

Sensitive Ecosystem Inventory of East Vancouver Island and Gulf Islands

Attribute Definitions

December, 2004

Allowable codes and fields for the definitions which follow:

Field Length:

The maximum number of characters which may be entered for a given item, for example:

- 20** A 20-character field, no implied data type.
5, 2 A field of 5 numeric places and 2 numeric places following the right of the decimal point.

Type:

A reference to one of the following categories of data:

- N** Numeric. The ten digits 0-9, plus the decimal point and leading blanks (e.g., 010 = 10). Zeroes are used to fill out field to the number of decimals specified in the field length.
- D** Date. The date follows the format (yyyy-mm-dd) for project, polygon and user defined data.
- C** All possible characters. These include numeric, alphabetic characters and special characters, such as x / ` ; - =
- Single** Single precision floating point.
Double Double precision floating point.
Integer Short integer.
Long Long integer.
Boolean Single byte Boolean value.
Date A date or time value between the years 100 and 9999.
Memo Unlimited-length string field.



SEI Polygon Attributes

Table 1: Polygon Attribute Field Definitions

Field Name	Description	Example	Type
POLYGON_ID	Unique identification number. The letter prefix refers to the preliminary study area sub-divisions and should not be used for data analysis by sub-unit, use the "Ecoregion" field instead. Numbers with different letter suffixes do not indicate association with polygons containing same number. (i.e. N0034A is not associated with N0034B). Where "-R1", "-R2", etc. are appended, this denotes that a given Version 1 polygon has been spatially modified (e.g., split due to disturbance).	C1080B-R1	C (12)
ID_1997	The polygon ID of the previously existing SEI Version 1 polygon. ID_1997 values are not unique, since a given 1997 polygon may have been split into several 2003 polygons to reflect disturbance.	C1080B	C (12)
VERSION	Database version	2.0	N (5,2)
REGION	Preliminary study area sub-division corresponding to Polygon ID prefix; do not use for data analysis. Possible values: CAPITAL-VI NANAIMO ISLANDS TRUST COMOX-STRATHC COWICHAN	COWICHAN	C (13)



SUBUNIT	Specifies sub-unit. USE THIS FIELD FOR DATA ANALYSIS. Possible values: CAPITAL-VI NANAIMO-VI ISLANDS COMOX-STR-VI COWICHAN-VI	COWICHAN-VI	C (13)
LOCATION	Brief description of the general location of the polygon	N OF MOUNT WORK	C (50)
AIR PHOTO	Air photo ID number(s) on which polygon is delineated	89019-150,152; 89020-041	C (40)
PHOTOSCALE	Scale of aerial photograph(s) on which the polygon is delineated	1:8,000; 1:16,000	C (36)
PHOTODATE	Date of the aerial photograph(s) used for delineation	Sept.10, 1989; Sept.10, 1989	C (50)
MAPSHEET	TRIM map sheet number on which the polygon is located	92B 071	C (35)
HECTARES	Total area of the polygon in hectares, calculated digitally	92.61	N (16,3)
ECOSYSTEM1	Dominant or primary ecosystem code after 2003 assessment (Version 2). Possible values: Coastal Bluff (CB) Coastal Bluff ecosystems are found on the coast from the water's edge to lands just above the high tide mark. Many distinct plant communities have developed in response to this relatively harsh environment of crashing waves, currents, tides, winds, heat, storms and salt spray. Coastal Bluff ecosystems have been divided into two distinct categories: <ul style="list-style-type: none"> ▪ CB - Vegetated rocky islets and shorelines; and ▪ CB:cl - Vegetated coastal cliffs and bluffs. These two categories encompass several different landforms that provide specialized wildlife habitats, and support distinct plant communities. Seasonally Flooded Agricultural Fields (FS) Seasonally Flooded Agricultural Fields are lands that have been modified for agricultural use, but have important wildlife habitat value during specific times of the year. These fields are located	RI:1:3a	C (15)



primarily in low-lying areas such as valley bottoms and deltas of large alluvial rivers and creeks. In some cases they are found on moisture-receiving sites, usually in association with lake shores, or lowlands adjacent to coastal bays. They are often former wetlands, and in many cases, are located adjacent to surviving wetlands such as marshes, swamps, and wet meadows. In such cases, other environmental factors such as poor drainage or a high water table contribute to flooding during the winter, fall and rainy season.

