

Vascular Plant inventory of Bowen Island ER #48

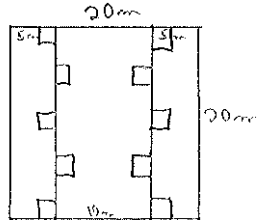
BOWEN ISLAND ECOLOGICAL RESERVE (#48)

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^a

Tree Stratum	X Class									
<i>Pseudotsuga menziesii</i>	60	95	85	95	85	85	85	75	65	V
<i>Alnus rubra</i>	—	4	—	—	—	—	4	8	—	II
High Shrub - Transgressive Stratum										
<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

^a Data are: Cover(%) / Frequency (%) and Consistency 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
<u>Herb - Dwarf Shrub Stratum</u>										
<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	--	--	II
<u>Bryophyte Stratum</u>										
<i>Stictisella 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>Rhynnum</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>Plagiobothrium 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>Rhyacomium splendens</i>	25/100	4/60	4/60	2.2/40	3.5/60	P	P	P	1.2/40	V
<i>Rhytidopsis 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>Rhytidolephus loreus</i>	18/80	.1/10	.5/30	.2/10	2/40	—	.1/20	—	.4/10	IV
<i>Pleurozium 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>Pleurozium insignne</i>	P	—	—	—	—	—	.2/10	—	—	II
<i>Peltigera aphthosa</i>	—	—	P	—	—	—	—	—	.4/10	II
<i>P. membranacea</i>	P	—	—	—	—	—	—	—	P	II
<i>Plagiocnema 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

Menziesia ferruginea 24(1)

Herb - Dwarf Shrub Stratum

Melica 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 impexa 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 ^a		
<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>	-	+

^aData 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 renziesii</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 fuscescens</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>Dicranoweisia 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	-

Lower Plateau

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^a

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

^aData 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>Geodera 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	---	---	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 oregana</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 insignitum</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>Isobothecium 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^a

Species	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>Trisetum cernuum</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>	2/30	3.3/50	3.5/40	4.2/50	V
<i>Vaccinium parvifolium</i>	.7/30	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>Carex alpina</i>	3.5/70	P	7/50	P	V
<i>Dicentra formosa</i>	.1/10	.3/40	P	P	V
<i>Peschampsia 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>Goodyera 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>Triontalix 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
Herb - Dwarf Shrub Stratum (cont'd)					
<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 shallon</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>Montia 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
Bryophyte - Lichen Stratum					
<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>Isopterygium ologans</i>	.7/40	1.6/60	1/20	.7/40	V
<i>Stoeciella 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 insignne</i>	1.5/50	2/70	1.1/30	2.6/70	V
<i>Isoetecium 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
<i>Mnium spinulosum</i>	.1/10	P	.4/10	.1/10
<i>Dicranum fuscocens</i>	.6/30	2.5/80		.4/30
<i>Pogonatum alpinum</i>	P	.4/30	P	P
<i>Polytrichum juniperinum</i>		P	P	P
<i>Dicranum howellii</i>	2/30		2/60	
<i>Plagiobothrium laetum</i>		P		P
<i>Leucoloma menziesii</i>		.2/20		1.5/50
<i>Claopodium</i> sp.	P	P		

^a 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 menziesii 28(8), *Thuja plicata* 11(30), *Tsuga heterophylla* 30(8)

High Shrub - Transgressive Stratum

Pseudotsuga menziesii 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>Gaultheria 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				886/907
<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	28/3	3/14	3/8	--	--	--	--	--	703/786
<i>Alnus rubra</i>	0/6	6/3	3 st. 6/3	17 st.	3 st.	3 st.	3 st.	3 st.	--	--	--	--	--	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 monziesii</i> - <i>Polystichum muritum</i>	64/75	50/50	31/19	36/3	19/3	8/0	11/0	25/3	8/3	22/14	264/164
<i>Pseudotsuga monziesii</i>	3/6	22/0	6/0	--	st.	--	--	--	st.	0/6	31/19
<i>Thuja plicata</i>	19/0	6/0	3/0	--	--	--	--	--	--	8 st.	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> - Basin	--	6/0	--	--	--	--	--	--	--	--	6/0
<i>Pseudotsuga monziesii</i>	--	6/0	6/0	--	--	12/0	--	--	--	0/50	24/50
<i>Thuja plicata</i>	--	--	--	--	--	--	--	--	--	st.	--
<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 ² /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>Geothorax 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 muritum</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 ² /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	Seedlings 30 cm.		Transgressives 30cm-3m		Trees							
	Abs.	Rel.	Abs.	Rel.	3-13m Abs.	Rel.	13-23m Abs.	Rel.	23-33m Abs.	Rel.	33+m Abs.	Rel.
<i>Pinus contorta</i> - Moss	—	—	—	—	162	18%	662	74%	75	8%	—	—
<i>Pinus contorta</i>	—	—	—	—	600	50%	588	50%	—	—	—	—
<i>Pseudotsuga menziesii</i>	1,000	—	100	—	—	—	—	—	—	—	—	—
<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>Stokesiella oregona</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%