

TEM LEGEND INFORMATION (BC PARKS)

TITLE(S)

- Ecosystem Units within Chilliwack Lake Provincial Park and Chilliwack River Ecological Reserve, Vancouver Forest Region.
- Ecosystem Units within Nahatlatch Provincial Park, Vancouver Forest Region.

MAPSHEETS

- BCGS Mapsheets: 092H003, 092H004, 092H013, 092H014 (Chilliwack)
- BCGS Mapsheets: 092H091, 092H092, 092I002 (Nahatlatch)

MAP SCALE

- Scale: 1:20,000

MAPPING DATE

- March, 2002

INTRODUCTION

This terrestrial ecosystem mapping (TEM) project, initiated by BC Parks, Lower Mainland District in 2000, identifies the terrestrial ecosystems within the Chilliwack Lake Provincial Park, Chilliwack River Ecological Reserve, and Nahatlatch Provincial Park. The TEM mapping has been completed in accordance with the 1998 TEM Standards.

As per the BC Conservation Data Centre's (CDC) risk designation criteria, blue-listed (vulnerable) and/or red-listed (threatened or endangered) species have been recorded within two of the three protected areas. A red-listed pacific giant salamander (*Dicamptodon tenebrosus*) was observed in the Chilliwack Lake Provincial Park in 1990 and a blue-listed grizzly bear (*Ursus arctos horribilus*) was observed in Nahatlatch Provincial Park in 2000. BC Parks currently has very limited understanding as to how these occurrences may relate to the terrestrial ecosystems within the protected areas. In order to properly manage for and protect blue and red-listed species, BC Parks has expressed the need to more accurately identify the terrestrial habitats.

This TEM product will be used as a foundation for identifying habitats of potential importance for blue and/or red-listed species within the three protected areas. By mapping terrestrial ecosystems within the protected areas, BC Parks may attain a better understanding as to how the blue and red-listed species are using the terrestrial ecosystems. The TEM data may be used in the future as the basis for deriving wildlife habitat capability and suitability (CAPSU) ratings for selected blue and red-listed species.

MAP LABEL FORMAT

Provide example label clearly indicating ecosection, BEC, and ecosystem units

MAP BOUNDARIES

Provide examples of all line types used to delineate polygons, including study area boundary and sample plot locations..

ECOREGION UNITS

- Chilliwack Ecoregion: Pacific Ranges
Ecosection: Eastern Pacific Ranges EPR
- Nahatlatch Ecoregion: Interior Transition Ranges
Ecosection: Leeward Pacific Ranges LPR

BIOGEOCLIMATIC UNITS

- CWHds1 Southern Dry Submaritime Coastal Western Hemlock Variant
- CWHms1 Southern Moist Submaritime Coastal Western Hemlock Variant
- IDFww Wet Warm Interior Douglas Fir Subzone
- MHmm2 Leeward Moist Maritime Mountain Hemlock Variant
- MHmmp2 Leeward Moist Maritime Mountain Hemlock Parkland Variant
- AT Alpine Tundra Zone

SITE UNITS MAPPED

BEC Unit	Site Series #	Map Code	Site Series Name	Description of Typical Situation	Typical Moisture Regime
IDFww	01	DH	FdCw - Hazelnut	Gentle slope; deep medium - textured soil	submesic - mesic
IDFww	02	DP	FdPI - Peltigera	Gentle slope, crest position; shallow soil	very xeric
IDFww	03	DF	Fd - Falsebox - Feathermoss	Gentle slope, upper slope position, deep medium - textured soil	xeric - subxeric
IDFww	05	RM	CwFd - Vine maple	Gentle slope, lower slope position; deep medium - textured soil, richer nutrient regime	subhygric
IDFww	06	RD	Cw - Devil's club - Lady fern	Gentle slope, lower slope receiving position, deep medium - textured soil, richer nutrient regime	hygric
IDFww	07	RC	CwSxw - Skunk cabbage	Treed swamp, deep medium - textured mineral soil, poorly drained	subhydric
IDFww	00	FE	Organic sedge fen	Sedge-dominated fen on organic soils	subhydric - hydric
IDFww	00	OS	Organic shrub fen	Shrub-dominated fen on organic soils	subhydric - hydric
CWHds1	01	HM	HwFd - Cat's-tail moss	Gentle slope, mid slope position, deep medium - textured soils	submesic - mesic
CWHds1	02	DK	FdPI - Kinnikinnick	Gentle slope, crest position, shallow soil	xeric
CWHds1	03	FF	FdHw - Falsebox	Gentle slope, upper to middle slope position, deep medium - textured soils	xeric - subxeric
CWHds1	04	DF	Fd - Fairybells	Gentle slope, mid slope position, deep medium - textured soils, richer nutrient regime	xeric - subxeric
CWHds1	05	RS	Cw - Solomon's seal	Gentle slope, mid slope position, deep medium - textured soils, richer nutrient regime	submesic - mesic
CWHds1	06	HQ	Hw - Queen's cup	Gentle slope, lower slope position, receiving position, deep medium - textured	subhygric-hygric

