

NORTH COAST TERRESTRIAL ECOSYSTEM MAPPING
(LANDSCAPE UNITS: KAIEN, QUOTOON, SCOTIA, BROWN, KUMEALON, HEVENOR)

MAP LEGEND

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1.0 INTRODUCTION

This project provides terrestrial ecosystem maps and descriptions for six landscape units of the North Coast Forest District at a scale of 1:20,000. As an integral part of the land base inventory, the detailed information on ecosystem distribution will aid in site specific management, planning and interpretations.

Mapping was completed as per 1998 Standards for Terrestrial Ecosystem Mapping (TEM) in British Columbia (RIC 1998), and Standards for Terrestrial Ecosystem Mapping – Digital Data Capture in British Columbia (RIC 2000). The following variances from standard TEM procedures were applied to this project:

- No bioterrain attributes were captured during the process of photo interpretation;

Field work was completed in August of 2012 using an ecosystem survey intensity level R.

2.0 LEGEND

2.1 Ecosections

The TEM project area is located within the following Ecosections:

- HEL - Hecate Lowland
- KIR - Kitimat Ranges
- NCF - North Coast Fjords

2.2 Biogeoclimatic Units

The TEM project area is located within the following Biogeoclimatic Units

- **CWHvh2:** Very Wet Hypermaritime Subzone, Central Variant
- **CWHvm1:** Very Wet Maritime Subzone Submontane Variant
- **CWHvm2:** Very Wet Maritime Subzone Montane Variant
- **MHwh1:** Wet Hypermaritime Subzone Windward Variant
- **MHmm1:** Moist Maritime Subzone Windward Variant
- **MHwhp:** Wet Hypermaritime Subzone Parkland Phase
- **MHmmp:** Moist Maritime Subzone Parkland Phase
- **CMAun:** Coastal Mountain-heather Alpine, Undifferentiated

2.3 Mapsheet Numbers

The TEM project area is found within the following mapsheets:

103G050, 103G060, 103G070, 103G080, 103G090

103H041, 103H042, 103H051, 103H052, 103H061, 103H062, 103H063, 103H071,
103H072, 103H073, 103H081

103I001, 103I002, 103I003, 103I011, 103I012, 103I103, 103I021, 103I031, 103I041,
103I042, 103I051, 103I052

103J009, 103J010, 103J019, 103J020, 103J029, 103J030, 103J039, 103J040, 103J050
103J060

2.4 Ecosystem Units

Descriptions of ecosystem units mapped in the TEM Project Area are provided in **Error! Reference source not found.**

Table 1. Map Entity List for North Coast TEM

BGC Units	Site Series No	Site Series Codes	Site Series Name	SMR/SNR
CWHvh2	01	HS	CwHw - Salal	4-5, A-C
	02	LR	PIYc - Rhacomitrium	0, A-C
	03	RS	CwYc - Salal	1-2, A-C
	04	HM	HwSs - Lanky Moss	3, A-C
	05	RF	CwSs - Sword Fern	2-3, D-E
	06	SF	CwSs - Foamflower	3-4, D-E
	07	SD	CwSs - Devil's Club	4-5, D-E
	08	SL	Ss - Lily-of-the-valley	4-6, D-E
	09	ST	Ss - Trisetum	4-6, D-E
	10	AL	Dr - Lily-of-the-valley	4-6, D-E
	11	YG	CwYc - Goldthread	5-6, A-C
	12	LS	PIYc - Sphagnum	6-7, A-B
	13	RC	CwSs - Skunk Cabbage	6-7, A-B
	14	SS	Ss - Salal	0-3; B-D
CWHvm1	01	AB	HwBa - Blueberry	3-4; B-C
	02	LC	HwPI - Cladina	0; A-C
	03	HS	HwCw - Salal	1-2; A-C
	04	RS	CwHw - Sword Fern	1-2; D-E
	05	AF	BaCw - Foamflower	3-4; D-E
	06	HD	HwBa - Deer Fern	5; B-C
	07	AS	BaCw - Salmonberry	5-6; D-E
	08	AD	BaSs - Devil's club	5-6; D-E
	09	SS	Ss - Salmonberry	5-6; D-E
	10	CD	Act - Red-osier Dogwood	5-6; D-E
	11	CW	Act - Willow	6-7; C-E
	12	YG	CwYc - Goldthread	6-5; A-C
	13	LS	PI - Sphagnum	7; A-B
	14	RC	CwSs - Skunk Cabbage	7; C-E
CWHvm2	01	AB	HwBa - Blueberry	3-4; A-C
	02	LC	HwPI - Cladina	0; A-C
	03	HS	HwCw - Salal	1-2; A-C
	04	RS	CwHw - Sword Fern	1-2; D-E
	05	AF	BaCw - Foamflower	3-4; D-E

