# TERRESTRIAL ECOSYSTEM MAPPING OF HOWE SOUND

Map sheets: 92G/033, 034, 043, 044, 053, 054

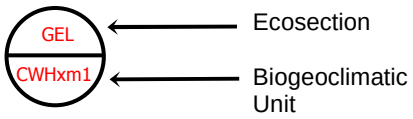
Scale 1: 16,000
September 2009

## INTRODUCTION

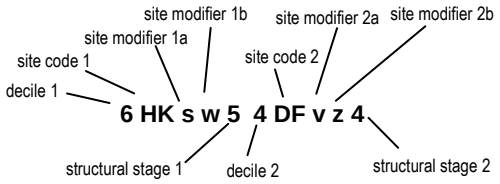
This project synthesizes results of bioterrain and terrestrial ecosystem mapping of Howe Sound including the CWHxm1, CWHdm and CWHvm2 biogeoclimatic subzones. The Howe Sound study area covers approximately 14,000 hectares and is located within the Bowen Island Municipality, the Gambier Local Trust Areas and the Greater Vancouver Regional District. Howe Sound includes Bowen Island, Gambier Island, Keats Island, Anvil Island, Bowyer Island and associated other islands/islets.

Digital maps will aid interpretation for resource management and land use planning; identified wildlife habitat capability and suitability; and sensitive ecosystem mapping. A seamless database of polygon attributes and the associated bioterrain and ecosystem data, as well as other features and parameters of interest accompanies this legend. Mapping was completed following the methods outlined in Standard for Terrestrial Ecosystem Mapping in British Columbia[1]. Field work was completed in June and August of 2009 at modified survey intensity levels and an overall level 4 survey intensity was completed with 17% or 340 of the 2017 polygons sampled.

## ECOSECTION & BIOGEOCLIMATIC UNITS




## ECOSYSTEM UNIT LABEL




## MAP SYMBOLS

**Ecosection**

**Biogeoclimatic Unit**

**Ecosystem Unit**

**Study Area Boundary**

**Plot Location**

**Ecosections**
**GEL**: Georgia Lowland

**Biogeoclimatic Units:**
**CWHxm1:** Coastal Western Hemlock zone, very dry maritime subzone, eastern variant
**CWHdm:** Coastal Western Hemlock zone, dry maritime subzone
**CWHvm2:** Coastal Western Hemlock zone, very wet maritime subzone, montane variant

## ECOSYSTEM UNITS

### CWHxm1

| Site Code | Description | Site Series | Assumed Modifiers | Soil Moisture Regime | Mapped Modifiers |
|---|---|---|---|---|---|
| AM | Arbutus-Hairy manzanita | 00 | j, r, s | xeric | - |
| CD | Act—Red-osier dogwood | 09 | a, d, j, m | subhygric - hygric | - |
| DC | FdPl-Cladina | 02 | j, m, r, s | very xeric | h, k, v, w |
| DF | Fd-Sword fern | 04 | d, j, m | xeric - subxeric | g, k, n, s, v, w |
| DS | FdHw-Salal | 03 | d, m, w | xeric - subxeric | j, k, s, v |
| HD | HwCw-Deer fern | 06 | d, j, m | subhygric - hygric | s, w |
| HK | HwFd-Kindbergia | 01 | d, j, m | submesic - mesic | g, h, k, s, v, w |
| LS | Shore pine - Sphagnum | 11 | d, j, p | subhydric | - |
| RC | CwSs-Skunk cabbage (Ws53-Cw-Sword fern-Skunk cabbage) | 12 | d, j, m | subhydric | - |

**ECOSYSTEM UNITS**

**CWHxm1 (continued)**

| Site Code | Description | Site Series | Assumed Modifiers | Soil Moisture Regime | Mapped Modifiers |
|---|---|---|---|---|---|
| RF | Cw-Foamflower | 07 | d, j, m | subhygric - hygric | g, k, n, s, w |
| RS | Cw-Sword fern | 05 | d, m | submesic - mesic | g, j, k, n, s, w |
| SS | Ss-Salmonberry | 08 | a, d, j, m | subhygric - hygric | - |
| SC | Cladina - Wallace's selaginella | 00 | j, m, r, v | very xeric | h, k, s, w |
| Em03 | Seashore saltgrass | Em03 | - | subhydric - hydric | - |
| Wb50 | Labrador tea - Bog-laurel - Peat-moss | Wb50 | - | subhydric | - |
| Wf50 | Narrow-leaved cotton-grass - Peat-moss | Wf50 | - | subhydric | - |
| Wf52 | Sweet gale - Sitka sedge | Wf52 | - | subhydric | - |
| Wm50 | Sitka sedge - Hemlock -parsley | Wm50 | - | subhydric - hydric | - |

