for social well-being. They regulate climate, clean water, generate and clean soils, recycle nutrients and pollinate our crops. To protect these areas, sensitive ecosystems must be located, identified and mapped. Along the Sunshine Coast the wave-beaten shorelines, coastal plains, rugged mountain slopes, fjords and estuaries contribute to high biodiversity values. Here one finds coastal temperate rainforests, dry shoreline woodlands, herbaceous woodlands and rocky coastal bluffs, wetlands and riparian ecosystems.

Methodology

The mapping methods are based on the Vancouver Island SEI project and the Resources Information Standards Committee (RISC) Standard for Terrestrial Ecosystem Mapping (TEM) in BC. Ecosystem categories include six Sensitive Ecosystem (SE) classes, two Important Ecosystem classes, and one Other Ecosystem class. The legend to the right of the map provides definitions. Ecosystem classes, subclasses, the corresponding Terrestrial Ecosystem site units and structural stages, and stream and drainage codes are included in TRIM. Field survey protocols followed Describing Terrestrial Ecosystems in the Field (RSC 1998) with the addition of a conservation evaluation form to document ecosystem condition and viability. Approximately 20% of the polygons were field checked.

Data Limitations

The SEI is a tool to alert decision makers to the existence of sensitive ecosystems, however when land-use changes are proposed detailed site-level assessments are necessary. For sites not field checked, the accuracy of the data depends heavily on the professional judgement of the mapper and the availability of source data. Because the area is changing rapidly, reference to the date of the information source is advised.

Aerial photographs

Aerial photographs were used from between 1994 and 1999, most are at 1:10,000 scale, some at 1:16,000 scale. Due to the mapping scale, minimum polygon size is usually 1/2 hectare. Minimum riparian polygon width is 20 metres regardless of the stream channel width. Enlargement of the data beyond the source scale may result in unacceptable distortion and faulty registration with other data sets.

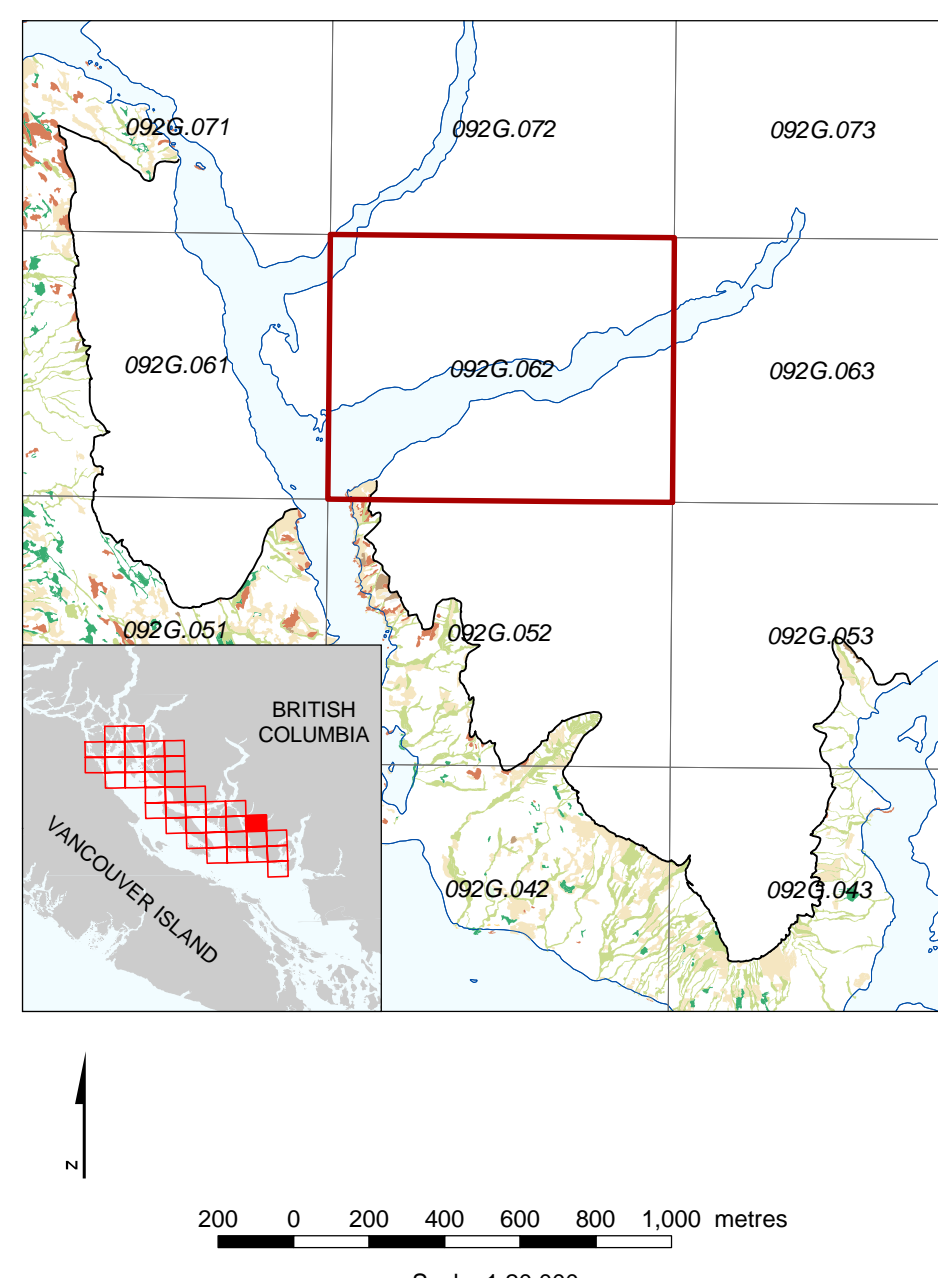
What can be done to protect sensitive ecosystems?

