

# Vascular Plant inventory of Bowen Island ER #48

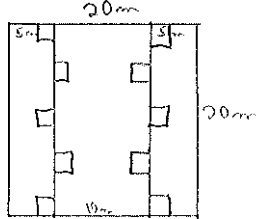
## BOWEN ISLAND ECOLOGICAL RESERVE (#48)

### Size of Sample Plots

20 m x 20 m

### Sampling Scheme

1. All plots were subjectively located and are permanently located by corner stakes.
2. Within the plots the following procedure was used:
  - (a) Tree data were taken on whole plot
  - (b) Shrub data were taken on whole plot
  - (c) Herb, Bryophyte and tree seedling data were taken from ten 1 m x 1 m sub-plots located systematically within the large plot as follows.



Cover values were averaged to get a single value.

Frequency values are based on the number of occurrences in the sub-plots.

3. Cover estimates were made using the same scale as was used for the Tow Hill study.

1977. Vascular plant inventory.

student M. Bell

Brown Island

*Pseudotsuga menziesii*

Table 2 *Pseudotsuga menziesii* - *Stokesiella oregana* Association

Stand No.	31	13	16	21	14	24	12	23	29
Aspect	SW	---	SE	W	SE	N	SE	E	WSW
Slope (degrees)	8	---	10	22	13	15	---	6	35
Topography	Bench	Low Ridge	Bench	Mid Slope	Mid Slope	Edge of Bench	Bench	Bench	Mid Slope
Cover (%)	60	90	85	75	85	75	90	90	65
Tree Stratum	30	1	---	2	2	2	---	3	8
High Shrub Stratum	2	1	2	20	2	3	1	1	3
Low Shrub Stratum	50	22	15	40	50	20	12	45	60
Herb Stratum	90	60	60	40	50	45	25	25	40
Bryophyte Stratum									

Species by Stratum<sup>a</sup>

Species	31	13	16	21	14	24	12	23	29	X Class
<u>Tree Stratum</u>										
<i>Pseudotsuga menziesii</i>	60	95	85	95	85	85	85	75	65	V
<i>Alnus rubra</i>	---	4	---	---	---	---	4	8	---	II
<u>High Shrub - Transgressive Stratum</u>										
<i>Vaccinium parvifolium</i>	2	P	---	---	2	2	---	4	---	IV
<i>Holodiscus discolor</i>	30	---	---	1	---	1	P	---	12	III
<i>Pseudotsuga menziesii</i>	2	---	1	---	---	1	---	1	---	III

<sup>a</sup> Data are: Cover(%) / Frequency (%) and Constancy given by percentage class (I = 1-20%; II = 21-40%; III = 41-60%; IV = 61-80%; V = 81-100%), + indicates cover of less than .1%, P indicates present in the stand but not in the subplots.

Table continued

Stand No.	31	13	16	21	14	24	12	23	29	% Class
<u>Low Shrub Stratum</u>										
<i>Vaccinium parvifolium</i>	+	3	3	3	4	3	2	4	4	V
<i>Gaultheria shallon</i>	1	2	1	6	1	1	---	2	4	V
<i>Rosa gymnocarpa</i>	3	---	1	---	---	P	---	1	---	III
<i>Holodiscus discolor</i>	---	---	1	1	---	---	---	---	2	III
<i>Berberis nervosa</i>	2	---	---	---	---	---	---	---	2	II
<i>Arelanchier alnifolia</i>	---	---	---	---	---	1	---	1	---	II
<i>Ribes lacustre</i>	P	---	---	---	---	---	P	---	+	II
<u>Herb - Dwarf Shrub Stratum</u>										
<i>Vaccinium parvifolium</i>	1.7/60	2/50	2/70	2/60	7/80	6/90	.5/20	4.5/70	.2/10	V
<i>Trisetum cernuum</i>	4/90	.4/20	.5/20	.6/20	.1/10	1.5/40	+/10	1/20	.1/20	V
<i>Pseudotsuga menziesii</i>	1.5/80	.2/30	.2/50	.1/20	.3/40	.3/50	+/10	.1/20	+/10	V
<i>Pteridium aquilinum</i>	34/80	20/50	16/60	.2/10	23/60	11/40	10/50	42/90	---	V
<i>Polystichum munitum</i>	8/60	P	1.5/10	5/30	P	1.5/20	4/20	P	2/40	V
<i>Festuca occidentalis</i>	2.5/80	P	2/40	.8/30	.3/20	.2/10	.4/20	P	.1/10	V
<i>Tsuga heterophylla</i>	.2/30	+/10	.2/40	P	P	+/10	P	P	P	V
<i>Gaultheria shallon</i>	P	.4/10	+/10	.8/30	P	P	.1/10	P	P	V
<i>Rubus ursinus</i>	.5/20	P	P	.2/10	+/10	.1/10	P	P	---	V
<i>Coccyra oblongifolia</i>	.5/40	P	.4/10	.2/10	P	P	P	.5/20	P	V
<i>Linnaea borealis</i>	7.5/60	---	1/40	3/50	.6/30	2/60	---	5/40	3.5/50	IV
<i>Polypodium glycyrrhiza</i>	P	P	---	P	---	.2/10	.3/20	P	.8/40	IV
<i>Viola sp.</i>	8/100	.2/20	.1/10	2/30	.3/20	P	---	---	---	IV
<i>Hieracium albiflorum</i>	1.5/50	.2/10	---	P	---	P	P	P	---	IV