**CWHdm**

| Site Code | Description | Site Series | Assumed Modifiers | Soil Moisture Regime | Mapped Modifiers |
|---|---|---|---|---|---|
| CD | Act—Red-osier dogwood | 09 | a, j, m | subhygric - hygric | - |
| DC | FdPl-Cladina | 02 | j, r, s | xeric | h, k, v, w, z |
| DF | Fd-Sword fern | 04 | d, m | xeric - subxeric | g, h, k, n, s, v, w |
| DS | FdHw-Salal | 03 | d, m, w | xeric - subxeric | k, s, v |
| HD | HwCw-Deer fern | 06 | d, j, m | subhygric - hygric | h, s, w |
| HM | Hw-Flat moss | 01 | d, m | mesic | g, h, k, n, r, s, v, w |
| LS | Shore pine - Sphagnum | 11 | d, j, p | subhydric | - |
| RC | CwSs-Skunk cabbage (Ws53-Cw-Sword fern-Skunk cabbage) | 12 | d, j, m | subhydric | - |
| RF | Cw-Foamflower | 07 | d, j, m | subhygric - hygric | g, k, s, w |
| RS | Cw-Sword fern | 05 | d, m | submesic - mesic | g, j, k, n, s, v, w |
| SC | Cladina - Wallace's selaginella | 00 | j, m, r, v | very xeric | k, w |
| Wb50 | Labrador tea - Bog-laurel - Peat-moss | Wb50 | - | subhydric | - |
| Wf50 | Narrow-leaved cotton-grass - Peat-moss | Wf50 | - | subhydric | - |
| Wf52 | Sweet gale - Sitka sedge | Wf52 | - | subhydric | - |

**CWHvm2**

| Site Code | Description | Site Series | Assumed Modifiers | Soil Moisture Regime | Mapped Modifiers |
|---|---|---|---|---|---|
| AB | HwBa-Blueberry | 01 | d, j, m | submesic - mesic | h, k, s, v, w |
| AF | BaCw-Foamflower | 05 | d, m | submesic - mesic | g, j, k, s |
| AS | BaCw-Salmonberry | 07 | d, j, m | subhygric - hygric | w |
| HD | HwBa-Deer fern | 06 | d, m | subhygric | j, k |
| HS | HwCw-Salal | 03 | j, m, s | xeric - subxeric | h, w |
| LC | HwPl-Cladina | 02 | j, r, s | very xeric | h, k, v, w |
| RS | CwHw-Sword fern | 04 | d, m | xeric - subxeric | g, h, j, k, s, v, w |
| YG | CwYc-Goldthread | 09 | d, j, p | subhygric - hygric | - |
| Wf52 | Sweet gale - Sitka sedge | Wf52 | - | subhydric | - |

| Non-Vegetated / Sparsely Vegetated / Anthropogenic | |
|---|---|
| **Site Code** | **Description** |
| BE | Beach |
| CF | Cultivated Field |
| GC | Golf Course |
| GP | Gravel Pit |
| IN | Industrial |
| LA | Lake |
| MU | Mudflat Sediment |
| OW | Shallow Open Water |
| RE | Reservoir |
| RO | Rock Outcrop |
| RW | Rural |
| RZ | Road Surface |
| UR | Urban/ Suburban |