Direct and indirect impacts to these ecosystems can be avoided by:

- Retaining or creating vegetated buffers around sensitive ecosystems to isolate them from outside disturbance;
- Controlling land and water access to fragile ecosystems;
- Controlling invasive species;
- Allowing natural disturbances to occur;
- Maintaining water quality.

If development must occur, develop carefully!

Conduct an ecological inventory to identify the existing flora and fauna and to locate any threatened or endangered plant and animal species, plant communities, and habitat features needing protection.



Sensitive Ecosystems

Sensitive ecosystems are fragile and/or rare, or are ecologically important because of the diversity of species they support.

Old Forest (OF):
Conifer-dominated dry to moist forest types, structural stage 7 (see table), generally <250yrs.
Subclasses:
of (conifer dominated) - greater than 75% coniferous species

Woodland (WD):
Dry open forests, generally between 10 and 30% tree cover, can be conifer dominated or mixed conifer and shrubs. Because of open canopy, will include non-forested openings, often with shallow soils and bedrock outcroppings.
Subclasses:
wd (conifer dominated) - greater than 75% coniferous species
wm (mixed conifer and deciduous) - a minimum of 25% cover of either group is included in the total tree cover

Herbaceous (HB):
Non-forested ecosystems less than 10% tree cover, generally with shallow soils and often with bedrock outcroppings. Includes large openings with scattered shrubs, coastal heath, sometimes vegetated with grasses and herbs, sometimes low shrubs, and moss and lichen communities on rock outcrops.
Subclasses:
hb (herbaceous) - central concept of the category, non-forested, less than 10% tree cover, generally shallow soils, often with exposed bedrock, predominantly a mix of grasses and forbs, also lichens and mosses
ea (open herbaceous) - as hb but influenced by proximity to ocean, wind-swept shoreline and slopes > 20% vegetation, grasses and herbs, some rock outcrops, moss and lichen communities
va (vegetated shoreline) - low lying rocky shoreline, soil pockets in rock cracks and crevices; salt-tolerant vegetation, generally with < 20% vegetation cover
sp (sp) - fringe-like extension of beach, composed of sand or gravel deposited by longshore drifting, low to moderate cover of salt-tolerant grasses and forbs
da (dunes) - ridge or hill, or beach area created by wind-blown sand; may be more or less vegetated depending on depositional activity, beach dunes will have low cover of salt-tolerant grasses and herbs
sh (shrub component) - > 20% of total vegetation cover is shrub cover, with grasses and herbs