Table continued

Stand No.	31	13	16	21	14	24	12	23	29	% Class
Herb - Dwarf Shrub Stratum										
<i>Chimaphila menziesii</i>	---	---	P	.2/20	---	P	+/10	---	P	III
<i>Berberis nervosa</i>	5/20	---	---	4/40	2.5/10	P	---	---	4.1/90	III
<i>Tricentalis latifolia</i>	.4/10	---	---	1.5/40	.1/10	---	---	---	.5/20	III
<i>Luzula campestris</i>	1/40	---	.3/20	P	P	P	---	---	---	III
<i>Listera</i> sp.	---	1/50	+/10	---	.8/30	---	P	---	---	III
<i>Montia parviflora</i>	.2/10	---	---	P	---	P	---	P	---	III
<i>Holodiscus discolor</i>	1.5/40	---	P	---	---	---	---	P	.2/10	III
<i>Galium aparine</i>	3.5/80	---	---	2/40	---	---	---	---	1.5/40	II
<i>Thuja plicata</i>	.3/20	---	---	.1/30	---	---	---	---	P	II
<i>Elymus glaucus</i>	.5/20	---	---	---	P	---	P	---	---	II
<i>Stellaria crispa</i>	---	---	---	---	---	P	.4/10	---	P	II
<i>Alnus rubra</i>	---	---	---	---	---	---	---	---	---	II
<i>Lonicera ciliosa</i>	---	---	---	P	---	---	---	---	---	II
<i>Dryopteris austriaca</i>	---	---	---	P	---	---	---	---	P	II
<i>Acer circinatum</i>	---	---	---	P	---	---	P	---	---	II
Bryophyte Stratum										
<i>Scoteseiella oregana</i>	10/80	17/100	17/70	5.5/70	6.3/90	1/30	.4/20	1/20	12/90	V
<i>Rhizomium glabrescens</i>	.6/20	.8/50	.5/30	.5/20	1.7/70	.1/10	.5/20	.6/30	.8/40	V
<i>Rytmum</i> sp.	1/40	1/50	.7/30	4/70	4/60	4/80	+/10	2/60	1.5/60	V
<i>Dicranum fuscescens</i>	3/30	6/60	5/90	3/50	8/80	1.7/60	8/60	2.2/40	.7/70	V
<i>Isopterygium elegans</i>	1.5/60	4.5/60	2/60	3/60	8.5/80	10/80	2.7/80	2/70	2.8/100	V
<i>Plagiothecium undulatum</i>	4.5/80	18/90	1.8/30	.3/10	9/70	8.8/30	4.5/30	4.5/40	.1/20	V

Table continued

Stand No.	31	13	16	21	14	24	12	23	29	% Class
<u>Bryophyte Stratum</u>										
<i>Rhacomitrium splendens</i>	25/100	4/60	4/60	2.2/40	3.5/60	P	P	P	1.2/40	V
<i>Rhytidiopsis robusta</i>	8.5/70	6/50	2.5/20	.8/30	15.5/60	2/30	—	4/10	.3/20	V
<i>Scapania</i> sp.	.4/20	1.5/60	.8/70	2.5/100	2/60	2.5/60	.8/50	P	.7/30	V
<i>Isoetes stoloniferum</i>	.2/10	.2/10	P	.3/10	—	.4/10	.5/20	.2/10	4.5/30	V
<i>Rhacomitrium heterostichum</i>	—	P	.1/10	.6/30	P	.8/50	—	P	.1/10	IV
<i>Mnium spinulosum</i>	.8/30	.5/30	1/40	.5/20	—	—	.3/20	—	.3/10	IV
<i>Polytrichum juniperinum</i>	1/30	.3/20	.2/10	P	—	P	.4/20	P	—	IV
<i>Rhytidiadelphus loreus</i>	18/80	.1/10	.5/30	.2/10	2/40	—	.1/20	—	.4/10	IV
<i>Plagiobothrium laetum</i>	.2/10	—	P	—	—	P	P	P	.2/20	III
<i>Dicranum howellii</i>	1.5/40	—	.5/10	—	—	5/70	—	—	—	II
<i>Polytrichum commune</i>	—	P	9/20	—	—	P	—	—	—	II
<i>Pogonatum alpinum</i>	4.5/60	—	—	—	—	7/30	—	—	—	II
<i>Plagiommium insigne</i>	P	—	—	—	—	—	.2/10	—	—	II
<i>Peltigera aphthosa</i>	—	—	P	—	—	—	—	—	.4/10	II
<i>P. membranacea</i>	P	—	—	—	—	—	—	—	P	II
<i>Plagiobothrium asplenoides</i>	—	—	P	—	—	—	—	—	P	II
<i>Dicranopsis cirrata</i>	—	—	—	—	—	P	P	P	—	II

