TERRESTRIAL ECOSYSTEM UNITS OF THE DUNEDIN STUDY AREA
Prince George Forest Region

Portions of BCGS mapsheets 94N/104, 105, 109, 110, 114, 115; 94O/101; 94K/118, 119, 120, 123, 124, 125, 94J/116

Scale 1:50 000

1. INTRODUCTION

1.1 Objectives: This work was conducted for Slocan Forest Products Ltd. in order to classify, map, and describe the terrestrial ecosystems of the Dunedin study area and to interpret them with respect to their wildlife habitat values. The Dunedin study area includes the Dunedin River watershed, located in northeastern British Columbia, east of the Rocky Mountains and south of the Liard River.

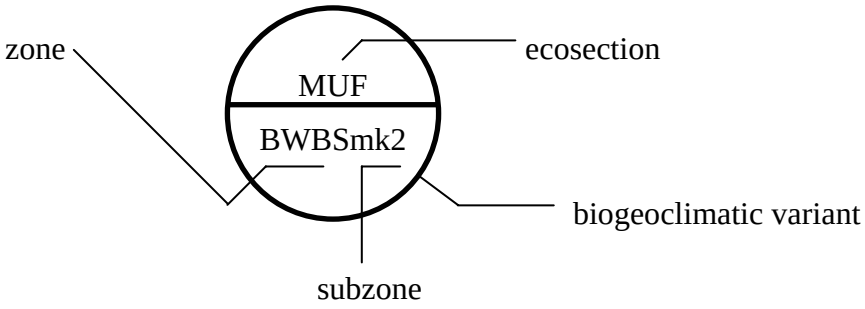
1.2 Mapping: Ecosystem mapping follows the methodology documented in "*Standards for Terrestrial Ecosystem Mapping in British Columbia*" (Ecosystems Working Group 1998) and in draft versions of the standards (Ecosystems Working Group 1995 and Cadrin *et al*. 1996). A level 4 survey intensity was conducted.

1.3 Classification: Ecosystem classification is within a three-level hierarchy of units. The broad ecological framework is provided by the two upper levels of classification, the Ecoregion Classification and Biogeoclimatic Units. Ecosystem Units form the third level of classification. Ecosystems of the study area are described in the Price George Forest Region guides (DeLong *et al*. 1990, MacKinnon et al. 1990). Forested ecosystems are named after the equivalent series (as described in the Ecosystem Working Group 1995, Cadrin *et al*. 1996). Some ecosystem units described are based on units described by Craig DeLong, Regional Ecologist for the Prince George Forest Region. Remaining ecosystem units are described for the first time in the accompanying report (Barton and Veach 1998).

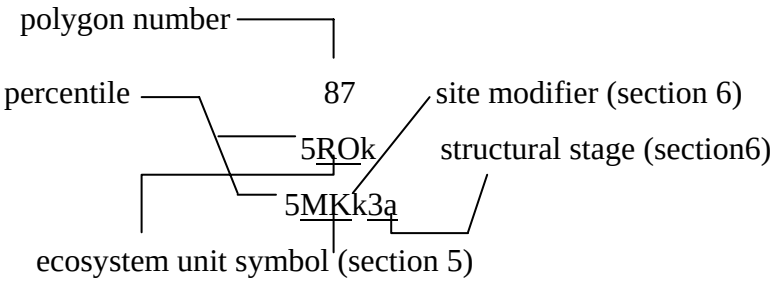
2. MAP SYMBOLS AND BOUNDARIES

▬▬▬▬	Ecosection boundary
▬▬▬▬	Biogeoclimatic unit (zone, subzone and variant)
———	Ecosystem units
▬▬▬▬	Study area boundary
⊙ G48	Plot location
Ⓗ	Helicopter landing site

2.2 **Biogeoclimatic Zone Symbol**



2.2 Map Unit Labels



ECOREGION UNITS

Ecoregion Classification is a very broad classification system that describes large landscape units within five levels of organization, of which the lowest level, that of ecosections, is most applicable for this study. The Dunedin study area falls within the Muskwa Plateau and Muskwa Foothills Ecosections. The Muskwa Plateau Ecosection is a dissected upland area that rises above the Fort Nelson Lowland to the east. The Muskwa Foothills Ecosection is an area of subdued mountains that are isolated by wide valleys. This area is in the rainshadow of the Rocky Mountains to the west; it is also more commonly under the influence of cold Arctic air in the winter (Demarchi 1996).

3. BIOGEOCLIMATIC UNITS

Biogeoclimatic classification involves up to four levels: zone, subzone, variant and phase. Three biogeoclimatic zones are represented in the study area: the Boreal White and Black Spruce zone (BWBS), the Spruce Willow Birch zone (SWB), and the Alpine Tundra zone (AT).

3.1 BOREAL WHITE AND BLACK SPRUCE ZONE (BWBS)

This is a lowland to montane zone characterized by a northern continental climate with long, cold winters and short summers. Poor tree growth reflects the adverse climate, especially the short growing season and cold soil temperatures (DeLong *et al*. 1990).