Terrestrial Herbaceous (HT)

Terrestrial Herbaceous ecosystems are open wildflower meadows and grassy hilltops, usually interspersed with moss-covered rock outcrops. They typically occur as small openings in forested areas with gentle to moderate slopes not exceeding 30% grades. They are located from outside the salt spray zone near shorelines, to the summits of local hills and mountains within the study area.

Three categories of Terrestrial herbaceous ecosystem are recognized for this project:

- HT – Sites with continuous vegetation cover;
- HT:ro – Sites with rock outcrops as a dominant feature; and
- HT:sh – Sites with more than 20% shrub cover.

Older Forest (OF)

Older Forest is defined as conifer-dominated forest with an average tree age of 100 years or greater. The trees are generally large and tall, reaching up to 1.5m in diameter and over 50m in height. Older Forest is often found in combination with Older Second Growth Forest (SG) and occasionally with Terrestrial Herbaceous ecosystems (HT).

Two categories are identified for this project:

- OF:co – Coniferous forest stands; and
- OF:mx – Coniferous forest stands comprised of more than 15% deciduous trees.

Based on broad areas of similar climate and vegetation, two biogeoclimatic zones are recognized in this project:

1. Coastal Douglas-fir zone (CDF). At lower elevations (<150m), Douglas-fir is the dominant canopy tree in this southern portion of the study area. Low soil moisture conditions favour open stand structure and low growth of herbs, grasses and woody shrubs in the understorey; and
2. Coastal Western Hemlock zone (CWH). At higher elevations, western hemlock is the dominant tree species in this northern portion of the study area. The forest floor is composed of a dense litter of needles and small branches. Cool, damp and acidic conditions favour a moss layer build up over time.



Riparian (RI)

Riparian ecosystems occur on floodplains adjacent to lakes, streams and rivers where high soil moisture and light conditions support distinct soils and plant communities. They vary in width from less than one metre along stream banks to more than 100 metres near large rivers.

Riparian ecosystems are divided into categories based on structural stage and the presence of gullies. They are often a complex or more than one structural stage because of their highly dynamic nature; the dominant stage is listed first (e.g., RI:4:5:6:g).

- RI:g – Riparian gullies;
- RI:1 – Sparsely vegetated areas and gravel bars: moss and lichen dominated, <10% treed, <20% shrub/herb;
- RI:2 – Herb: herb dominated, <20% shrub, <10% treed;
- RI:3 – Shrub/herb: >20% shrub, <10% treed;
- RI:4 – Deciduous pole/sapling stands: trees >10m tall, densely stocked, 10-40 years old;
- RI:5 – Young deciduous forest: self-thinning evident, 40-80 years old;
- RI:6 – Mature coniferous-deciduous forest: 80-250 years old; and
- RI:7 – Older forest: >250 years old

Older Second Growth Forest (SG)

Older Second Growth Forests are the most common forested ecosystem in the SEI study area. They function as both essential habitat areas for many wildlife species, and as primary connections between ecosystems in the highly fragmented landscape of the Georgia Basin. All Second Growth Forests have been disturbed by logging or other human disturbance since the settlement of Vancouver Island and the Gulf Islands began in the middle of the 19th century.

There are two distinct sub-categories of Older Second Growth Forest in the SEI study area:

- SG:co - Large stands of conifer dominated forest between 60 and 100 years old with less than 15% deciduous trees; and
- SG:mx – Stands with more than 15% deciduous tree cover.

Sparsely Vegetated (SV)

Coverage consists mainly of sand, gravel or bedrock and little vegetation. Several distinct plant communities have adapted to this harsh coastal environment characterized by crashing waves, salt spray, shifting sands, exposure to winds and sun, and (with regard to the cliffs and bluffs) low moisture and nutrient conditions.



Sparsely Vegetated ecosystems encompass three unique landforms that provide specialized wildlife habitats and support newly-developing plant communities:

- SV:cl - Inland cliffs and bluffs;
- SV:sd - Coastal sand dunes; and
- SV:sp - Coastal gravel and sand spits.