Sporadic Species (only in one stand)

High Shrub - Transgressive Stratum*Picea sitchensis* 16(1), *Rosa gymnocarpa* 21(1)

Table continued

Low Shrub Stratum

*Menziessia ferruginea* 24(1)

Herb - Dwarf Shrub Stratum

*Malva subulata* 31(7), *Achillea millefolium* 31(P), *Adonocaulon bicolor* 31(+), *Agrostis scabra* 31(P), *Athyrium filix-femina* 31(P),  
*Blechnum spicant* 31(P), *Circaea alpina* 29(P), *Coralorrhiza maculata* 29(1), *Carex* sp. 31(.4), *Epilobium angustifolium* 21(+),  
*Fragaria vesca* 31(2.5), *Lactuca* sp. 31(.8), *Luzula parviflora* 12(.1), *Ranunculus uncinatus* 31(P), *Ribes lacustre* 31(+), *Pyrola*  
*plata* 16(P), *Sorbus sitchensis* 23(.1), *Tharexella laciniata* 31(P).

Epiphyte - Lichen Stratum

*Cladonia implexa* 31(P), *Claopodium* sp. 29(.1), *Dicranum tausicum* 24(+), *Peltigera canina* 16(P), *Rhacomitrium canescens* 31(P).

Table 3 Pinus contorta - Moss Association

Stand No.	17	26
Aspect	SE	SE
Slope (degrees)	12	21
Topography	Top of Slope Edge of Rock Outcrop	Edge of Rock Outcrop
Cover (%) Tree Stratum	80	90
High Shrub-Transgressive	1	2
Low Shrub Stratum	1	1
Herb Stratum	2	8
Bryophyte-Lichen Stratum	40	20
Species by Strata <sup>a</sup>		
<u>Tree Stratum</u>		
<i>Pseudotsuga menziesii</i>	68	68
<i>Pinus contorta</i>	68	15
<i>Salix</i> sp	2	-
<u>High Shrub-Transgressive Stratum</u>		
<i>Vaccinium parvifolium</i>	+	1
<i>Pseudotsuga menziesii</i>	2	+
<i>Holodiscus discolor</i>	-	P
<u>Low Shrub Stratum</u>		
<i>Vaccinium parvifolium</i>	2	3
<i>Gaultheria shallon</i>	+	2
<i>Holodiscus discolor</i>	-	1
<i>Rosa gymnocarpa</i>	-	+

<sup>a</sup>Data are: Cover (%) / Frequency (%) and Constancy given by percentage class (I = 1-20%; II = 21-40%; III = 41-60%; IV = 61-80%; V = 81-100%).  
P indicates present in the stand but not the subplots. + indicates a cover of less than .1%.

Table continued

Stand No.	17	26
<u>Herb-Dwarf Shrub Stratum</u>		
<i>Linnaea borealis</i>	3.5/60	.3/10
<i>Vaccinium parvifolium</i>	.1/10	.5/20
<i>Rubus ursinus</i>	+/10	.1/10
<i>Gaultheria shallon</i>	P	.2/10
<i>Rosa gymnocarpa</i>	P	+/10
<i>Pseudotsuga menziesii</i>	P	+/10
<i>Holodiscus discolor</i>	P	P
<i>Festuca occidentalis</i>	P	P
<i>Tsuga heterophylla</i>	P	P
<i>Hieracium albiflorum</i>	P	P
<i>Goodyera oblongifolia</i>	P	P
<i>Calypso bulbosa</i>	P	P
<i>Listera</i> sp	-	.1/10
<i>Berberis nervosa</i>	-	4.8/30
<i>Pteridium aquilinum</i>	-	P
<i>Trientalis latifolia</i>	-	P
<i>Elymus glaucus</i>	-	P
<i>Polypodium glycyrrhiza</i>	-	P
<i>Danthonia spicata</i>	P	-
<i>Pyrola picta</i>	P	-
<i>Pyrola asarifolia</i>	P	-
<i>Lilium columbianum</i>	P	-
<u>Bryophyte-Lichen Stratum</u>		
<i>Dicranum fuscoscens</i>	6/90	3.3/70
<i>Rhytidiopsis robusta</i>	.4/10	.2/10
<i>Hypnum</i> sp	1.8/50	4.8/80
<i>Isopterygium elegans</i>	3.5/50	14/100
<i>Dicranoseisia cirrata</i>	2.4/30	.2/10
<i>Rhacomitrium heterostichum</i>	1.2/60	1.5/60