	06	HD	HwBa - Deer Fern	5; A-C
	07	AS	BaCw - Salmonberry	5-6; D-E
	08	AD	BaSs - Devil's Club	5-6; D-E
	09	YG	CwYc - Goldthread	5-6; A-C
	10	LS	PI - Sphagnum	7; A-B
	11	RC	CwYc - Skunk Cabbage	7; C-E
MHwh1	01	MB	HmSs - Blueberry	2-4; A-C
	02	MM	HmYc - Mountain-heather	0-2; A-C
	03	MR	SsHm - Reedgrass	2-4; D-E
	04	YG	HmYc - Goldthread	5; A-C
	05	YT	YcHm - Twistedstalk	5; D-E
	06	MD	HmYc - Deer Cabbage	6; A-C
	07	YH	YcHm - Hellebore	6; D-E
	08	YS	HmYc - Sphagnum	7; A-B
	09	YC	YcHm - Skunk Cabbage	7; C-E
MHmm1	01	MB	HmBa - Blueberry	2-4; A-C
	02	MM	HmBa - Mountain-heather	0-1; A-C
	03	MO	BaHm - Oak Fern	2-4; D-E
	04	AB	HmBa - Bramble	5; A-C
	05	MT	BaHm - Twistedstalk	5; D-E
	06	MD	HmYc - Deer cabbage	6; A-C
	07	YH	YcHm - Hellebore	6; D-E
	08	YS	HmYc - Sphagnum	7; A-B
	09	YC	YcHm - Skunk Cabbage	7, C-E
MHwhp/MHmmp	00	Af	Alpine Fellfield Class	
	00	Ag	Alpine Grassland Class	
	00	Ah	Alpine Heath Class	
	00	Am	Alpine Meadow Class	
	00	As	Alpine Nivation Class	
	00	At	Alpine Tundra Class	
	00	LM	Hm-Lichen Parkland	
	00	MB	HmBa-Blueberry	
	00	MH	Hm-Mountain Heather Parkland	
	00	Sk	Alpine Tundra Class	
	00	SP	Sedge Parkland Meadows	
	00	Ss	Subalpine Shrub Seepage	
	00	YR	Yc-Racomitrium Bluffs	
CMAun	00	Ah	Alpine Heath Class	
	00	As	Alpine Nivation Class	
	00	At	Alpine Tundra Class	

Other Non-forested and Non-vegetated Ecosystems	00	Sk	Alpine Tundra Class	
	00	Ss	Subalpine Shrub Seepage	
	00	Bb	Beachland Class	
	00	Br	Headland Class	
	00	Ed	Estuarine Meadow Class	
	00	Em	Estuarine Marsh Class	
	00	ES	Exposed Soil	
	00	Et	Estuarine Tidal Flat Class	
	00	Fa	Active Channel Flood Class	
	00	Ff	Fringe Flood Class	
	00	Fl	Low bench Flood Class	
	00	Fm	Middle Bench Flood Class	
	00	GL	Glacier	
	00	GP	Gravel Pit	
	00	LA	Lake	
	00	MU	Mudflat Sediment	
	00	PD	Pond	
	00	PN	Permanent Snow	
	00	Rc	Rock Group Cliff Class	
	00	RI	River	
	00	RM	CwHw-Fern Bluffs	
	00	Ro	Rock Outcrop Class	
	00	Rt	Talus Class	
	00	RW	Rural	
	00	RZ	Road Surface	
	00	SW	Salt Water	
	00	UR	Urban/Suburban	
	00	Vh	Avalanche Herb Meadow Class	
	00	Vs	Avalanche Shrub Thicket Class	
	00	Vt	Avalanche Treed Class	
	00	Wa	Alpine Wetland Class	
	00	Wb	Bog Wetland Class	
	00	Wf	Fen Wetland Class	
00	Wm	Marsh Wetland Class		
00	Ws	Swamp Wetland Class		
00	Ww	Shallow-water Wetland Class		
00	YR	Yc-Rhacomitrium Bluffs		

2.5 Site Modifiers

Site modifier code and criteria are listed in Table 1.

