

# **Salt Spring Island Upland Park: Vegetation Summary and Restoration Plan**

Undertaken for  
British Columbia Government  
Terrestrial Eco-systems Restoration Program  
  
Capital Regional District  
Salt Spring Island Parks Art and Recreation Commission

By

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March 2002.

**SALTSPRING ISLAND UPLAND PARK VEGETATION SUMMARY  
AND RESTORATION PLAN**

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## **1.0 SUMMARY**

This study took place from September 2001 to March 2002 and describes the existing vegetation in a recently developed 32 hectare park on southern Salt Spring Island. The park is owned by the Victoria Capital Regional District and managed by the local Parks Art and Recreation Commission. The study recommends restoring the park to a more natural Douglas Fir ecosystem by removing the densely growing non-native Scotch Broom plants and replanting and managing native plant species. The park was divided into polygons depending on existing vegetation, soils and drainage and options for restoration of the areas are presented.

## **2.0 INTRODUCTION**

### **2.1 Location of Park**

The park is located on the southern half of Salt Spring Island (Map 1) in the Fulford Creek watershed. The land rises from an elevation of 130 meters above sea level in the southwest corner to an elevation of 260 meters at the public access off Sarah Way. (Map 2.)

The adjoining 30 hectares on the parks southern boundary is undeveloped Crown Land. On the North boundary, the neighboring acreage is a privately owned natural Douglas Fir forest of approximately 32 hectares bordering the area around Ford Lake. (Map 2.)

### **2.2 History**

The land belonged to the logging company Macmillan -Bloedel until 1988. It was sold to private individuals and logged and cleared from 1991-94. In 1998 it was dedicated as a park when the adjoining property was subdivided into large residential lots.

### **2.3 Trail Network and road access. (Map 2.)**

In 1999 a trail network was established along neighboring properties into the park. The old logging roads were cleared of alder for 4-wheel drive maintenance access and hiking trails. (Map 6)

A public hiking trail enters the park at the northeast corner of the property. The trail is 3 km. in length and connects through to Peter Arnell Park on Stewart Road.

The road access to the park is off Stewart Rd, through the new subdivision and at the end of Sarah Way off Jasper Rd. and Jennifer Way. (Map 1) At the time of this report the road access is being developed and we have had permission from a neighbor to enter the park through his property on Mereside Drive. This is not a public access.

## **3. ECOLOGICAL DESCRIPTION**

### **3.1 Soils**

The soils are predominantly Rumsley-Mexicana (Van Vliet, 1987) ( Map 3) with a small area of Mexicana around the constructed pond and the area near the nettle meadow (Polygons D and X) (Map 6)

Rumsley –Mexicana soils are described as gravelly loamy sand to gravelly sandy loam colluvial and glacial drift materials less than 100 cm. deep over metamorphosed intrusive bedrock.

Mexican soils are gravelly sandy loam to gravelly loam morainal deposits less than 100cm. deep over compact, unweathered till. (Van Vliet, 1987)

### **3.2 Geology**

Unlike the northern half of Salt Spring Island the bedrock in the Ford Lake area is not sedimentary in origin. It is metamorphosed igneous rock that occurs north of the Fulford Valley and south of Cusheon Lake. The bedrock is part of the Tye intrusion of Triassic-Jurassic igneous rock. The formation is primarily altered granitoids and sericite schists. The major rock types are metagranodiorite, metaquartzdiorite, and metaquartz porphyry.

(van Vliet, et. al, 1987)

### **3.3 Drainage**

The seasonal creeks that drain the park flow from wetlands on the new subdivision and swampy areas in the crown land parcel. (Map 6.) The creeks all join in the northwest corner of the property. They then cross the neighbors land and Mereside Drive and enter the main branch of Fulford Creek downstream of Ford Lake. Fulford Creek flows west and south into Fulford Harbour.

Downstream of the Crown land, on one of the tributaries, there is a small recently constructed year round wildlife pond. (Photo 3-4)

### **3.4 Biogeoclimatic Ecosystem and Ecoregion classification**

Salt Spring Island contains two bioclimatic zones; the Coastal Douglas Fir moist maritime (CDF mm) and the Coastal Western Hemlock, very dry maritime (CWH xm). Both zones are characterized by warm summers and mild wet winters. (Johnson, 2001)

The new park is in the CDF mm zone, within the Strait of Georgia Ecoregion. ( BC Government Ministry of Forests 1994 )

### **3.5 Wildlife**

The park has many deer and birds. Red- legged frogs are found in and around the pond. The occasional bear has been seen in the Fulford Valley and the uplands near the park and tracks of both cougar and raccoons have been seen in the muddy edges of the pond. The pond is not fish bearing.

## **4. OBJECTIVES**

The objectives were to map the existing vegetation and drainage systems on the 80-acre park parcel. This study would identify the areas of the heaviest broom infestation. Monitoring polygons would be located and inventoried for future reference. Restoration and treatment options for the park and a possible restoration timetable would be presented.

## 5. METHODS AND RESULTS

Aerial photographs, an ortho photo and many on site surveys were used to locate the major vegetation polygons. The aerial photograph shows patches of blooming broom plants as they looked in 2000. (Map 4.) A hand held GPS was used to map the trails and the waterways of the drainage system. A clinometer was used to measure slopes.