Table Continued

Stand No.	17	26
<u>Bryophyte-Lichen Stratum</u>		
<i>Stokesiella oregana</i>	1.3/30	.4/10
<i>Scapania</i> sp	.1/10	.6/30
<i>Plagiothecium undulatum</i>	2/40	P
<i>Polytrichum juniperinum</i>	P	P
<i>Mnium spinulosum</i>	-	P
<i>Hylocomium splendens</i>	P	P
<i>Dicranum tauricum</i>	P	P
<i>Rhytidiadelphus loreus</i>	2.5/10	-
<i>Polytrichum commune</i>	2.5/10	-
<i>Dicranum howellii</i>	-	.5/20
<i>Isothecium stoloniferum</i>	-	P
<i>Rhizomnium glabrescens</i>	-	P
<i>Cladina impexa</i>	P	-
<i>Rhacomitrium canescens</i>	P	-

*Bowman Island*

Table 4 *Pseudotsuga menziesii* - *Polystichum munifolium* Association

Stand No.	15	7	10	5	25	20	18	8	19
Aspect	SSE	NW	WSW	W	ESE	W	S	SW	W
Slope (degrees)	29°	33°	17°	14°	11°	25°	12°	18°	5°
Topography	Lower Talus	Lower Talus	Mid-Lower Slope	Lower Slope	Mid-Slope	Lower Slope	Lower Slope	Lower Slope & Basin	Lower Slope & Basin
Cover (%)	80	75	85	90	80	95	80	70	90
Tree Stratum	0	10	5	0	1	3	1	1	1
High Shrub Stratum	2	10	1	5	1	1	1	3	1
Low Shrub Stratum	85	45	70	25	75	70	85	55	75
Herb Stratum	7	15	7	12	10	30	40	95	20
Bryophyte Stratum									

Species by Stratum<sup>a</sup>

Tree Stratum										% Class	
<i>Pseudotsuga menziesii</i>	67.5	67.5	67.5	67.5	15	67.5	67.5	67.5	67.5	40	V
<i>Alnus rubra</i>	7.5	4	15	4	85	25	15	15	15	50	V
<i>Tsuga heterophylla</i>	-	4	-	15	-	7.5	-	7.5	-	-	III
<i>Thuja plicata</i>	-	-	-	15	-	-	-	-	-	7.5	II

<sup>a</sup>Data are: Cover (%)/Frequency (%), and Constancy by percentage class (I = 1-20%; II = 21-40%; III = 41-60%; IV = 61-80%; V = 81-100%), + indicates cover of less than .1%, P indicates occurrence in the stand but not in the subplots.

Table continued

Stand No.	15	7	10	5	25	20	18	8	19	% Class
<u>High Shrub - Transpressive Stratum</u>										
<i>Holodiscus discolor</i>	P	4	—	—	—	7.5	—	P	—	III
<i>Pseudotsuga menziesii</i>	—	—	4	—	2	4	P	—	1	III
<i>Vaccinium parvifolium</i>	—	4	—	—	—	—	—	7.5	—	II
<u>Low Shrub Stratum</u>										
<i>Vaccinium parvifolium</i>	2	4	2	2	2	4	3	—	2	V
<i>Rosa gymnocarpa</i>	P	1	1	—	2	2	P	—	1	IV
<i>Ribes lacustre</i>	1	1	—	P	1	—	1	P	P	IV
<i>Gaultheria shallon</i>	P	4	+	2	—	—	2	2	—	IV
<u>Herb - Dwarf Shrub Stratum</u>										
<i>Polystichum monitum</i>	5/60	32/90	22/80	20/90	31/60	60/90	14/40	49/100	40/90	V
<i>Vaccinium parvifolium</i>	3/30	1.5/60	.5/30	1/50	.5/20	1.4/40	1.5/60	1.5/60	1.2/40	V
<i>Tricentalis latifolia</i>	+/10	1/40	1/40	2/80	3/70	2.5/80	.4/20	2/80	1.4/40	V
<i>Pteridium aquilinum</i>	P	1.5/30	28/100	1/40	46/100	2/40	45/100	6/80	47/80	V
<i>Trisetum cernuum</i>	P	.6/40	1.5/60	1/60	4/100	1.5/50	3/70	1.7/90	1.7/60	V
<i>Galium aparine</i>	—	1.2/40	+/10	2/80	2/60	4/60	P	1.6/60	1.1/50	V
<i>Viola sp.</i>	—	1/60	1/40	.4/40	2.5/70	2/70	P	6/100	.3/20	V
<i>Dryopteris austriaca</i>	P	P	.5/20	+/10	.2/10	.4/10	1.7/40	P	1/30	V
<i>Pseudotsuga menziesii</i>	P	P	.1/20	+/10	+/10	P	P	.1/10	+/10	V
<i>Barberis nervos</i>	33/100	3/30	P	P	P	6/30	—	P	P	V
<i>Coccyra oblongifolia</i>	+/10	.1/20	P	+/10	.2/10	.2/10	—	P	+/10	V
<i>Rubus ursinus</i>	P	P	1/50	P	.1/10	.2/10	P	—	P	V