Table 1: Site Modifier Criteria

Code	Criteria
Topography	
a	Active floodplain-the site series occurs on an active fluvial floodplain (level or very gentle sloping surface bordering a river that has formed by river erosion and deposition), where evidence of active sedimentation and deposition is present
g	gullying occurring – the site series occurs within a gully, indicating a certain amount of variation from the typical, or the site series has gullying throughout the area being delineated.
h	hummocky1 terrain (optional modifier) – the site series occurs on hummocky terrain, suggesting a certain amount of variability. Commonly, hummocky conditions are indicated by the terrain surface expression but occasionally they occur in a situation not described by terrain features.
j	gentle slope – the site series occurs on gently sloping topography (less than 25% in the interior, less than 35% in the CWH, CDF, and MH zones).
n	fan1 – the site series occurs on a fluvial fan (most common), or on a colluvial fan or cone.
q	very steep cool aspect – the site series occurs on very steep slopes (greater than 100% slope) with cool, northerly or easterly aspects (285°–135°).
k	cool aspect – the site series occurs on cool, northerly or easterly aspects (285°–135°), on moderately steep slopes (25%–100% slope in the interior and 35%–100% slope in the CWH, CDF and MH zones).
r	ridge(optional modifier) – the site series occurs throughout an area of ridged terrain, or it occurs on a ridge crest.
t	terrace – the site series occurs on a fluvial or glaciofluvial terrace, lacustrine terrace, or rock cut terrace.
w	warm aspect – the site series occurs on warm, southerly or westerly aspects (135°–285°), on moderately steep slopes (25%–100% slope in the interior and 35%–100% slope in the CWH, CDF and MH zones).
z	very steep warm aspect – the site series occurs on very steep slopes (greater than 100%) on warm, southerly or westerly aspects (135°–285°).
Soil	
c	coarse-textured soils – the site series occurs on soils with a coarse texture, including sand and loamy sand; and also sandy loam, loam, and sandy clay loam with greater than 70% coarse fragment volume.
d	Deep soil – the site series occurs on soils greater than 100cm to bedrock.

Code	Criteria
f	fine-textured soils 2 – the site series occurs on soils with a fine texture including silt and silt loam with less than 20% coarse fragment volume; and clay, silty clay, silty clay loam, clay loam, sandy clay and heavy clay with with less than 35% coarse fragment volume.
p	peaty material – the site series occurs on deep organics or a peaty surface (15–60 cm) ³ over mineral materials (e.g., on organic materials of sedge, sphagnum, or decomposed wood).
s	shallow soils – the site series occurs where soils are considered to be shallow to bedrock (20–100 cm).
v	very shallow soils – the site series occurs where soils are considered to be very shallow to bedrock (less than 20 cm).
moisture	
x	drier than typical – describes part of the range of conditions for circummesic ecosystems with a wide range of soil moisture regimes or significantly different site conditions. For example, SBSmc2/01 (Sxw–Huckleberry) has three site phases described, and the submesic phase can be labeled with the “drier than average” modifier (e.g., SBx). This code should be applied only after consultation with the Regional Ecologist.
y	moister than typical – describes part of the range of conditions for circummesic ecosystems with a wide range of soil moisture regimes or significantly different site conditions. For example, SBSmk1/06 (Sb–Huckleberry–Spirea) is “typically” described as submesic to mesic. When this site series is found on subhygric or hygric sites, the “y” modifier is used (e.g., BHy). This code should be applied only after consultation with the Regional Ecologist.

2.6 Structural Stages

Table 2 lists the structural stage codes, names and criteria.