The park was divided into 26 separate larger polygons (A-Z) based on vegetation, substrate, and drainage. (Map 6) (Table 1) Within these larger areas, 7 smaller specific monitoring polygons were mapped with GPS for future data collection. (MP 1-MP 7) (Pages 19-25) These smaller polygons had a 10-meter radius, and had specific differences in vegetation. The % coverage of the existing plant species was recorded. (Appendix 3)

### 5.1 Table 1. Polygon Information (See Map 6)

Polygon #	Photo #	Size Ha.	Distinguishing Features
A	1	.86	Mature Fd and Cw with alder and broom along trail. Mature Fd and Cw along both perimeters.
B	1	.44	Broom is on a slope mixed with Ocean spray and Fd and Cw
C	2	1.17	Ocean spray, and broom are mixed with alder
D	3-7	.58	Broom field, alder, huckleberry, ocean spray, Fd and Cw seedlings
E	8	.61	Drainage area, Fd and Cw along creek with alder at the base of the slope. Very little broom.
F	9-10	.45	The trail passes through a broom field. Alder to north and dense sword fern to the south. Lots of Himalayan Blackberry. Ocean spray on south slope.
G	11	2.43	Trail passes through Douglas-fir forest with Arbutus grove and view of Mt.Maxwell. The uniform Douglas-fir forest along the western boundary of the park is included in this polygon.
H	13-14	1.03	Mature Fd and Cw with exposed rocky outcroppings supporting broom.

I	13-14	.66	A continuous cover of salal with broom along the trail. Infrequent broom mixed in among the salal.
J	13-14	2.59	Ocean spray and broom are becoming established in the continuous salal with Mature Douglas-fir and Western Red Cedar
K	12	3.12	Mature Douglas-fir, Western Red Cedar are growing in patches with some mature and many immature alder. Broom is not a problem in this area.
L	12	2.45	Mostly alder with some mature conifers growing along a drainage slope. A lush area with large patches of Bracken fern A diverse number of native shrubs throughout the area. Broom is not a problem here.
M	15-16	.48	A low area with a braided seasonal creek. Borders Crown land and has some mature Douglas-fir and cedar that weren't logged. Potential pond site.
N	17-19	.20	Rocky outcropping just inside park gate. Some mature Douglas-fir, an Arbutus grove, Dwarf rose and Foxglove with exposed rock.
O	20-21	2.24	Uniform growth of alder with many conifer seedlings throughout the alder.
P	20-21	.91	A field of broom. Arbutus with Ocean spray down the slope to the west. Trail to the East passes through Ocean spray and broom mixed with the Alder. A viewscape of Burgoyne Bay.
Q	22-28	.29	Equal number of Ocean spray mixed with broom. Some moss covered rocky outcroppings.
R	22-28	1.14	Area of Alder mixed with Ocean spray and broom along with many other mature native shrubs.
S	13-14	2.37	A uniform stand of alder. Very little else growing except sword fern along the creek and broom along the trail.
T	9-10	.27	A broom field. Alder around the cleared area with many conifer seedlings. Mature Fd and Cw at the perimeters.



U	22-28	.83	Mature Fd and Cw with a variety of mature native shrubs. Primarily Ocean spray and broom are growing.
V		1.00	Large Fd and Cw with some rocky outcropping. Broom is growing in the open spaces.
W		1.06	A low area along the Creek. An old logging road. Dense area of sword fern with broom at the east end and up the northern slope.
X	32-34	.20	The moist area known as the Nettle meadow
Y	22-28	.77	Borders on the Fd forest to the north . Rocky outcropping with Ocean Spray and Broom
Z	35-36	3.19	Natural Fd forest along the northern property boundary Some conifers are 30 years old.

## 6. RESTORATION PRESCRIPTIONS GENERAL

The 32 hectare park has been divided into 26 separate polygons based on vegetation, substrate and drainage differences. Some polygons have been separated for assessment because of these differences but will receive the same treatment recommendations and are combined into the same grouping.. In some cases more than one treatment option will be suggested for the same polygon.

### 6.1 Treatment Methods.

Wherever possible natural succession will be encouraged. Broom removal will enhance the succession back to a Douglas Fir Forest. Brushing and planting will take place only where absolutely necessary.

#### 6.1.1 Brushing

Brushing is best done in the winter months when the conifer trees are most easily seen. In the areas where salal is suppressing the growth of the conifers it can be hand cut while taking care not to damage the conifers. Loppers and saws are used to cut the broom. They should be cut close to the ground and below the top lateral root if possible to deter re-sprouting. In the winter months plants may be pulled out taking care to disturb as little soil as possible. Disturbing the soil gives the dormant seeds a place to grow.

The native shrubs such as ocean spray, red huckleberry, salmonberry, and thimbleberry should be left to add to biodiversity and wildlife forage and cover.

### **6.1.2 Planting**

A planting density of 600 s/ha is recommended, (Muller, 1999) which is a spacing distance of 4.4m and/or 3 trees per 3.99m plot. If the planting density is any less open spaces may be left which will create shrub competition for nutrients and dry season water. Plants should be large plugs or if possible 1 gallon pots or bareroot.

## **7. TREATMENT PRESCRIPTIONS FOR SPECIFIC POLYGONS**

### **7.1 Polygon A, B**

**Photo 1**

**Map 6**

This area includes the trail which connects Mereside Rd. and the park. It is an old logging road, and has a seasonal creek in a deeply incised channel running alongside it. Mature second growth Douglas fir (Fd) and alder remain along the creek.

On the southwest side of Polygon B is a steep bank that supports some Fd and Western Red Cedar (Cw) with Ocean spray and a dense stand of large Scotch broom in the clearings. The trees provide adequate shade to prevent broom growing immediately beside the creek and will soon give the same protection to the trail.

The broom has been cut and piled.

#### **Treatment options:**

- The trail should be maintained by keeping the alder and any invasive broom cut until the Fd and Cw have reached a density to completely shade the trail.
- The Southwest slope should be planted with Fd at 600 trees/ha.
- The removal of broom must continue until the trees provide sufficient shade to prevent broom regeneration.

## 7.2 Polygon C

### Photo 2

### Map 6

This is an open area with small Red Alder, some Ocean Spray and a dense invasion of Scotch broom. The numbers of natural fir and cedar seedling will provide adequate tree cover without additional planting, after they have been released.

The broom has been cut and burned.

#### **Treatment options:**

- The alder should be thinned to provide adequate light to release the FdCw seedlings.
- Broom removal must be maintained until the trees provide adequate shade to prevent broom regeneration.