Table continued

Stand No.	15	7	10	5	25	20	18	8	19	% Class
Herb - Dwarf Shrub Stratum										
<i>Osmorhiza chilensis</i>	---	---	---	---	.5/20	---	---	.1/10	---	II
<i>Rosa gymnocarpa</i>	---	---	---	---	---	---	.1/10	.2/10	---	II
<i>Lonicera villosa</i>	+/10	---	---	P	---	---	---	---	---	II
<i>Listera</i> sp.	---	P	---	---	---	---	---	P	---	II
<i>Circaea alpina</i>	---	---	---	---	P	---	---	P	---	II
<i>Rubus spectabilis</i>	---	---	---	---	---	P	---	---	---	II
<i>Ranunculus uncinatus</i>	---	P	---	---	---	---	---	P	P	II
<u> Bryophyte - Lichen Stratum</u>										
<i>Plagiobothrium undulatum</i>	.5/20	4/30	.1/30	1/60	1/20	5/40	12/80	1.3/60	6/60	V
<i>Rhizomatium glabrescens</i>	1/40	2/100	.4/40	3/80	1/60	2.5/60	3/60	5/80	2.4/70	V
<i>Dicranum fuscoscens</i>	.3/20	.7/30	.2/20	.2/20	.4/20	---	3/50	.2/10	.1/10	V
<i>Stokesiaella exegana</i>	P	.1/20	.2/20	.4/40	.6/40	.2/20	.1/30	2.4/90	.1/20	V
<i>Rhytidolepis lorous</i>	P	1.5/10	.1/20	.1/10	2.5/50	9/50	15/80	9/90	3/50	V
<i>Isopterygium elegans</i>	5/90	---	1/40	P	1.2/60	1/50	1/50	2.3/50	1.7/60	V
<i>Hylacomium splendens</i>	P	.1/20	+/10	P	P	1.5/50	.1/10	.2/10	.8/20	V
<i>Plagiomnium insighte</i>	P	P	P	---	.4/20	+/10	1.2/30	3.5/50	1.7/50	V
<i>Hypnum</i> sp.	3.5/80	P	P	P	.2/10	P	.2/20	P	---	V
<i>Isoetecium stoloniferum</i>	P	P	P	---	P	.4/10	P	P	---	IV
<i>Scapania</i>	1/40	---	---	---	1/40	1.7/60	.4/10	.4/20	.3/20	IV
<i>Mnium spinulosum</i>	1/20	---	---	9/40	1.5/60	2.5/40	---	---	---	III
<i>Rhytidopsis robusta</i>	---	.2/20	P	---	---	.1/10	.2/10	2/30	---	III
<i>Pogonatum alpinum</i>	---	.2/10	---	---	.2/10	P	---	P	P	III



*Basin*

Table 5 *Alnus rubra* - Basin Association

Stand No.	28	30	27	11
Aspect	S	SW	S	SW
Slope (degrees)	5	2	2	4
Topography	Basin (organic)	Basin	Basin (organic)	Basin (mineral)
Cover (%)	80	78	75	75
Tree Stratum				
High Shrub - Transgressive Stratum	1	2	1	-
Low Shrub Stratum	1	2	2	-
Herb - Dwarf Shrub Stratum	60	80	62	45
Bryophyte - Lichen Stratum	15	20	30	40

Species by Stratum<sup>a</sup>

	28	30	27	11	% Class
<u>Tree Stratum</u>					
<i>Alnus rubra</i>	85	85	75	65	V
<u>High Shrub - Transgressive Stratum</u>					
<i>Vaccinium parvifolium</i>	+	P			III
<u>Low Shrub Stratum</u>					
<i>Vaccinium parvifolium</i>	3	1	1	2	V
<i>Ribes lacustre</i>	+	1	2		IV
<i>Rosa gymnocarpa</i>		+	1		III
<u>Herb - Dwarf Shrub Stratum</u>					
<i>Pteridium aquilinum</i>	36/90	42/90	28/80	11/60	V
<i>Viola sp.</i>	9.7/100	3/70	10/90	.2/10	V
<i>Triactum cornutum</i>	6/80	3.5/90	3/80	1/70	V

Table continued

Stand No.	28	30	27	11	% Class
Herb - Dwarf Shrub Stratum (cont'd)					
<i>Polystichum muritum</i>		3.3/50	3.5/40	4.2/50	V
<i>Vaccinium parvifolium</i>	2/30	1.2/50	.2/20	.5/30	V
<i>Athyrium folix-fomina</i>	.4/10	.4/10	1.4/70	.1/10	V
<i>Galium aparine</i>	2.5/70	3.3/90	2.6/80	2/90	V
<i>Thuja plicata</i>	+/10	.4/20	.2/40	.1/10	V
<i>Tiarolla trifoliata</i>	5.5/100	P	5/90	1.3/30	V
<i>Alnus rubra</i>	.8/50	.7/70	.4/40	P	V
<i>Blechnum spicant</i>	1.5/40	.4/10	.5/20	P	V
<i>Ribes lacustro</i>	+/10	.2/10	1/30	P	V
<i>Lactuca muralis</i>	.8/20	2.3/80	1/50	P	V
<i>Carex</i> sp.	.2/20	P	.6/40	.1/10	V
<i>Circea alpina</i>	3.5/70	P	7/50	P	V
<i>Dicentra formosa</i>	.1/10	.3/40	P	P	V
<i>Puschampsia elongata</i>	.1/10	P	.6/20	P	V
<i>Dryopteris austriaca</i>	+/10	.7/30	P	P	V
<i>Tellima grandiflorum</i>	P	.1/30	.1/20	P	V
<i>Goodera oblongifolia</i>	P	P	P	+/10	V
<i>Pseudotsuga menziesii</i>	P	+/10	P	+/10	V
<i>Tsuga heterophylla</i>	.1/10	+/10	P	P	V
<i>Tiarella laciniata</i>	7.5/100		5/80	3/90	IV
<i>Elymus glaucus</i>		1.5/40	4/20	.1/10	IV
<i>Trientalis latifolia</i>		.8/30	+/10	+/10	IV
<i>Ranunculus uncinatus</i>		.1/20	.4/10	.1/10	IV