Chilliwack Lake TEM Legend

soils					
CWHds1	07	RD	Cw - Devil's club	Gentle slope, lower slope position, receiving position, deep medium - textured soil, richer nutrient regime	subhygric-hygric
CWHds1	08	SS	Ss - Salmonberry	High fluvial bench - floodplain, medium - textured soil	subhygric - hygric
CWHds1	09	CD	Act - Red-osier dogwood	Middle fluvial bench - floodplain, medium - textured soil	subhygric - hygric
CWHds1	10	CW	Act - Willow	Low bench - floodplain, coarse - textured soil	subhygric - hygric
CWHds1	12	RC	CwSs - Skunk cabbage	Depression to flat, treed swamp, poorly drained, deep, medium - textured mineral soil	subhydric
CWHds1	00	AV	Dr - Vine maple avalanche unit	Moderately to steeply sloping colluvial parent materials subject to regular snow avalanching	mesic - subhygric
CWHds1	00	MA	Marsh	Semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	subhydric
CWHms1	01	AM	HwBa - Step moss	Significant slopes; middle slope position; deep medium - textured soils	mesic
CWHms1	02	DK	FdPI - Kinnikinnick	Gentle slope; crest position; shallow soil	very xeric
CWHms1	03	DF	FdHw - Falsebox	Significant slope, upper to middle slope position, warm aspect; deep medium - textured soils	xeric - subxeric
CWHms1	04	AO	BaCw - Oak fern	Significant slopes; deep medium - textured soils	submesic - mesic
CWHms1	05	HQ	HwBa - Queen's cup	Gentle slope; lower slope receiving position, deep medium - textured soil	subhygric - hygric
CWHms1	06	AD	BaCw - Devil's club	Gentle slope; lower slope position, deep medium - textured soil, richer nutrient regime; receiving moisture	subhygric - hygric
CWHms1	07	SS	Ss - Salmonberry	High fluvial bench - floodplain, deep, medium - textured soil	subhygric - hygric
CWHms1	09	CW	Act - Willow	Low bench - floodplain, deep coarse - textured soil	subhygric - hygric
CWHms1	11	RC	CwSs - Skunk cabbage	Treed swamp, poorly drained, level to depression, deep medium - textured soil	subhydric
CWHms1	00	AV	Dr - Vine maple avalanche unit	Moderately to steeply sloping colluvial parent materials subject to regular snow avalanching	mesic - subhygric
CWHms1	00	MA	Marsh	Semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	subhydric
MHmm2	01	MB	HmBa - Blueberry	Significant slopes; deep medium - textured soil	mesic
MHmm2	02	MM	HmBa - Mountain heather	Gentle slopes; crest position; shallow soils	very xeric - xeric
MHmm2	03	MO	BaHm - Oak fern	Significant slopes; deep medium - textured soils; richer nutrient regime	subxeric - mesic
MHmm2	05	MT	BaHm - Twistedstalk	Significant slopes; deep soils; middle to lower slope position, seepage site; richer nutrient regime	subhygric
MHmm2	06	MD	HmYc - Deer cabbage	Lower slope receiving position; gentle slope; deep medium - textured soil	hygric