Riparian (RI):
Areas adjacent to water bodies (rivers, lakes, ocean, wetlands) which are influenced by factors such as erosion, sedimentation, flooding and/or subterranean irrigation due to proximity to the water body. Structural stages 1-7.
Subclasses:
rl (low bench floodplain) - flooded at least every other year for moderate periods of growing season; plant species adapted to extended flooding and abrasion, low or all shrubs most common
rm (medium bench floodplain) - flooded every 1-4 years for short periods (10-25 days); deciduous or mixed forest dominated by species tolerant of flooding and periodic sedimentation, trees occur on elevated microsites
rh (high bench floodplain) - only periodically and briefly inundated by high waters, but lengthy subsurface flow in the rooting zone; typically conifer-dominated floodplains of larger coastal rivers
rl (riparian) - narrow linear communities along open water bodies (rivers, lakes and ponds) where there is no floodplain, irregular flooding
gr (gully riparian) - watercourse is within a steep sided V-shaped gully
ri (river) - watercourse is large enough to represent >10% of the polygon

Wetland (WN):
Areas that are saturated or inundated with water for long enough periods of time to develop vegetation and biological activity adapted to wet environments. This may result from flooding, fluctuating water tables, tidal influences or poor drainage conditions.
Subclasses:
wg (bog) - nutrient poor wetland on organic soils (sphagnum peat), water source predominantly from precipitation; may be tree or shrub dominated
fw (fen) - nutrient medium wetland (sedge peat) where ground water inflow is the dominant water source, open water channels common, dominated by sedges, grasses and mosses
ms (marsh) - wetland with fluctuating water table, often with shallow surface water, usually organically enriched mineral soils, dominated by reeds, grasses and sedges
sw (swamp) - peat to very rich wetland on mineral soils or with an organic layer over mineral soil, with gently flowing or seasonally flooding water table; woody vegetation
sw (shallow water) - standing or flowing water less than 2 m deep, transition between deep water bodies and other wetland ecosystems (i.e. bogs, swamps, fens, etc.); often with vegetation rooted below the water surface
wm (wet meadow) - periodically saturated but not inundated with water, organically enriched mineral soils; grasses, sedges, rushes and forbs dominate

Cliffs (CL):
Very steep slope, often exposed bedrock, may include steep sided sand bluffs, habitat for rare species.
Subclasses:
cc (coastal cliffs)
lc (land cliffs)

Other Important Ecosystems

Other important ecosystems have high biodiversity values.

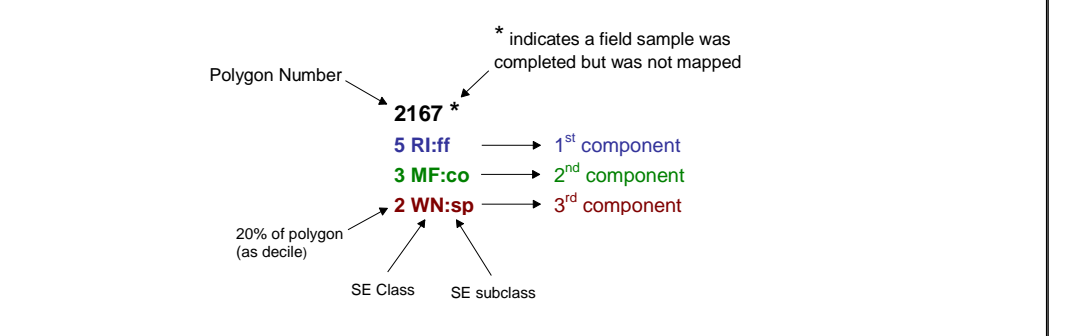
Mature Forests (MF):
Usually conifer-dominated, occasionally deciduous, dry to moist forest types, structural stage 6, generally >250yrs, > 20% of buffering sensitive ecosystems.
Subclasses:
mf (conifer dominated) - greater than 75% coniferous species
md (mixed conifer and deciduous) - a minimum of 25% cover of either group is included in the total tree cover

Seasonally Flooded Agricultural Fields (FS):
Annually flooded cultivated fields or hay fields; important migrating and wintering waterfowl habitat.