> BWBSmw2: Moist Warm, Fort Nelson variant. This variant occurs throughout the study area between 300 and 1050 metres. It is wet and warm during the growing season but cold during the winter.

BWBSwk3: Wet Cool variant. Occuring only in isolated pockets in our study area, this variant has an eleavational range between 900 and 1300 metres. There is very little climatic data for this variant but it is assumed to be similar in climate to other BWBS variants (DeLong et al. 1990). Its forests are dominated by white spruce and pine, with *Vaccinium membranaceum* as an understorey indicator.

3.2 SPRUCE WILLOW BIRCH ZONE (SWB)

This zone has an interior subalpine climate characterized by long, very cold winters, and brief, cool summers. Lower elevations of the SWB have intermittent white spruce and subalpine fir forests, while upper elevations are dominated by willow and scrub birch low shrub interspersed with grass and sedge-dominated meadows (MacKinnon *et al*. (1990).

SWBmk: Moist Cool subzone. This subzone occurs between 1000 and 1450 metres (to 800 metres).

SWBmks: Moist Cool Scrub subzone. Occurring between 1340 and 1650 metres, this subzone is virtually treeless, dominated by sedge grass meadows, and low scrub birch and willow thickets.

3.3 ALPINE TUNDRA ZONE (AT)

The severe climate of this zone is characterized by low growing season temperatures and a very short frost-free period. The AT is treeless and is dominated by dwarf woody plants, sedges and lichens (MacKinnon et al. 1990). The subzone occurs between 1550 and 2105 metres.

4. ECOSYSTEM UNITS

The ecosystem units listed below are fully described in an associated project report (Barton and Veach 1998) pending.

4.1 Ecosystem Units of the BWBSmw2:

Symbol	Site Series #	Site Series Name	Typical Situation	Assumed Modifier	Mapped Modifier
AM	01	SwAt-Step moss	Gentle slope; deep, medium-textured soils.	d, j, m	k, w, q, z, y
BB	06	Sb – Feathermoss – Bludbells	Gentle slope; lower slope position, deep, medium-textured soil.	d, j, m	p
BK	03	Sb - Lingonberry – Knight's plume	*Noncorrelated unit, talk with Regional Ecologist.	d, j, m, r	k, w, q, z, s
BL	04	Sb - Lingonberry – Coltsfoot	Gentle slope; lower slope or toe position;	d, j, m	k, w

			deep, medium-textured soil.		
BS	08	Sb – Cloudberry – Sphagnum	Organic bog wetland.	p	none
BW	09	Sb – Willow	Level sites; deep, medium-textured soil.	d, m	p
JB	00	Tall Jacob's ladder - Bluejoint			none
LL	02	Pl-Lingonberry – velvet-leaved blueberry	Gentle slope, deep, coarse–textured soils.	c, d, j	w
SB	00	Sandbar willow			none
SC	00	*			
SD	00	Sb - Devil's club			none
SH	05	Sw – Currant - Horsetail	Gentle slope to level; moist, receiving sites, coarse-textured soil.	c, j	
SH;pa	05$	Ac – Alder - Horsetail			a, m
SK	00	*			
SP	00	Spruce-Polargrass			
SS	00	Scrub birch - Willow-Water sedge			none
SW	00	*			
WA	00	Willow-Alder	?		k, w
TB	10	Lt - Buckbean	Organic fen wetland; medium to rich nutrient regime.	p	none

5.2 Ecosystem Units of the BWBSwk3:

Symbol	Site Series #	Site Series Name	Typical Situation	Assumed Modifier	Mapped Modifier
BA	00	Bog blueberry - Alpine bearberry			none
FH	00	Subalpine fir – Black huckleberry			k, w
FL	00	Fragrant wood fern - Lichen			k
JB	00	Tall Jacob's ladder - Bluejoint			none

LB	00	Lodgepole pine - Bluejoint			w
LC	00	Lodgepole pine - Crowberry			w, k
SC	00	White spruce-Currant			
WA	00	Willow Alder			k, w

5.3 Ecosystem Units of the SWBmk:

Symbol	Site Series #	Site Series Name	Typical Situation	Assumed Modifier	Mapped Modifier
AW	00	Entire-Leaved mountain-avens-Netted willow			
JB	00	Tall Jacob's ladder-Bluejoint			none
MA	00	Entire-leaved mountain-avens-Arctic lupine			
SA	00	Scrub birch-Altai fescue			
SB	00	*			w, k
SC	00	Sw-Prickly Rose – Shrubby cinquefoil			j, w, x
SH	00	*			w, k
SK	00	Sw-Willow - kinnikinnick			a, j, w, k
SL	00	Sw-Willow - Larkspur			j, k, w
SP	00	Sw - Polargrass			k
SW	00	Sw – Hairywildrye – Step Moss			k, w
WS	00	Willow –Bog birch - Sedge			none
WY	00	Willow - Yellow mountain-avens			none