Table continued

Stand No.	28	30	27	11	% Class
<u>Herb - Dwarf Shrub Stratum (cont'd)</u>					
<i>Luzula parviflora</i>	P		1/40	.3/30	IV
<i>Luzula campestris</i>		.5/30	P	P	IV
<i>Calamagrostis canadensis</i>	.4/20	+/10	.4/30		IV
<i>Rubus ursinus</i>	P	.4/20	P		IV
<i>Gaultheria shallen</i>		+/10	P	P	IV
<i>Cirsium</i> sp.		+/10	2.7/50		III
<i>Osmorhiza chilensis</i>	.4/10		P		III
<i>Berberis nervosa</i>	P	.2/10			III
<i>Monarda parviflora</i>		.2/10		P	III
<i>Adiantum podatum</i>			P	P	III
<i>Rosa gymnocarpa</i>		P	.1/10		III
<i>Helediscus discolor</i>		P		P	III
<u>Bryophyte - Lichen Stratum</u>					
<i>Rhytidiadelphus loreus</i>	6/70	2.6/90	1/30	3/70	V
<i>Plagiothecium undulatum</i>	.7/30	1.8/70	.5/30	1/30	V
<i>Isotrichum ologon</i>	.7/40	1.6/60	1/20	.7/40	V
<i>Stictisella oregana</i>	.2/10	.4/20	.4/20	1.2/80	V
<i>Rhizomium glabrescens</i>	2/70	1.3/50	2/70	.4/40	V
<i>Plagiomnium insigne</i>	1.5/50	2/70	1.1/30	2.6/70	V
<i>Isoetes stoloniferum</i>	.5/20	.7/30	.5/20	.6/30	V
<i>Hypnum</i> sp.	1/40	.4/20	2/30	.4/40	V
<i>Scapania</i> sp.	1/30	1.3/50	2.5/60	.5/40	V

Table continued

Stand No.	28	30	27	11	
<u>Epiphyte - Lichen Stratum (cont'd)</u>					
<i>Hilcomium splendens</i>	P	.4/20	P	.2/20	V
<i>Mnium spinulosum</i>	.1/10	P	.4/10	.1/10	V
<i>Dicranum fuscocens</i>	.6/30	2.5/80		.4/30	IV
<i>Pogonatum alpinum</i>	P	.4/30	P	P	V
<i>Polytrichum juniperinum</i>		P	P	P	IV
<i>Dicranum howellii</i>	2/30		2/60		III
<i>Plagiobothrium laetum</i>		P		P	III
<i>Leucolepis monziosii</i>		.2/20		1.5/50	III
<i>Claopodium</i> sp.	P	P			III

<sup>a</sup> Data are: Cover (%) and Constancy by percentage class (I = 1-20%; II = 21-40%; III = 41-60%; IV = 61-80%; V = 81-100%) P indicates occurrence in the stand but not in the subplots; + indicates cover less than .1%.

Sporadic Species (only in 1 plot)

Tree Stratum

*Pseudotsuga monziosii* 28(8), *Thuja plicata* 11(30), *Tsuga heterophylla* 30(8)

High Shrub - Transgressive Stratum

*Pseudotsuga monziosii* 30(10), *Tsuga heterophylla* 30(1), *Ribes lacustre* 27(+)

Herb - Dwarf Shrub Stratum

*Asterocaulon bicolor* 30(+), *Amelanchier alnifolia* 27(+), *Aquilegia formosa* 30(+), *Bromus pacificus* 28(P), *Cornus canadensis* 28(P), *Ilex aquifolium* 27(P), *Lycopodium clavatum* 30(P), *Malica subulata* 11(2), *Polypodium glycyrrhiza* 30(P), *Rubus pedatus* 30(P), *Rubus spectabilis* 11(P), *Stellaria crispa* 27(P), *Urtica dioica* 27(P).

Table continued

Bryophyte - Lichen Stratum  
Dicranum tauricum 28(.3)

Lowerland

Table 6

The numbers of trees by 10 centimeter diameter classes together with total density for associations studied. The data are expressed as the number of stems per hectare. In each data pair the figure to the left of the slash is living density; figure to the right is dead density.