Woodland (WD)

Woodlands are open forested areas comprised of pure stands of Garry oak and mixed stands of Douglas-fir/Garry oak and Douglas-fir/arbutus. Remnant stands of trembling aspen are also found in wetter sites. Their understorey is characterized by a rich mosaic of wildflowers, grasses, shrubs and mosses.

Woodlands are found on south facing slopes of rocky knoll and bedrock dominated areas. The disturbance or soil conditions of such areas restrict the establishment of closed conifer forest and promote Garry oak regeneration. Woodlands also occur in combination with other ecosystems such as older Douglas-fir forest (OF), Older Second Growth Forest (SG) and Terrestrial Herbaceous (HT).

Wetland (WN)

Wetland ecosystems are characterized by seasonal or year-round water, either at or above the soil surface or within the root zone of plants. They are found in areas of flat, undulating terrain and colder wetter climate.

Wetlands encompass a range of plant communities which includes western redcedar/skunk cabbage swamps, cattail marshes, *Sphagnum* moss dominated bogs and coastal salt marshes. The six Wetland classes recognized by the SEI include:

- WN:bg – Bog: Acidic, nutrient-poor wetlands that characteristically support *Sphagnum* mosses and ericaceous shrubs such as Labrador tea and bog-rosemary. Being generally isolated from mineral rich groundwater or surface water, their primary source of water and nutrients is from rainfall;
- WN:fn – Fen: Underlain by sedge or brown moss peat, fens are closely related to bogs. In addition to rainfall, fens receive mineral and nutrient-enriched water from upslope drainage or groundwater. Thus a broader range of plants, including shrubs and small trees, is able to grow;
- WN:ms – Marsh: Characterized by permanent, seasonal or diurnal flooding of nutrient-rich waters. They include: freshwater marshes which are dominated by rushes, sedges and grasses; saltwater marshes; and estuarine marshes occurring at the mouths of most of the major rivers;



	<ul style="list-style-type: none"> ▪ WN:sp – Swamp: Wooded wetlands dominated by 25% or more cover of flood-tolerant trees or shrubs. Characterized by periodic flooding and nearly permanent sub-surface waterflow through mixtures of mineral and organic materials, swamps are high in nutrient, mineral and oxygen content. ▪ WN:sw - Shallow Water: Wetlands characterized by water less than 2 m in depth in mid-summer, support less than 5% rooted vegetation. They serve as important habitat for waterfowl and support fish, insects and amphibians. ▪ WN:wm – Wet Meadow: Wetlands which receive water from run-off or seepage, and provide a grassy overall mixture of flood tolerant grasses, low sedges, rushes and forbs. <p>Wetlands often occur as mosaics of several classes (e.g., WN:ms:sp:sw) or are transitional between two classes. In addition, Wetlands may occur in complexed units with other ecosystems such as Seasonally Flooded Agricultural Fields (FS), Riparian (RI) and Older Second Growth (SG).</p>		
ECOSYSTEM2	Secondary ecosystem code after 2003 assessment. For a complete list of ecosystem values and their interpretations, see the list of values included in the description for ECOSYSTEM1.	WN:sp	C (15)
DATASOURCE	<p>Indicates source of information. Possible values include:</p> <ul style="list-style-type: none"> ▪ CWS – Canadian Wildlife Service, Comox Valley Welands Inventory 1993; ▪ DB – Drive by to confirm existence of ecosystem; ▪ DFO – Department of Fisheries and Oceans; ▪ DU – Ducks Unlimited Canada; ▪ EP – Ecoplot; ▪ FC – Forest Cover Maps, BC Ministry of Forests; ▪ GVWD – Greater Victoria Water District; ▪ MBFC – Forest Cover Maps, MacMillan Bloedel; ▪ PK – Personal Knowledge; ▪ SM – Soils Maps, BC Ministry of Environment; ▪ TRIM – Terrain Resource Inventory Mapping base map; ▪ WB – Walk by to confirm existence of ecosystem; ▪ WFC – Forest Cover Maps, Weldwood; and ▪ WO – Observation from water craft to confirm existence of ecosystem. 	PK,WB	C (15)