## 7.3 Polygon D

### Photo 3,4,5,6,7

### Map 6

This is an old landing site left from the logging that has become colonized almost exclusively by broom with dense stands of Red Alder around the perimeter. There are Douglas fir, Western red cedar and a minor component of Western Hemlock along the seasonal creek to the south and west. The approximate size is 80 by 120 metres. Around the edges some conifer seedlings are becoming established with some ocean spray, gummy gooseberry, foxglove and thistles also present.

A 400 sq. m. pond has been dug to supply a summer water source so as to increase the biodiversity of the park. Cougar tracks have been seen at the pond.

The broom has been cut piled and burned.

#### **Treatment options:**

- Willow species and other native vegetation should be planted around the pond.
- This area will be kept as a picnic site with a picnic table and outhouse facilities provided.
- Fd will be planted at 600 trees/ha. With a .5 ha. Clearing left unplanted to the east of the pond for recreation and wildlife grazing.
- A regular maintenance program must be established to eradicate the broom.

## **7.4 Polygon E**

**Photo 8**

**Map 6**

Polygon E is an area at the bottom of a long steep slope. It has some large FdCw with Red Alder being the predominant species. Located along the creek as it leaves the pond is a small wetland containing bull rushes, reeds, skunk cabbage and some very large sword fern. Very large broom plants were established throughout this area, and some of it has been cut and burned.

### **Treatment options:**

- The small wetland will be encouraged to thrive by removing non-native species.
- Some stepping-stones will be placed across the creek where it leaves the pond to provide hikers with a dry route across.
- The area should be replanted with Fd. at a density of 600 trees/ha.
- Salal should be cut by hand to allow the Fd to establish.

## **7.5 Polygon F,T**

**Photo 9,10**

**Map 6**

Polygon F is a flat clear-cut, broom filled area around 250 sq. m. in size. Red alder, Ocean spray, salal and Oregon grape are growing around the perimeter with many large Fd and Cw and sword fern on the slope. Ocean spray and large broom plants are establishing on the slope.

Polygon T is an old landing site with a dense stand of broom in the cleared area and a mixture of Red alder, broom and Fd and Cw volunteers establishing from the perimeter. Some tall Fd, Cw and alder are bordering this area to the south and northeast out of the landing site area

In both these areas there are many small Fd and Cw volunteers.

The broom has been cut and burned.

**Treatment options:**

- Fd will be planted in both clearings at a rate of 600 trees/ha. with half this number required throughout the surrounding area. Thinning of the red alder will be required to allow the FdCwBg regeneration to occur.

**7.6 Polygon G****Photo 11****Map 6**

Polygon G follows the trail around the bottom of the park and up a hill to the adjacent Crown land. Broom has established along the trail and is interspersed throughout the FdCw(Hw) forest type with Red alder on both sides and being dense on the slope. This area has a view of Mt. Maxwell and a grove of Arbutus trees.

**Treatment options:**

- The slope should be planted with Fd at a rate of 600 trees/ha. with some brushing of the salal to allow the conifers to become established..
- Broom removal should be maintained along the trail and in the Arbutus Grove.

**7.7 Polygon H,I,J****Photo 13,14****Map 6**

Polygon H is at the top of the trail along the boundary between the Crown land and the park. It differs from the other two polygons by having a more diverse vegetation. Sword fern, Salal, Oregon grape, Deer fern and Twinflower are some of the plants growing along the trail with large Fd and arbutus on the slope in the park.

Polygons I and J are further along this trail. On the South side is the Crown land with a mixture of FdCw(BgHw) salal, sword fern and Oregon grape. The slope to the north of the trail has a dense salal and broom growth. Many conifer seedlings have established. This area contains Monitoring Polygon #5.

The broom has been cut and piled.

**Treatment options:**

- The area could be left with no treatment. The dense salal cover with yearly broom maintenance would eventually inhibit broom regeneration. The trail here is open with an extensive view of Salt Spring Island including Ford Lake and Mt. Maxwell. To maintain this viewscape, the existing vegetation should be allowed to remain with regular removal of the broom until the salal prevails.
- An alternative option would be to plant the area with Fd at a rate of 600 trees/ha. Partial removal of the salal by hand brushing would be necessary to prevent competition with the seedlings.

**7.8 Polygon K,L****Photo 12****Map 6.**

Polygons K and L are located on the southern slope below the Crown land. The tree cover consists of FdCw(BgHw) with an understory of salal and sword fern and bracken fern in the more exposed areas. The growth of broom has been prevented by the adequate shade produced by the natural vegetation.

Polygon L is the area from the perimeter trail through the bottomland and up a gentle slope to the main trail. Some tall Fd and Cw have been left along the seasonal creeks and sporadically throughout the area with red alder being the more predominant species.

**Treatment options**

- Existing trails should be maintained.
- In both of these polygons the numbers of existing natural seedlings of FdCw(BgHw) will be adequate to regenerate the area. Existing large trees will provide a future seed source.
- Thinning of Alder will be necessary to reduce shade to the seedlings.

**7.9 Polygon M****Photo 15,16****Map 6**

This is a very special area in the park and is popular with hikers. There are remnants of old growth Douglas fir and Western red cedar left along the seasonal creek giving it a very shady, lush feel. It is downhill from the entrance gate and at the edge of the Fd forest.

This area contains monitoring polygon #4.

**Treatment options:**

- A pond will be dug here to supply water to wildlife when the creek is dry. Some large cedar stumps will be removed to dig the pond. These stumps will then be replaced around the edge of the pond to provide additional habitat..
- A donated bridge will be installed to cross the creek at this point.
- Cw will be planted around the pond
- The tall FdCw supplies adequate shade to prevent the growth of invasive species.

**7.10 Polygon N****Photo 17,18,19****Map 6**

This is a rocky outcropping located just inside the main entrance gate to the park. It has several large Fd with a grove of Arbutus on the top. Fd seedlings are moving in to this area from the east. Many foxglove and dwarf rose bloom grow here in the summer.

This area contains Monitoring Polygon #7.

The broom has been cut and removed.