Association and Species	Trees										Total Density	
	0-10 cm	11-20 cm	21-30 cm	31-40 cm	41-50 cm	51-60 cm	61-70 cm	71-80 cm	81-90 cm	90+ cm		
<i>Pinus contorta</i> - Moos												
<i>Pinus contorta</i>	62/325	600/212	175/0	50/0	--	--	--	--	--	--	750/487	
<i>Pseudotsuga menziesii</i> (d)	1100/1112	538/150	188/25 st.	25/12 st.	0/25 st.	0/38 st.	0/25 st.	--	--	0/12 st.	1712/1288	
<i>Pseudotsuga menziesii</i> - <i>Gaitheria shallon</i>												
<i>Pseudotsuga menziesii</i>	89/561	318/332	236/39	157/0	46/0	14/4 st.	14/0	4/0	7/0	4/0	885/907	
<i>Thuja plicata</i>	57/7	32/0	4/0	--	--	--	--	--	--	--	93/7	
<i>Tsuga heterophylla</i>	4/0	4/0	--	4/0	4/0	--	--	--	--	--	16/0	
<i>Alnus rubra</i>	--	4/0	4/4	--	--	--	--	--	--	--	8/4	
<i>Pseudotsuga menziesii</i> - <i>Stokosiella oregana</i>												
<i>Pseudotsuga menziesii</i>	67/336	197/317	233/44	147/8	28/17 st.	28/3 st.	3/14 st.	3/8 st.	--	6/8 st.	703/786	
<i>Alnus rubra</i>	0/6	6/3	6/3	--	--	--	--	--	--	--	12/12	

*Stokosiella oregana*

Table continued

Association and Species	Trees										Total Density
	0-10 cm	11-20 cm	21-30 cm	31-40 cm	41-50 cm	51-60 cm	61-70 cm	71-80 cm	81-90 cm	90+ cm	
<i>Pseudotsuga menziesii</i> - <i>Polystichum muritum</i>	64/75	50/50	31/19	36/3	19/3 st.	8/0	11/0	25/3 st.	8/3 st.	22/14 st.	264/164
<i>Pseudotsuga menziesii</i>	3/6	22/0	6/0	--	--	--	--	--	--	0/6 8 st.	31/19
<i>Thuja plicata</i>	19/0	6/0	3/0	--	--	--	--	--	--	--	28/0
<i>Tsuga heterophylla</i>	--	17/14	58/39	50/3	6/0	6/0	--	--	--	--	139/56
<i>Alnus rubra</i>	--	--	--	--	--	--	--	--	--	--	--
<i>Alnus rubra</i> - Basal	--	6/0	--	--	--	--	--	--	--	--	6/0
<i>Pseudotsuga menziesii</i>	--	6/0	6/0	--	--	12/0	--	--	--	0/50 st.	24/50
<i>Thuja plicata</i>	--	--	--	--	--	--	--	--	--	--	--
<i>Tsuga heterophylla</i>	--	6/0	--	--	--	--	--	--	--	--	6/0
<i>Alnus rubra</i>	0/6	25/50	119/50	125/25	19/6	--	--	--	--	--	288/138









Table continued

Association	<i>Pseudotsuga monziosii</i>			<i>Thuja plicata</i>			<i>Tsuga heterophylla</i>			<i>Pinus contorta</i>		
	Age (yrs.)	Ht. (m.)	dbh (cm.)	Age (yrs.)	Ht. (m.)	dbh (cm.)	Age (yrs.)	Ht. (m.)	dbh (cm.)	Age (yrs.)	Ht. (m.)	dbh (cm.)
<i>Pseudotsuga monziosii</i> - <i>Polystichum munitum</i>	55	30.8	32.2	62	16.4	27.2	35	13.1	14.5	---	---	---
	63	24.1	33.8	64	10.0	18.8	60	20.1	20.8	---	---	---
	64	19.8	35.1	76	12.2	18.0	68	15.5	20.1	---	---	---
	66	43.3	47.8	---	---	---	---	---	---	---	---	---
	67	39.6	69.6	---	---	---	---	---	---	---	---	---
	74	41.8	57.9	---	---	---	---	---	---	---	---	---
	75	36.6	48.8	---	---	---	---	---	---	---	---	---
	80	52.4	89.2	---	---	---	---	---	---	---	---	---
	82	48.8	75.9	---	---	---	---	---	---	---	---	---
	84	23.8	32.5	---	---	---	---	---	---	---	---	---
86	29.0	34.0	---	---	---	---	---	---	---	---	---	
93	49.4	73.7	---	---	---	---	---	---	---	---	---	
96	29.6	50.5	---	---	---	---	---	---	---	---	---	
96	50.6	74.2	---	---	---	---	---	---	---	---	---	
<i>Alnus rubra</i> - Basin	---	---	---	68	24.7	56.1	40	12.2	17.0	---	---	---

*Lower forest*

Table 8 Mensuration data for the tree species by association (a)