DOMINANTS	Tree species codes entered where known. These species may be based on field observation for groundtruthed plots, or on forest cover mapping when the plot has not been visited. For a complete list of values and their interpretations, see Ward, P., et al, 1998.	AT MB QG	C (15)
AGE_FOREST	Age of trees based on cores done during the groundtruthing, or on forest cover maps.	100-250	C (10)
SOIL	Codes taken from the provincial soil maps where applicable or available.	ART:2CO	C (50)
COMMENTS	Miscellaneous comments	SOME VETS (AP)	C (150)
DIST_COMM	Disturbance description; used when disturbance type (DIST_TYPE) is 'Other', or when some explanation is necessary to describe complex or pre-existing disturbance.	Irrigation pond.	C (255)
MOD_TYPE	Type of modification made to the SEI polygon. For a complete list of values and their interpretations, see AXYS Environmental Consulting Ltd. 2004. <i>Redigitizing of Sensitive Ecosystems Inventory Polygons to Exclude Disturbed Areas</i> . Unpublished report submitted to the Canadian Wildlife Service, Environment Canada, Pacific and Yukon Region.	DD	C
DIST_TYPE	Disturbance type which caused the deletion of the polygon or portion of the polygon. For a complete list of disturbance types and their interpretations, see AXYS, 2004.	Urban Use	C (20)
DIST_FRAG	Disturbance fragmentation; when disturbance areas are too small to digitize, an existing SEI polygon is classified with the degree of fragmentation. For a complete list of disturbance types and their interpretations, see AXYS, 2004.	6 - 25%	C (10)
CODE	Two-letter ecosystem abbreviation used for thematic mapping. This value is the first two letters of the ECOSYSTEM1 field described above.	SG	C (2)
FLD_CHECK	Site has been visited; * indicates GT, EP, or CWS with further information available upon request.	*	C (1)



ECO1_1997	Dominant or primary ecosystem code from the originally defined (1997) SEI polygon. This field, in conjunction with ECOSYSTEM1, allows a temporal view of the ecosystem values. For a complete list of values and their interpretations, see Ward, P., et al, 1998.	RI:1:3a	C (15)
ECO2_1997	Secondary ecosystem code from the originally defined (1997) SEI polygon. This field, in conjunction with ECOSYSTEM2, allows a temporal view of the ecosystem values. For a complete list of values and their interpretations, see Ward, P., et al, 1998.	WN:sp	C (15)



MS Access Database (MDB)**Table 2: SEVI_GEN Field Definitions**

Field Name	Description	Example	Type
POLYGON_ID ID_1997 VERSION REGION SUBUNIT LOCATION	See Table 1 above.		
ORIG_PHOTO	Air photo ID number(s) on which polygon was originally delineated.	89019-150,152; 89020-041	C (40)
ORIG_SCALE	Scale of aerial photograph(s) on which the polygon was originally delineated.	1:8,000; 1:16,000	C (36)
ORIG_DATE	Date of the aerial photograph(s) used for the original delineation.	Sept.10, 1989; Sept.10, 1989	C (50)



MAPSHEET HECTARES ECOSYSTEM1 ECOSYSTEM2 DATASOURCE DOMINANTS AGE_FOREST SOIL COMMENTS DIST_COMM MOD_TYPE DIST_TYPE DIST_FRAG CODE FLD_CHECK ECO1_1997 ECO2_1997	See Table 1 above.		
PHOTO_NO	Orthophoto ID number(s) used for updating SEI polygons.	92F 066,92F 076	C (20)
PHOTO_SCALE	Scale of orthophoto(s) used for updating SEI polygons.	1:10,000	C (36)
PHOTO_DATE	Date of the orthophoto(s) used for updating SEI polygons.	July - August, 2002	C (50)



Table 3: SITE Field Definitions

Field Name	Description	Example	Type
POLYGON_ID	Foreign Key. Relates the SITE record to a unique SEVI_GEN polygon record.	C1080B	C (12)
MultiplePlots	Flag indicating whether	Yes	Boolean Y/N
SecondaryPlot	Flag indicating whether	Yes	Boolean Y/N
MultiPlotsID			C (100)
Eco1or2		1	Integer



GroundPhoto		BF3#14	C (100)
SoilCorrect			C (100)
SoilUnit			C (50)
SurveyDate	Date the survey was performed.	Aug. 12, 1994	Date
Surveyors	Initials or names of those performing the survey.	G.S., J.B.	C (50)
LandscapeCondition	Description of the existing fragmentation at the survey site. Possible values include: Unfragmented (< 5% of landscape fragmented) Partly (5 – 25% of landscape fragmented) Highly (> 25% of landscape fragmented)	Highly	C (50)