**Treatment options:**

- No treatment other than monitoring of the broom.
- Removal of any volunteer Fd seedlings which compete with native vegetation.
- Spot plant Garry oak with some of the flowers that should thrive in this area. Camas, Lilies, Spring gold, and Sea blush are examples.

**7.11 Polygon O,P****Photo 20, 21****Map 6**

Red alder and broom are the predominant species in these two polygons. The alder are small with the average size of approximately eight cm. in diameter. Salal, sword fern and grasses make up most of the under story with many volunteer seedlings of FdCw(Hw)

This polygon includes landing site #1, a clearing with picnic tables, an outhouse and a wonderful viewscape of Burgoyne bay.

The broom has been cut and removed.

**Treatment options:**

- In polygons O and P the numbers of conifer seedlings are sufficient to establish a conifer stand without any planting. The broom will have to be monitored and removed when necessary.
- Some alder will be thinned to allow light in to the shade intolerant conifer species.
- Regular maintenance to remove shrubs and trees will keep the picnic area clear and will maintain the viewscape.

**7.12 Polygon Q, R, Y, U****Photo 22,23,24,25,26,27,28****Map 6**

These areas occur on various different slopes of a large rocky outcropping. Large trees are interspersed in the area; Fd and Arbutus on the drier sections, with Cw(Hw) in the areas with more sub-surface seepage. Broom and ocean spray are the predominant species with some of the broom being 2-3 metres high. In some of the lower spots that hold more moisture there are thick areas of Salal.

Monitoring Polygon #2 is in this area.

The broom has been cut and removed.

**Treatment options:**

- The area should be monitored and broom seedlings removed when necessary.
- Some of the competing Salal should be removed to decrease competition and then Fd planted at a rate of 600 plants/ha.
- The trails through this area need to be kept well marked and maintained.

**7. 13 Polygon S****Photo 29,30,31****Map 6**

This area, completely dominated by Alder, occurs on the main trail and runs through the bottomland in the middle of the park. The alder is so dense that it has shaded out all other species apart from some Fd and Cw with salal and sword fern growing along the seasonal creek.

Broom along the trail has been cut. The few plants growing very sporadically among the alder have also been removed.

This area contains Monitoring Polygon #6.



**Treatment options:**

- This area could be left as it is because the alder is large and dense enough to prevent broom from invading here.
- Alternatively, the alder could be thinned and the area planted with Fd at 600 trees/ha.

**7. 14 Polygons V,W****Map 6**

Polygons V and W occur in a draw along an old logging road that was used to bring logs down to the #3 landing site. Polygon W contains a seasonal creek with a winter wetland. There are some large FdCw remaining along the creek with large numbers of sword fern.

Polygon V is the slope to the north. Again, there are some Fd with Arbutus remaining and many native shrubs are becoming established.

FdCw(BgHw) seedlings are also establishing.

In both areas the broom has been cut and burned.

**Treatment options:**

- These areas should be planted with Fd at 600 trees/ha.
- No thinning of present vegetation is necessary.
- The new planting and healthy diverse native vegetation will give this area characteristics to make it a demonstration destination in the trail system.
- Broom removal would have to be maintained until the area was sufficiently shaded to prevent its growth.

**7.15 Polygon X****Photo 32,33,34****Map 6**

This area is known as nettle meadow. The soil here remains damp throughout the dry summer months producing a lush, rich habitat. Many large cedar stumps remain.

Polygon X contains Monitoring Polygon #1.

**Treatment options:**

- This is an ideal location to plant a cedar grove to add diversity to the park enhancing interest and education for the visitors.
- No thinning would be necessary.

## **7.16 Polygon Z**

**Photo 35,36**

**Map 6**

This area takes in the Northeast section of the property. A well-used trail goes through here and on to Peter Arnell Park on Stewart Rd., a distance of 3 km. The area consists of a shaded valley rich in native shrubs and ferns and shaded on all sides by tall conifers. The trail extends from the valley up a slope to the corner of the park where it receives more light and supports a wide array of plants including some Easter lilies.

This polygon contains Monitoring Polygon #3.

### **Treatment options:**

- This area needs no treatment apart from keeping the trail well marked and improving the present signage.

## **8.0 RESTORATION AND MANAGEMENT PRIORITIES**

Developing a management plan for the park that includes input from the public and local interest groups is a priority. This report will become background information for the management plan.

The priority within the park itself is broom removal and monitoring. Planting some of the demonstration sites could be completed during 2002. Signage should be completed as soon as possible after the planting.

## **9.0 MONITORING**

### **9.1 Monitoring Procedure**

The baseline data was collected at seven locations in March of 2002. Another plant inventory will be taken in June 2002 at the sites of the monitoring plots and will continue yearly in June. June is the month when the maximum number of plant species will be in bloom. Once the broom has been removed and planting is under way it is hoped that a more diverse selection of bulbs on the rocky outcroppings and annuals throughout the park will return and thrive. Any new information that may need to be recorded such as localized weather conditions, a change in drainage conditions or invertebrate study will take place in these areas.

The monitoring plots will be used as a guideline to the success of the park restoration.

## 9.2 Monitoring Polygon Data

Monitoring polygons were identified on March 25, 2002. The closest GPS reading was recorded to identify the position of the site for future monitoring.

These areas were all 20 meters in diameter. Field Notes are included in Appendix 1.

### 9.2.1 Polygon MP #1

GPS #143

Lat. 48.793N Long. 123.471W

Slope 5%

Map # 6

Photos #32, 33, 34

This Monitoring Polygon is representative of a damp, meadow-like area featuring stinging nettle and bracken fern surrounded by red alder.

The % cover for each layer ie. Trees, shrubs and the herbaceous layer are treated separately.