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MHmm2	07	YH	YcHm - Hellebore	Lower slope receiving position; gentle slopes; deep, medium - textured soil, wet, richer nutrient regime	hygric
MHmm2	00	AA	Ba - Alaskan blueberry	Characterized by infrequent avalanches, stunted, edaphic forest and brush species. Often located in areas fully or partially protected from all but the heaviest of avalanches or snow years	submesic - mesic
MHmm2	00	AH	Sitka Alder - Black huckleberry avalanche chute	Moderate to steeply sloping colluvial parent materials subject to regular snow avalanching	mesic - subhygric
MHmm2	00	BA	Ba - Valerian	A forested parkland unit, typically on gentle, lower slopes in receiving position; deep, medium - textured soil.	subhygric - hygric
MHmm2	00	FH	BaBl - Mountain heather; typic ecosystem unit	Typically on gently sloping morainal blankets in cirque basins. Sites are typified by open canopy Bl and Ba forests with dense mats of mountain heather.	mesic - submesic
MHmm2	00	LB	Liverwort - Brachythecium; typic talus ecosystem unit	Blocky talus slopes subject to rapid mass movement. Soils generally lack development.	xeric-subxeric
MHmm2	00	MR	Mountain heather - Racomitrium scrub	Mountain heather-dominated ecosystems on gentle slopes of colluvial parent materials and/or rock. The shrub layer, typically dominated by pink and white mountain heathers, blue-leaved huckleberry, and oval-leaved blueberry, is often mixed with scattered krummholz	xeric - subxeric
MHmm2	00	OS	Organic shrub fen	Shrub-dominated fen on organic soils	subhydric - hydric
MHmm2	00	SM	Sedge - Mountain hairgrass; meadow ecosystem unit	Gently sloping morainal and glaciolacustrine blankets. Sites are typified by extensive open meadows with a dominance of parkland plants.	mesic - subhygric
MHmmp2	00	MR	Mountain-heather - Racomitrium scrub	Mountain heather-dominated ecosystems on gentle slopes of colluvial parent materials and/or rock. The shrub layer, typically dominated by pink and white mountain heathers, blue-leaved huckleberry, and oval-leaved blueberry, is often mixed with scattered krummholz	xeric - subxeric
MHmmp2	00	JK	Common Juniper - Kinnikinnick	Steep, upper slope positions with shallow colluvial parent materials on warm aspects. May also occur on gently sloping ridge tops.	xeric-subxeric
MHmmp2	00	BJ	BaBl - Juniper	Occurs on steep, exposed, wind-swept ridges. Soils are typically very shallow on colluvial parent materials (typically thin veneers over rock). The tree percent cover is typically very low.	xeric
MHmmp2	00	BV	Blue-leaved huckleberry - Sitka valerian	Shallow soil on colluvial parent materials with steep, cool aspects in upper slope positions.	subxeric - submesic
MHmmp2	00	LB	Liverwort - Brachythecium; talus ecosystem unit	Blocky talus slopes subject to rapid mass movement. Soils generally lack development and are restricted to isolated	xeric-subxeric

pockets.

MHmmp2	00	AS	Alaskan blueberry - Sitka valerian	Moderate to steeply sloping colluvial parent materials subject to regular snow avalanching	mesic - subhygric
MHmmp2	00	FH	BaBl - Mountain heather; typic ecosystem unit	Gently sloping morainal blankets in cirque basins. Sites are typified by open canopy BI and Ba forests with dense mats of mountain heather.	mesic - submesic
MHmmp2	00	AA	Ba - Alaskan Blueberry	Characterized by infrequent avalanches, stunted, edaphic forest and brush species. Often located in areas fully or partially protected from all but the heaviest of avalanches or snow years	submesic - mesic
MHmmp2	00	BA	Ba - Valerian	Forested parkland unit, typically on gentle, lower slopes in receiving position; deep, medium - textured soils.	subhygric - hygric
MHmmp2	00	SM	Sedge - Mountain hairgrass; meadow ecosystem unit	Gently sloping morainal and glaciolacustrine blankets. Sites are typified by extensive open meadows with a dominance of parkland plants.	mesic - subhygric
MHmmp2	00	FE	Organic sedge fen	Sedge-dominated fen on organic soils	subhydric - hydric
AT	00	CP	Copperbrush - Partridgefoot cliff	Very steep, very shallow soils over bedrock; cliffs	xeric
AT	00	PL	Partridgefoot - Lichen rock	Wind-exposed rock ridges and slopes; very shallow soils	xeric - subxeric
ALL	00	BE	Beach		
ALL	00	BI	Blockfields, Blockslopes, Blockstreams		
ALL	00	CL	Cliff		
ALL	00	ES	Exposed Soil		
ALL	00	GB	Gravel bar		
ALL	00	LA	Lake		
ALL	00	MN	Moraine		
ALL	00	OW	Shallow Open Water		
ALL	00	PD	Pond		
ALL	00	PN	Permanent Snow		
ALL	00	RI	River		
ALL	00	RO	Rock Outcrop		
ALL	00	RZ	Road Surface		
ALL	00	TA	Talus		