EnvUniformity	Possible values include: Low Medium High	High	C (50)
VegUniformity	Possible values include: Low Medium High	High	C (50)
Elevation	Elevation of the site, in metres.	240	Long
ElevationRange	Elevation range of the site, in metres, where the elevation varies significantly.	0-40	C (50)
PercentSlope	Percent slope of the site.	72	Single
PercentSlopeRange	Slope range of the site, in percent, where the slope varies significantly.	60-90	C (50)



Aspect	Direction the site faces, in degrees. Values range from 0 to 360, zero being North.	140	Single
MesoSlope	Possible values include: LW (Lower Slope) TO (Toe) CR (Crest) UP (Upper Slope) MD (Mid Slope) DP (Depression) LV (Level) CH (Channel)	TO	C (10)
MoistureRegime	Possible Values include: 0 VX (Very Xeric) 1 X (Xeric) 2 SX (Subxeric) 3 SM (Submesic) 4 M (Mesic) 5 SHG (Subhygric) 6 HG (Hygric) 7 SHD (Subhydric) 8 HD (Hydric)	2	C (3)
NutrientRegime	Possible values include: A Very poor (Oligotrophic) B Poor (Submesotrophic) C Medium (Mesotrophic) D Rich (Permesotrophic) E Very Rich (Eutrophic) F Excess Saline (Hypereutrophic)	B	C (3)



Drainage	Possible values include: AC (Aquic) AQ (Aqueous) HU (Humid) I (Imperfectly drained) M (Moderately well drained) P (Poorly drained) PA (Peraquic) PH (Perhumid) R (Rapidly drained) SA (subaquic) V (Very poorly drained) W (Well drained) X (Very rapidly drained)	W	C (2)
ForestedSiteAssociation		POSSIBLE CWHXM 01	C (50)
NonForestedEcosystem		GRAVEL BAR	C (50)
NewEcosystem		Yes	Boolean Y/N



EcoPlotNumber			C (50)
MineralSoil		Yes	Boolean Y/N
OrganicSoil		Yes	Boolean Y/N
DisturbanceWindthrow DisturbanceDisease DisturbanceLogging DisturbanceConstruction DisturbanceFire DisturbanceFlood DisturbanceAnimal DisturbanceErosion DisturbanceOtherNatural DisturbanceWaterControl DisturbanceGrazing DisturbanceAgriculture DisturbanceDyking DisturbanceDredging DisturbancePollutantsDump DisturbanceRecreation DisturbanceOtherAnthropogenic	Boolean flag indicating various types of disturbance present at the site.	Yes	Boolean Y/N



AdjacentLandUses		LOGGING ROAD	C (255)
KnownThreats		Possible development from landowner(s)	C (255)
Comments		Mainly introduced grasses and forbs	Memo
WildlifeObs		bumblebees (Bombus spp with orange abdomen) numerous.	Memo
FishPresent	Possible values include: 1 (No fish) 2 (Fish) 3 (No Data)	2	Integer
EcoPlotNum			C (25)



DataAppliesToEco2		Yes	Boolean Y/N
CoredSpecies		Fd	C (255)
CoredDBH		65	Double
CoredAge		>250	C (255)
CoredCanopy		75%	C (255)

Table 4: SPECIESLIST Field Definitions



Field Name	Description	Example	Type
Code	Eight-letter abbreviation for the scientific name of a species. This code is used as the primary key (unique identifier) for species records.	ABIEAMA	C (8)
LatinName	Scientific name for the species.	Abies amabilis	C (255)
Layer		1	Integer
CommonName	Common name for the species.	amabilis fir	C (255)

Table 4: VEGETATION Field Definitions

Field Name	Description	Example	Type
POLYGON_ID	Foreign Key. Relates the VEGETATION record to a unique SEVI_GEN polygon record.	C0003	C (12)



Layer		8	C (50)
Species	Foreign key. Relates the VEGETATION record to a unique SPECIESLIST record.	ALNURUB	C (8)
Cover		15	Single