	<u>Scientific Name</u>	<u>Common Name</u>	<u>% cover</u>
Trees	<i>Alnus rubra</i>	Red alder	15%
	<i>Pseudotsuga menziesii</i>	Douglas-fir	2 > 2m. tall
	<i>Abies grandis</i>	Grand fir	2 > 2m tall
Shrubs	<i>Cytisus scoparius</i>	Scotch broom	2%
	<i>Holodiscus discolor</i>	Ocean spray	5%
	<i>Mahonia nervosa</i>	Dull Oregon grape	5%
	<i>Polystichum munitum</i>	Sword fern	1%
	<i>Pteridium aquilinum</i>	Bracken fern	30%
	<i>Ribes lobbii</i>	Gummy gooseberry	2%
	<i>Rubus urinus</i>	Trailing blackberry	5%
	<i>Sambucus racemosa</i>	Red elderberry	2%
	<i>Symphoricarpus albus</i>	Snowberry	10%
Herb layer	<i>Cirsium arvense</i>	Canada thistle	4%
	<i>Digitalis purpurea</i>	Foxglove	4%
	<i>Urtica dioica</i>	Stinging nettle	65%

grasses	25%
lichen	1%
Sedges	1%

Additional features:

There are 14 large stumps of a mixture of Douglas fir and cedar.

The dominant tree is red alder with an average diameter of 9.5 cm.

### **9.2.2 Polygon MP #2**

GPS # 140

Lat.48.794N Long.123.469W

Slope 19%

Map #6

Photos #22,23,24,25

This Monitoring Polygon is representative of an exposed rocky outcropping, which supports mostly Broom and Ocean Spray.

Trees	<i>Arbutus menziesii</i>	Arbutus	2%
	<i>Pseudotsuga menziesii</i>	Douglas-fir	5%
Shrubs	<i>Cytisus scoparius</i>	Scotch broom	40%
	<i>Gautheria shallon</i>	Salal	5%
	<i>Holodiscus discolor</i>	Ocean spray	50%
	<i>Mahonia aquifolium</i>	Tall Oregon grape	0.5%
	<i>Mahonia nervosa</i>	Dull Oregon grape	1%
	<i>Polystichum munitum</i>	Sword fern	0.5%
	<i>Pteridium aquilinum</i>	Bracken fern	0.5%
	<i>Rosa gymnocarpa</i>	Dwarf rose	2%
	<i>Rubus urinus</i>	Trailing blackberry	0.5%
Herb layer	<i>Digitalis purpurea</i>	Foxglove	4%
	mosses		30%
	lichens		1%
	grasses		65%

Additional features:

There are 2 mature Douglas-fir and 1 Arbutus.

The Douglas-fir are the dominant tree.

The diameter of the Douglas-fir are 12.7 and 27.7cm.

Salal occurs in one section and covers about 5% of the total area. There are less than 5 plants of each of the other shrub species.

Apart from the moss, which is growing under the Ocean spray, the rest of the ground is covered by grasses with 20-30 Foxglove plants.

### **9.2.3.Polygon MP #3**

GPS # 137

Lat.48.794 Long.123.465W

Slope 64%

Map #6

Photos #35,36

This polygon is representative of a young Douglas-fir forest.

Trees	<i>Pseudotsuga menziesii</i>	Douglas-fir	90%
Shrubs	<i>Gaultheria shallon</i>	Salal	50%
	<i>Holodiscus discolor</i>	Ocean spray	2%
	<i>Mahonia nervosa</i>	Dull Oregon grape	1%
	<i>Polystichum munitum</i>	Sword fern	1%
	<i>Pteridium aquilinum</i>	Bracken fern	0.5%
	<i>Rosa gymnocarpa</i>	Dwarf rose	5%
	<i>Symphoricarpus albus</i>	Snowberry	40%
	<i>Vaccinium parvifolium</i>	Red huckleberry	0.5%
Herb layer	Mosses		10%
	grasses		20%
	<i>Erythronium spp</i>		1 plant
	<i>Ranunculus spp.</i>		1 plant
	Plant litter		70%

Additional comments:

The mature Douglas-fir provide an almost complete canopy.

A wildlife tree is providing habitat for woodpeckers.

The majority of the shrub layer is salal and snowberry with 5-10 plants of each of the other species.

The ground is bare except for some moss under the plants with some grasses and a group of buttercups. A Lily is just starting to show.

### **9.2.4 Polygon MP #4**

GPS #160

Lat.48.791N Long.123.466W

Slope 11%

Map #6

Photos #15,16

This polygon is representative of a logged cedar forest that has mature cedar and Douglas-fir remaining around it and has become a low wet area supporting a dense stand of red alder.

Trees	<i>Abies grandis</i>	Grand fir	5%
	<i>Alnus rubra</i>	Red alder	70%
	<i>Thuja plicata</i>	Western red cedar	10%
Shrubs	<i>Gaultheria shallon</i>	Salal	5%
	<i>Mahonia nervosa</i>	Dull Oregon grape	5%
	<i>Polystichum munitum</i>	Sword fern	10%
	<i>Symphoricarpus albus</i>	Snowberry	5%
	<i>Vaccinium parvifolium</i>	Red huckleberry	3%
	<i>Rubus discolor</i>	Himalayan Blackberry	1%
Herb layer	<i>Digitalis purpurea</i>	Foxglove	10%
	<i>Urtica dioica</i>	Stinging nettle	10%
	sedges		10%

#### **Additional comments:**

There are 5 old cedar stumps left from the most recent logging in a low, wet area that would be a suitable pond site.

There is some green algae on the rocks in the creek.

The alder have an average diameter of 7.3 cm. .The alder are the dominant tree.

The Douglas-fir and Grand Fir in the monitoring polygon are each under 2 metres in height.

Sword fern covers about 10% of the area with under 10 plants of each of the other species represented.

The foxglove, stinging nettle and sedges are equally represented in the herb layer.

### **9.2.5 Polygon MP #5**

GPS # 155

Lat.48.791N Long.123.474W

Slope 48%

Map #6

Photos #14

This monitoring polygon is representative of a logged, steep slope that receives limited sun. It has a dense, lush growth of Salal with many Broom and Ocean Spray throughout.