5.4 Vegetated Ecosystem Units of the SWBmks:

Symbol	Site Series #	Site Series Name	Typical Situation	Assumed Modifier	Mapped Modifier

AW	00	Entire-leaved mountain-avens - Netted Willow			k, w
MA	00	Entire-leaved mountain-avens - Arctic Lupine			k, w
SA	00	Scrub birch – Altai fescue			k, w
SC	00	*			j
SK	00	*			

5.5 Ecosystem Units of the AT:

Symbol	Site Series #	Site Series Name	Typical Situation	Assumed Modifier	Mapped Modifier
ML	00	Moss campion - Limestone sunshine lichen			k, w

5.6 Sparsely Vegetated, non-Vegetated Units:

Symbol	Site Series Name	Typical Situation	Assumed Modifier	Mapped Modifier
BF	Blockfield			
CL	Cliff			
ES	Exposed Soil			
GB	Gravel bar			
LA	Lake			
PD	Pond			
RG	Rock Glacier			
RI	River			
RO	Rock Outcrop			
RU	Rubble			

Ecosystem units are assigned according to published standards (Ecosystems Working Group 1995, Cadrin *et al*. 1996) and unpublished addenda (Ecosystem Working Group 1998). Ecosystem Units drawn from various sources have been assigned two letter symbols.

* Map units developed by Craig DeLong, Regional Ecologist for the Prince George Forest Region.

5. STRUCTURAL STAGES & SITE MODIFIERS

No. Structural Stage Site Modifiers

1	Non-vegetated/sparse	**a**	active floodplain
1a	Non-vegetated	**j**	gentle slope
2a	Forb-dominated Herb	**k**	cool aspect (285^o – 135^o, slope 25-100%)
2b	Graminoid-doiminated Herb	**m**	medium-textured soils
2d	Dwarf shrub	**p**	peaty material on surface
3	Shrub/Herb (regenerating)	**q**	very steep cool aspect (285^o–135^o, slope>100%)
3a	Low shrub	**s**	shallow soils (20-100 cm)
3b	Tall Shrub	**w**	warm aspect (135^o-285^o, slope 25-100%)
4	Pole/Sapling	**x**	drier than typical
5	Young Forest	**y**	moister than typical
6	Mature Forest	**z**	very steep warm aspect (135^o-285^o, slope>100%)

6. SURVEY INTENSITY AND SAMPLING

Detailed plots, ground inspections, and visual checks were completed in the study area to achieve a survey intensity of 28%. Field sampling resulted in 63 ecosystem plots, 219 ground inspections, and 756 visual plots for a total of 1038 plots. Plot locations are shown on the map. Those beginning with a G are ground inspection plots and those beginning with a V are visual plots. Those that are labeled as numbers (e.g. 13-3) are visual plots done from a hovering helicopter and all others are detailed ecosystem plots.

7. DATA SOURCES

Fieldwork: Madrone Consultants Ltd., Duncan, BC.
Aerial Photographs: 1986 and 1987 black and white stereo aerial photographs (approximate scale 1:63 000).
Aspect Maps: Hugh Hamilton Ltd., North Vancouver, BC.
Forest Cover Maps: Slocan Forest Products Ltd., Fort Nelson, BC.
Bedrock Geology data: Taylor, G.C., *Map 1343A: Tuchodi Lakes*. Geological Survey of Canada, 1971 TRIM base maps: 1;20 000.
1:50 000 NTS topographic maps.

7.1 References

Barton, K., and L. Veach. 1998. *Terrestrial Ecosystem Mapping for Wildlife Interpretations for the Dunedin Study Area*. Madrone Consultants Ltd., Duncan, BC.

Cadrin, C., T. Lea, B. Maxwell, D. Meidlinger and B. von Sacken. 1996. *Addenda to Terrestrial Ecosystems Mapping Standards (Draft Version).* Ecosystems Working Group, Resources Inventory Committee, Victoria, BC.

DeLong, C., A. MacKinnon and L. Jang. 1990. *A Field Guide for Identification and Interpretation of Ecosystems of the Northeast Portion of the Prince George Forest Region*. Land Management Handbook Number 22, BC Ministry of Forests, Victoria, BC.

Demarchi, D.A., 1996. *An Introduction to the Ecoregions of British Columbia*. BC Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria, BC.

Ecosystems Working Group. 1995. *Standards for Terrestrial Ecosystem Mapping in British Columbia (Review Draft*). Resources Inventory Committee, Terrestrial Ecosystem Task Force, Victoria, BC.

Ecosystems Working Group. 1998, *Addenda to Standards for Terrestrial Ecosystem Mapping in British Columbia (Review Draft)*. Resource Inventory Committee, Terrestrial Ecosystems Task Force, Victoria, BC.

MacKinnon, A., C. DeLong and D. Meidinger. 1990. *A Field Guide for Identification and Interpretation of Ecosystems of the Northwest Portion of the Prince George Forest Region*. Land Management Handbook Number 21, BC Ministry of Forests, Victoria, BC.

8. CREDITS

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