SITE MODIFIERS MAPPED

a	active floodplain ¹
g	gullying ¹ occurring
h	hummocky ¹ terrain
j	gentle slope
k	cool aspect
n	fan ¹
q	very steep cool aspect
r	ridge ¹ (optional modifier)
t	terrace ¹
w	warm aspect
z	very steep warm aspect
c	coarse-textured soils ²
d	deep soil
m	medium-textured soils
p	peaty material
s	shallow soils
v	very shallow soils

¹ *Howes and Kenk 1997*

² *Soil textures have been grouped specifically for the purposes of ecosystem mapping.*

STRUCTURAL STAGES AND MODIFIERS MAPPED

1	Sparse/Bryoid (less than 10% vegetative cover)
2	Herb
2b	Herb (graminoid dominated)
2d	Herb (dwarf shrub dominated)
3	Shrub/Herb
3a	Low Shrub (< 2m tall)
3b	Tall Shrub (> 2m tall)
4	Pole / Sapling (between 20-40 yrs)
5	Young Forest (between 40-80 yrs)
6	Mature Forest (between 80-250 yrs)
7	Old Forest (> 250 yrs)

DATA SOURCES

ORIGINAL SOURCE SPATIAL DATA

- 1:20,000 scale Terrain Resources Information Management (TRIM 2) data from Geographic Data BC
- Project area boundaries (BC Parks)

AERIAL PHOTOS

- 1:17,000 scale colour aerial photography: 1996 (Chilliwack)
- 1:17,000 scale colour aerial photography: 1997 (Nahatlatch)

ADDITIONAL OR DERIVED INVENTORY SOURCE DATA

- Bioterrain interpreted coverage and digital monorestitution collection following RIC standards (2001)

FIELD INSPECTION

- Visual inspections, full ecosystem (FS882) plots and ground inspections were completed in both project areas
- Completed at Ecosystem Survey Intensity Level 5, 75 Plots were completed within the Chilliwack study area: 52 visual inspections, 3 ecosystem (FS882) plots and 20 ground inspections.
- Completed at Ecosystem Survey Intensity Level 4, 31 Plots were completed within the Nahatlatch study area: 21 visual inspections, 1 ecosystem (FS882) plot and 9 ground inspections.

CREDITS

PROJECT TEAM

- Project Supervisor: Terry Conville, Atticus Resource Consulting Ltd.
- Project Ecologist: Scott Hawker, Atticus Resource Consulting Ltd.
- Bioterrain Mappers: Blythe Kenna, June Ryder & Associates Terrain Analysis Inc.
Stephanie Sork, June Ryder & Associates Terrain Analysis Inc.
- GIS Personnel: Jim Sin, Atticus Resource Consulting Ltd.

CORRELATION

- Bioterrain Review: Deepa Spaeth-Filatow, provincial bioterrain specialist, Ministry of Sustainable Resource Management
- Ecotyping Review: Corey Erwin, vegetation ecologist, Ministry of Sustainable Resource Management
- In-House Ecotyping Review: Terry Conville, Atticus Resource Consulting Ltd.

COORDINATING AND FUNDING AGENCIES

- Mapping for: Planning, Innovation and Enforcement Division (P.I.E.), Ministry of Water, Land and Air Protection - Lower Mainland Region
- Contact: Tom Eng, Data Technician, Ministry of Water, Land and Air Protection
- Funded by: Ministry of Water, Land and Air Protection - Lower Mainland Region (Contract #: CGLVOS0342)

CITATION

Atticus Resource Consulting Ltd. 2002. Terrestrial Ecosystem Mapping of Chilliwack Lake Provincial Park and Chilliwack River Ecological Reserve. Prepared for the Planning, Innovation and Enforcement (P.I.E.) Division of the Ministry of Water, Land and Air Protection, Lower Mainland Region. 1:20,000 maps.

Atticus Resource Consulting Ltd. 2002. Terrestrial Ecosystem Mapping of Nahatlatch Provincial Park. Prepared for the Planning, Innovation and Enforcement (P.I.E.) Division of the Ministry of Water, Land and Air Protection, Lower Mainland Region. 1:20,000 maps.