Trees	<i>Pseudotsuga menzeisii</i>	Douglas-fir	10%
	<i>Salix lucida</i> spp. <i>Lasiandra</i>	Pacific willow	1 plant
Shrubs	<i>Cytisus scoparius</i>	Scotch broom	15%
	<i>Gaultherias shallon</i>	Salal	70%
	<i>Holodiscus discolor</i>	Ocean spray	10%
	<i>Mahonia nervosa</i>	Dull Oregon grape	1%
	<i>Pteridium aquilinum</i>	Bracken fern	1%
	<i>Polystichum munitum</i>	Sword fern	2%
	<i>Rosa gymnocarpa</i>	Dwarf rose	1%
Herb layer	<i>Anaphalis margaritacea</i>	Pearly everlasting	1 plant
	<i>Digitalis purpurea</i>	Foxglove	2%
	grasses		5%

#### **Additional comments:**

The Douglas-fir are small seedlings with the exception of 1 large specimen that has a diameter of 27 cm.

The Pacific willow is only one plant and is located at the edge of the adjacent forest.

Salal, Broom and Ocean Spray make up most of the cover with the other species equally represented along the trail.

### **9.2.6 Polygon MP #6**

20 m. east of GPS # 165

Lat.48.792 Long.123.469W

Slope 11%

Map #6

Photos #29,30,31

This polygon is representative of the natural establishment of Red alder. The dense growth of the red alder has shaded out most of the broom that had previously grown here. The broom that remained along the trail has been cut.

Very few other species are present.

Trees	<i>Alnus rubra</i>	Red alder	95%
	<i>Pseudotsuga Menziesii</i>	Douglas-fir	2%
Shrubs	<i>Holodiscus discolor</i>	Ocean spray	2%
	<i>Mahonia nervosa</i>	Dull Oregon grape	1%
	<i>Polystichum munitum</i>	Sword fern	1%
	<i>Rubus urinus</i>	Trailing blackberry	
1%			
Herb layer	<i>Digitalis purpurea</i>	Foxglove	3%
	<i>Taraxacum officinale</i>	Common dandelion	1plant
	<i>Urtica dioica</i>	Stinging nettle	10%
	grasses		75%
	mosses		5%
	sedges		3%

Additional comments:

The data for Polygon 6 was collected 65 metres west of GPS 165.

The red alder has an average diameter of 3.14 cm.

Each species listed is represented by less than 5 plants each except for Douglas-fir of which there are 10 small trees under 3m. in diameter each.

The ground is covered with grasses with about 10% stinging nettle and the others scattered about.



### **9.2.7 Polygon MP #7**

GPS # 132

Lat.48.791N Long.123.466W

Slope 37.5%

Map #6

Photos #17,18,19

This polygon is representative of a rocky outcropping with some mature Douglas-fir and is being colonized with Arbutus..

Trees	<i>Arbutus menziesii</i>	Arbutus	15%
	<i>Pseudotsuga menziesii</i>	Douglas-fir	40%
Shrubs	<i>Cytisus scoparius</i>	Scotch broom	2%
Shrubs	<i>Gaultheria shallon</i>	Salal	2%
	<i>Holodiscus discolor</i>	Ocean spray	30%
	<i>Mahonia aquifolium</i>	Tall Oregon grape	1 plant
	<i>Mahonia nervosa</i>	Dull Oregon grape	3%
	<i>Rosa gymnocarpa</i>	Dwarf rose	1%
	<i>Rubus urinus</i>	Trailing blackberry	1 plant
	<i>Vaccinium parvifolium</i>	Red huckleberry	1%
Herb layer	<i>Digitalis purpurea</i>	Foxglove	5%
	grasses		80%
	mosses		10%

Additional comments:

This data was collected on top of the rocky outcropping 12 metres North of GPS #132.

The Douglas-fir are the dominant trees. The average diameter is 20 cm.

## **10.0 MANAGEMENT TIMETABLE**

1. All broom will be cut and piled for composting or burned by the summer of 2002.
2. Upon completion of the access road from Sarah Way, work that requires the use of a vehicle can proceed.

3. A backhoe will be required to dig the pond at the SE corner of the property. This should be done in the driest time of the year, before September 15.
4. The timing of planting will be determined by the availability of plants and of crew to do the planting. Priority areas will be planted first. These would be areas where removal of the broom and the inevitable soil disturbance together with open spaces will be ideal areas for broom seeds to germinate. Also some of the existing plants will regenerate. These areas need to be planted first to establish a canopy to shade the broom and eventually kill it. This would include Polygons that now have large areas of cleared land and Polygons that will have cleared spaces between the Ocean spray with few other under story species.
5. Planting should start at the onset of rains in the fall, usually November, and can continue all winter as long as the roots have time to establish before the summer drought. In most years planting can safely continue until April. If the spring is very wet planting could be extended and in contrast if it was a very dry season planting should cease earlier. If the plants can be watered such as around the ponds they can be planted at any time.
6. Broom removal should continue on a yearly basis until native plant growth has formed enough canopy to kill the broom. This maintenance is best done in the dormant months when young broom plants are most easily seen.

## **11.0 PRICING AND SCHEDULE**

### **11.1 Planting**

Planting time will be dependent on the availability of the planting material and the crew to plant them. As many plants as possible will be donated from our own wetland nursery and other sources. The cost of the 6486 Douglas-fir is estimated to be \$11146.50. The cost of the 204 Western Red Cedar is estimated to be \$306. The 25 native shrubs will cost \$100 and the 10 Garry Oak will be \$40.