Table 2: Structural Stage Codes and Criteria

Code	Name	Criteria
1	Sparse/bryoid	Initial stages of primary and secondary succession; bryophytes and lichens often dominant, can be up to 100%; time since disturbance less than 20 years for normal forest succession, may be prolonged (50–100+ years) where there is little or no soil development (bedrock, boulder fields); total shrub and herb cover less than 20%; total tree layer cover less than 10%.
1a	Sparse	Less than 10% vegetation cover.
1b	Bryoid	Bryophyte- and lichen-dominated communities (greater than 1/2 of total vegetation cover).
2	Herb	Early successional stage or herbaceous communities maintained by environmental conditions or disturbance (e.g., snow fields, avalanche tracks, wetlands, grasslands, flooding, intensive grazing, intense fire damage); dominated by herbs (forbs, graminoids, ferns); some invading or residual shrubs and trees may be present; tree layer cover less than 10%, shrub layer cover less than or equal to 20% or less than 1/3 of total cover, herb-layer cover greater than 20%, or greater than or equal to 1/3 of total cover; time since disturbance less than 20 years for normal forest succession; many herbaceous communities are perpetually maintained in this stage.
2a	Forb-dominated	Herbaceous communities dominated (greater than 1/2 of the total herb cover) by non-graminoid herbs, including ferns.
2b	Graminoid-dominated	Herbaceous communities dominated (greater than 1/2 of the total herb cover) by grasses, sedges, reeds, and rushes.
2c	Aquatic	Herbaceous communities dominated (greater than 1/2 of the total herb cover) by floating or submerged aquatic plants; does not include sedges growing in marshes with standing water (which are classed as 2b).
2d	Dwarf shrub	Communities dominated (greater than 1/2 of the total herb cover) by dwarf woody species such as <i>Phyllodoce empetriformis</i> , <i>Cassiope mertensiana</i> , <i>Cassiope tetragona</i> , <i>Arctostaphylos arctica</i> , <i>Salix reticulata</i> , and <i>Rhododendron lapponicum</i> .
3	Shrub/herb	Early successional stage or shrub communities maintained by environmental conditions or disturbance (e.g., snow fields, avalanche tracks, wetlands, grasslands, flooding, intensive grazing, intense fire damage); dominated by shrubby vegetation; seedlings and advance regeneration may be abundant; tree layer cover less than 10%, shrub layer cover greater than 20% or greater than or equal to 1/3 of total cover.
3a	Shrub low	Communities dominated by shrub layer vegetation less than 2 m tall; may be perpetuated indefinitely by environmental conditions or repeated disturbance; seedlings and advance regeneration may be abundant; time since disturbance less than 20 years for normal forest succession.

Code	Name	Criteria
3b	Tall shrub	Communities dominated by shrub layer vegetation that are 2–10 m tall; may be perpetuated indefinitely by environmental conditions or repeated disturbance.
4	Pole/Sapling	Trees greater than 10 m tall, typically densely stocked, have overtopped shrub and herb layers; younger stands are vigorous (usually greater than 10-15 years old).
5	Young Forest	Self-thinning has become evident and the forest canopy has begun differentiation into distinct layers (dominant, main canopy, and overtopped); time since disturbance is generally 40–80 years but may begin as early as age 30, depending on tree species and ecological conditions.
6	Mature Forest	Trees established after the last disturbance have matured; a second cycle of shade tolerant trees may have become established; understories become well developed as the canopy opens up.
7	Old Forest	Old, structurally complex stands composed mainly of shade-tolerant and regenerating tree species, although older seral and long-lived trees from a disturbance such as fire may still dominate the upper canopy; snags and coarse woody debris in all stages of decomposition typical, as are patchy understories.

3.0 CREDITS

This project was coordinated by Corey Erwin and Sari Saunders of BC Government and Dan Bernier of Ecora Resource Group Ltd.

Ecosystem polygon delineation was completed by Shikun Ran, Robyn Laubman, Tom Braumandl (Ecora), and David Yole (independent consulting ecologist). Ecosystem classification was completed by Shikun Ran, Robyn Laubman, Tom Braumandl (Ecora), and David Yole (independent consulting ecologist). External quality assurance was conducted by Allen Banner (Banner Consulting).

Field data collection was completed by Shikun Ran, Dan Bernier, Robyn Laubman, and Krysta Giles-Hansen of Ecora Resource Group Ltd.

GIS Mapping was completed by David Myers of Ecora Resource Group Ltd.

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