| SITE MODIFIERS | |
|---|---|
| **Code** | **Topography** |
| g | gullying[1]: occurs within a gully, or with gullying throughout the delineated area |
| h | hummocky[1] terrain: indicated by the terrain surface expression |
| j | gentle slope: < 35% in the CWH and CDF zones |
| k | cool aspect: occurs on aspects 285°–135°, on moderately steep slopes (35%–100% in the CWH and CDF) |
| n | fan[1]: occurs on a fluvial fan or on a colluvial fan or cone |
| q | very steep cool aspect–very steep slopes (< 100%) with aspects 285°–135° |
| r | ridge[1]: occurs throughout an area of ridged terrain, or on a ridge crest |
| w | warm aspect: 135°–285°, on moderately steep slopes (35%–100% slope in the CWH and CDF zones) |
| z | very steep warm aspect –slopes > 100% on aspects 135°–285° |
| **Code** | **Soil** |
| s | shallow soils: 20–100 cm to bedrock |
| v | very shallow soils: < 20 cm to bedrock |
| **STRUCTURAL STAGE** | |
| **Code** | **Structural Stage** |
| 1 | **Sparse (1a)** bare rock or ground **/ bryoid (1b)** bryophytes and lichens dominant, may reflect recent disturbance |
| 2 | **Herb** some invading or residual shrubs and trees may be present, may reflect recent disturbance<br>**Forb-dominated (2a) / Graminoid-dominated (2b) / Aquatic (2c) / Dwarf shrub (2d)** |
| 3 | **Shrub** Early successional stage or maintained by environmental conditions or disturbance<br>**Low shrub (3a)** < 2 m tall / **Tall shrub (3a)** 2–10 m tall |
| 4 | **Pole/Sapling** Trees > 10 m tall, often densely stocked, no vertical canopy structure, typically < 40 years since disturbance |
| 5 | **Young Forest** Self-thinning and canopy differentiation initiated, typically 40–80 years since disturbance |
| 6 | **Mature Forest** Mature tree canopy, typically 80–250 years since disturbance |
| 7 | **Old Forest** Structurally complex stands comprised mainly of shade-tolerant and regenerating tree species; snags and coarse woody debris and patchy understories, typically > 250 years since disturbance. |
| **STAND COMPOSITION** | |
| **Code** | **Stand Composition** |
| B | **Broadleaf** – greater then ¾ of total tree layer cover is broadleaf |
| M | **Mixed** – neither coniferous or broadleaf account for greater then ¾ of total tree layer cover |

| DISTURBANCE MODIFIERS | | | |
|---|---|---|---|
| L | Forest harvesting | T | Terrain-related effects |
| c<br>e<br>l | ▪ clearcut system<br>▪ selection system<br>▪ land clearing | s | ▪ terrain failures (active/recent slumps, slides, solifluction, etc.) |
| W | Water-related effects | | |
| i | ▪ inundation (including temporary inundation resulting from beaver activity) | | |

## DATA SOURCES

This mapping project is based on colour aerial photography at a 1:20000 scale from 2004 and 2006, provided by the Islands Trust. Base map data is from Terrain Resource Inventory Mapping (TRIM) and provided by Islands Trust. An overall total of 17% polygon inspection was achieved. Eight full plots, 41 ground inspections and 319 visual checks were completed.

## CREDITS

| | |
|---|---|
| Bioterrain Mappers: | Wanda Miller, Sonia Meili |
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| Ecosystem Mapping: | Tyler Innes, Tania Tripp, Jackie Churchill |
| Ecosystem Q/A: | Kathy Dunster |
| Field Data Collection: | Tyler Innes, Jackie Churchill, Tania Tripp, Kathy Dunster, Wanda Miller, Sonia Meili, Corey Erwin (MoE), Sid Tsang |
| Project Manager: | Tania Tripp, assisted by Jackie Churchill |
| GIS/Map Production: | Anna Jeffries, Peter Berst |
| Funding: | Islands Trust |

## LITERATURE CITED


[1]Resources Inventory Committee [RIC]. 1998. Standard for terrestrial ecosystem mapping in British Columbia. Ecosystems Working Group, Terrestrial Ecosystems Task Force, Resources Inventory Committee. Vancouver, B.C. 100 pp.

[2]Howes, D.E. and E. Kenk (contributing eds.). 1997. Terrain classification system for British Columbia. V.2. Resource Inventory Branch, Min. Env., Lands and Parks. MOE Manual 10. Victoria, B.C. 99 pp.

[3]Soil Classification Working Group. 1998. The Canadian System of Soil Classification. Agric. and Agri-Food Can. Publ. 1646 (Revised) 187 pp. NRC Research Press, Ottawa, Ont.