**11.2 Table 2. Estimates of Costs for planting**

Polygon	No. of Trees Required For Planting	Tree Species	Time Required For Planting (hours)	Cost of Trees \$1.50/tree
A	18	Pseudotsuga menziesii	.3	\$27
B	162	Pseudotsuga menziesii	3	\$243
C	0			
D	168 + 25	Pseudotsuga menziesii + native shrubs	3.1	\$252 +\$100
E	270	Pseudotsuga menziesii	4.4	\$405
F	195	Pseudotsuga menziesii	3.2	\$292.50
G	1092	Pseudotsuga menziesii	17.8	\$1638
H	0			
I	0			
J	0			
K	0			
L	0			
M	144	Thuja plicata	2.3	\$216
N	10	Quercus garryana	.2	\$40
O	0			
P	0			
Q	174	Pseudotsuga menziesii	2.8	\$261
R	684	Pseudotsuga menziesii	11.1	\$1026
S	1422	Pseudotsuga menziesii	23	\$2133
T	105	Pseudotsuga menziesii	1.7	\$1575
U	498	Pseudotsuga menziesii	8.1	\$747
V	600	Pseudotsuga menziesii	9.8	\$900
W	636	Pseudotsuga menziesii	10.3	\$954
X	60	Thuja plicata	1.0	\$90
Y	462	Pseudotsuga menziesii	7.5	\$693
Z	0	Pseudotsuga menziesii		
<b>Totals</b>	<b>6725</b>		<b>109.6 hrs.</b>	<b>\$11592.50</b>

### **11.3 Broom Removal and Brushing Estimated Costs**

We have received funding for a youth employment crew of 10 workers and a supervisor. They will be working in the park removing broom, brushing and planting until September 30, 2002.

We estimate the costs of labor from April-September, 2002 to be \$5000. This work will be funded by Employment Canada.

Yearly volunteer work will be necessary to prevent broom from re-growing in the park.

## 12 REFERENCES

- British Columbia Government, Ministry of Lands Parks and Housing 1986. Guidelines for the Rehabilitation of Crown Land. Land Policy Branch, Occasional Paper No.4.
- British Columbia Government, Ministry of Forests 1998. Field Manual for Describing Terrestrial Ecosystems. Research Branch, B.C. Ministry of Forests, Victoria, B.C.
- British Columbia Government, 1998 , Standard for Terrestrial Ecosystem Mapping in British Columbia. Resource Inventory Committee, Ecosystems working group.
- British Columbia Government. Ministry of Forests. 1994: A Field Guide for Site Identification and Interpretation for the Vancouver Forest Region: Land Management Handbook No. 28.
- Gayton, Donald V. 2001, Ground Work: basic concepts of ecological restoration in British Columbia. Society for Ecological Restoration B.C. Chapter, Victoria, B.C.
- Johnson, Marc, 2001 Threshold Community Search on the Crown Lands of Salt Spring Island. Report prepared for the Public Land Strategy and the Islands Trust.
- Lyons, C.P., Merilees, Bill. 1995: Trees, Shrubs and Flowers to Know in British Columbia and Washington. C.P Lyons and Lone Publishing Com.
- Klinka, K., Krajina, V.J., Ceska, A. and Scagel, A.M. 1989: Indicator Plants of Coastal British Columbia. University of B.C. Press.
- Marchant, C. and J. Sherlock. 1984 A Guide to Selection and Propagation of some native woody species for land rehabilitation in British Columbia. B.C. Min. For. Research Report RR84007-HQ
- Muller, Reinhard. 1999: Uchuck Creek Riparian Overview Assessment and Restoration Prescriptions: Fen Forest Consulting.

Pojar, Jim and Andy MacKinnon, 1994. Plants of Coastal British Columbia. Lone Pine Publishing, Vancouver, British Columbia.

van Vliet, L., A. Green and E. Kenny, 1987 Soils of the Gulf Islands of British Columbia. Vol1, Soils of Salt Spring Island, Rep. No., 43. British Columbia Soil Survey, Research Branch, Agriculture Canada.

## Upland park

### Mapping Field Notes

<u>GPS Reading</u>	<u>Plants</u>	<u>Common name</u>	<u>Comments</u>	<u>Broom</u>
1.31	Digitalis purpurea grasses	Foxglove	Top parking lot	
1.32	Holodiscus discolor Pseudotsuga menziesii Digitalis purpurea Arbutus menziesii Cytisus scoparius	Ocean spray Douglas-fir Foxglove Arbutus Scotch broom	Rocky outcrop	Some scattered on rock
1.33	Grasses Gaultheria shallon Mahonia nervosa Polystichum munitum Pteridium aquilinum Claytonia perfoliata Pseudotsuga menziesii (sn Thuja plicata (small) Alnus rubra Cytisus scoparius	Salal Dull Oregon grape Sword fern Bracken fern Miner's lettuce Douglas-fir Red cedar Red alder Scotch broom	Trail	Along sides of trail
1.34	Cytisus scoparius Alnus rubra Salix spp. Arbutus menziesii Digitalis purpurea Grasses Verbascum thapsus Urtica dioica	Scotch broom Red alder Willow Arbutus Foxglove  Common Mullein Stinging nettle	#1 landing site view picnic tables	Thick in clearing and through- out surrounding trees.
1.35	Alnus rubra Gaultheria shallon Holodiscus discolor Alnus rubra Cytisus scoparius	Red alder Salal Ocean spray Red alder Scotch broom	Trail to NE	Large broom all along left side of trail.
1.36	Pseudotsuga menziesii Gaultheria shallon Mahonia nervosa	Douglas-fir(large) Salal Dull Oregon grape	Trail to NE corner of park	Only at entrance to trail