Association and Species	Max. dbh (b) (cm.)	Avg. dbh (cm.)	Max. Ht. (m.)	Basal Area (m <sup>2</sup> /ha)	Density (stems/ha)	Max. Age (Yrs.)
<i>Pinus contorta</i> - Moss						
<i>Pinus contorta</i>	34.8	18.46/9.57	28.3	22.4/3.8	750/487	79
<i>Pseudotsuga menziesii</i>	32.0	10.67/11.07	23.7	22.0/36.7	1712/1288	69
<i>Pseudotsuga menziesii</i> - <i>Gaultheria shallon</i>						
<i>Pseudotsuga menziesii</i>	81.3	24.26/10.79	44.0	55.5/20.6	886/907	99
<i>Thuja plicata</i>	18.5	9.51/6.01	12.5	.5/0.3	93/7	60
<i>Tsuga heterophylla</i>	42.2	24.38/0	34.1	1.1/0	16/0	75
<i>Alnus rubra</i>	21.3	20.32/0	21.6	.2/0	8/4	--
<i>Pseudotsuga menziesii</i> - <i>Stokesiella oregana</i>						
<i>Pseudotsuga menziesii</i>	62.5	25.33/15.14	37.8	45.6/28.8	703/786	96
<i>Alnus rubra</i>	23.9	22.73/13.78	23.2	.5/2	11/11	--
<i>Pseudotsuga menziesii</i> - <i>Polystichum munitum</i>						
<i>Pseudotsuga menziesii</i>	120.6	36.94/21.79	54.2	49.0/18.5	264/164	96
<i>Thuja plicata</i>	27.2	16.60/11.24	17.1	.7/30.3	31/19	76
<i>Tsuga heterophylla</i>	20.8	9.93/0	20.1	.3/0	31/0	68
<i>Alnus rubra</i>	50.8	29.11/22.76	35.4	9.9/2.4	139/56	--

Table Mensuration data for the tree species by association (a) (continued)

Association and Species	Max. dbh (b) (cm.)	Avg. dbh (cm.)	Max. Ht. (m)	Basal Area (m <sup>2</sup> /ha)	Density (stems/ha)	Max. Age (yrs.)
<i>Alnus rubra</i> - Basin						
<i>Pseudotsuga menziesii</i>	12.2	--	7.3	--	--	--
<i>Thuja plicata</i>	125.5	53.59/118.47	45.4	10.9/49.8	31/44	--
<i>Tsuga heterophylla</i>	17.0	--	12.2	--	--	40
<i>Alnus rubra</i>	43.9 (d)	29.49/23.32	38.4 (d)	20.8/6.4	288/138	--

(a) Data for average dbh, basal area and density are given as living tree/dead trees.

(b) dbh = diameter at breast height (approx. 1.3 m above ground).

(c) Max. age = age of oldest tree cored

(d) Fire scar

Fire scar

Brewer Island

Table 9 Height class distribution for tree species. The data are expressed as the number of stems per hectare. Absolute (Abs.) and Relative (Rel.) densities are given for the tree classes.

Association and species	Trees											
	Seedlings 30 cm.		Transgressives 30cm-3m		3-13m		13-23m		23-33m		33+m	
	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.
<i>Pinus contorta</i> - Moss												
<i>Pinus contorta</i>												
<i>Pseudotsuga menziesii</i>	1,000		100		600	50%	588	50%	75	8%		
<i>Pseudotsuga menziesii</i> - <i>Gaultheria shallon</i>												
<i>Pseudotsuga menziesii</i>	321		21		125	14%	375	43%	321	37%	54	6%
<i>Thuja plicata</i>					79	100%						
<i>Tsuga heterophylla</i>	71				7	37%	4	21%	4	21%	4	21%
<i>Alnus rubra</i>					4	50%	4	50%				
<i>Pseudotsuga menziesii</i> - <i>Stokesiiella oregana</i>												
<i>Pseudotsuga menziesii</i>	4,938				100	13%	341	45%	291	38%	31	4%
<i>Thuja plicata</i>	125											
<i>Tsuga heterophylla</i>	531											
<i>Alnus rubra</i>									6	100%		

Table continued

Association and species	Trees											
	Seedlings 30 cm.		Transgressives 30cm-3m		3-13m		13-23m		23-33m		33+cm	
	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.
<i>Pseudotsuga monziesii</i> - <i>Polystichum munitum</i>												
<i>Pseudotsuga monziesii</i>	1,194		78		58	22%	50	19%	58	22%	92	35%
<i>Thuja plicata</i>	389		--		25	75%	8	25%	--	--	--	--
<i>Tsuga heterophylla</i>	250		22		17	75%	6	25%	--	--	--	--
<i>Alnus rubra</i>	972		--		--	--	61	43%	47	33%	33	24%
<i>Alnus rubra</i> - Basin												
<i>Pseudotsuga monziesii</i>	875		75		6	100%	--	--	--	--	--	--
<i>Thuja plicata</i>	8,812		--		12	40%	--	--	12	40%	6	20%
<i>Tsuga heterophylla</i>	562		25		6	100%	--	--	--	--	--	--
<i>Alnus rubra</i>	4,000		--		81	33%	38	15%	88	36%	38	15%