Other Mapped Ecosystems

Other mapped ecosystems occur in mosaic with sensitive ecosystems and are not possible to delineate separately at the mapping scale.

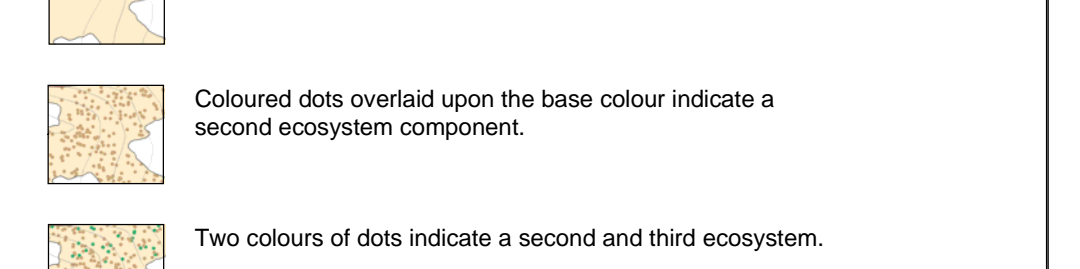
Young Forests (YF):
Limited to areas of young forest dispersed among sensitive and other important ecosystems.



Some polygon labels will have class and subclass repeated up to three times. This is not an error; it reflects the variability in site units and structural stages occurring within a polygon. More than one site unit can be correlated to a SE class and subclass. Polygon labels on the map do not include the site units. The Sensitive and Terrestrial Ecosystems Labels on the left side of the map provide details about site units mapped in each polygon.

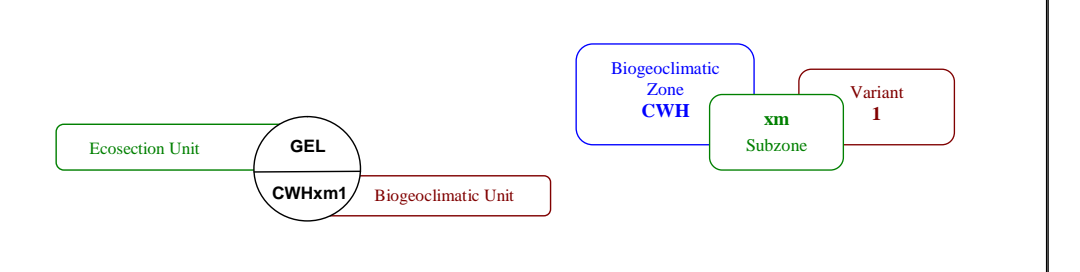
Ecosystem Components

This cartographic product uses Dot Density to indicate where more than one ecosystem class is mapped in a polygon. The number of dots indicates the proportion of the polygon represented by the 2nd and 3rd ecosystem; the colour of the dots indicates the 2nd and 3rd ecosystem class.



Biogeoclimatic Units

- CD1FM Coastal Douglas-fir Moist Maritime Subzone
- CVHM1 Coastal Western Hemlock Eastern Very Dry Maritime Variant
- CVHM2 Coastal Western Hemlock Dry Maritime Subzone
- CVHM3 Coastal Western Hemlock Eastern Very Wet Maritime Variant



Ecosystems

- GEL Georgia Lowlands Ecosystem
- SOG Strait of Georgia Ecosystem
- QUF Outer Fjordland Ecosystem
- SPR Southern Pacific Ranges Ecosystem

Map Symbols

- Polygon Boundary
- Biogeoclimatic Boundary
- Ecosystem Boundary
- Study Area Boundary
- Roads
- 20m contours
- TRIM Streams
- Additional streams
- Intermittent/Perennial Stream
- Drainage Route
- Field sample point
- Flight line
- Air photo centre