	M. aquifolium	Tall Oregon grape		
	Polystichum munitum	Sword fern		
	Holodiscus discolor	Ocean spray		
	Linnaea borealis	Twin flower		
	Digitalis purpurea	Foxglove		
	Vicia spp.	Vetch		
	Cytisus scoparius	Scotch broom		
1.37	Same as above		Corner pin 6498 PIP trail	
1.38	Urtica dioica(very thick)	Stinging nettle		
	Polystichum munitum	Sword fern		
	Alnus rubra	Red alder		
	Pseudotsuga menziesii	Douglas-fir		
	Rubus discolor	Himalayan blackberry		
	Rubus ursinus	Trailing blackberry		
	Digitalis purpurea	Foxglove		
	Achlys triphylla	Vanilla-leaf		
	Claytonia perfoliata	Miner's lettuce		
	Pteridium aquilinum	Bracken fern		
	Tsuga heterophylla	Western hemlock	small	
	Fragaria spp.	Strawberry		
1.39	Cytisus scoparius	Scotch broom	#2 Landing	Very thick
	Holodiscus discolor	Ocean spray	Rocky outcrop	
	M. aquifolium	Tall Oregon grape		
	Mahonia nervosa	Dull Oregon grape		
	Pseudotsuga menziesii	Douglas-fir		
1.4	Cytisus scoparius	Scotch broom	Trail Junction	Very thick
	Holodiscus discolor	Ocean spray		
	Pteridium aquilinum	Bracken fern		
	Gaultheria shallon	Salal		
	Arbutus menziesii	Arbutus		
1.41	Cytisus scoparius	Scotch broom	Along trail, Good camping spot with aspen view. Large Ocean Spray	Broom thick all along slope
	Holodiscus discolor	Ocean spray		
	Digitalis purpurea	Foxglove		
	Arbutus menziesii	Arbutus	Very few	
	Acer macrophyllum	Big-leaved Maple	Very large	
	Polystichum munitum	Sword fern		
1.42	Same as above		Still along trail	Broom thick all along slope



1.43	Utica dioica Ribes lacustre grasses	Stinging nettle Black gooseberry	Nettle meadow	
1.44			Junction with main trail	
1.45	Holodiscus discolor Cytisus scoparius	Ocean spray Scotch broom	Along trail Gulley to west. Rocky bluff to east.	Broom all along sides
1.46	i		At dry creek crossing trail Trail from park to Mereside Rd Junction with trail to Mereside Rd and main trail	Broom all along trail
1.47	Cytisus scoparius Holodiscus discolor Alnus rubra Thuja plicata	Scotch broom Ocean spray Red alder Western red cedar		
1.48	Acer macrophyllum Cytisus scoparius Rubus spectabilis Pseudotsuga menziesii Polystichum munitum	Big-leaved Maple Scotch broom Salmonberry Douglas fir(small) Sword fern	2 large maple along trail Small spring wetland	Broom thick all through bank to west of trail
1.49	Alnus rubra Cytisus scoparius Thuja plicata	Red alder Scotch broom Western red cedar	Trail follows seasonal creek on left. Deep channel. Boundary of 80 acre park/private land	Broom along trail
1.5	Cytisus scoparius Cirsium arvense  Leucanthemum vulgare Phalaris arundinacea Carex spp& other spp. Juncus spp& other spp..	Scotch broom Canada Thistle Fall ryegrass Oxeye daisy Reed canary grass Sedges Rushes various grasses	Pond(16 X 24 m.) Opposite end to spring, creek entering. Cougar tracks seen by pond. #3 landing area, 50 X 50 m.	Very thick with broom, large plants, cut and burned
1.51	Cytisus scoparius Holodiscus discolor Navarretia squarrosa Digitalis purpurea Thuja plicata Rubus discolor	Scotch broom Ocean spray Skunk- weed Scotch broom Ocean spray Foxglove Western red cedar Himalayan blackberry	Trail to Crown land	Large broom in clearing and along trail, cut and piled.
1.52	Arbutus menziesii	Arbutus	Trail to Crown land. View of Mt.	Broom along side of trail.

	Utica dioica	Stinging nettle	Maxwell	cut and piled.
	Cytisus scoparius	Scotch broom		
	Pseudotsuga menziesii	Douglas-fir		
	Alnus rubra	Red alder		
	Gaultheria shallon	Salal		
	Pteridium aquilinum	Bracken fern		
	Holodiscus discolor	Ocean spray		
	Digitalis purpurea	Foxglove		
1.53	Blechnum spicant	Deer fern	Perimeter trail. Going uphill to crown	
	Polystichum munitum	Sword fern	land.	
	Gaultheria shallon	Salal		
	Athyrium filix-femina	Lady fern		
	Alnus rubra	Red alder		
	Holodiscus discolor	Ocean spray		
	Achlys triphylla	Vanilla-leaf		
	Digitalis purpurea	Foxglove		
	Linnaea borealis	Twin flower		
1.54	Rosa gymnocarpa	Baldhip rose	Boundery between 80 acre park and	Anywhere there is a clear-
	Cytisus scoparius	Scotch broom	Crown land	ing there is a solid stand of
	Mahonia nervosa	Dull Oregon grape	Rocky outcropping.	broom.
	Trientalis latifolia	Broad-leaved starflower		It has been cut and piled
	Holodiscus discolor	Ocean spray		
1.55	Cytisus scoparius	Scotch broom	Along perimeter trail	All along trail and down rocky
	Holodiscus discolor	Ocean spray		slope to the north
	M. aquifolium	Tall Oregon grape		Broom cut and piled along trail.
1.56	Pseudotsuga menziesii	Douglas-fir	Just out of gulley. In forest.	
	Gaultheria shallon	Salal	Older, large Douglas-firs	
	Holodiscus discolor	Ocean spray		
	Polystichum munitum	Sword fern		
1.57	Mosses		Around midpoint of perimeter trail.	
	Corallorhiza maculate	Western coralroot	Elevation 230m.	
	Pseudotsuga menziesii	Douglas-fir	Trail goes through typical older	
	Gaultheria shallon	Salal	Douglas-fir forest.	
	Mahonia nervosa	Dull Oregon grape		
	Galium aparine	cleavers		
	Lactuca muralis	Wall lettuce		
	Adenocaulon bicolor	Pathfinder		

1.58	Gautheria shallon Holodiscus discolor Digitalis purpurea Rosa gymnocarpa Rubus ursinus	Salal Ocean spray Foxglove Dwarf rose Trailing blackberry	Clearing in forest. Still perimeter trail.	
1.59	Pteridium aquilinum Alnus rubra Utica dioica Thuja plicata Gautheria shallon Digitalis purpurea	Bracken fern Red alder Stinging nettle Western red cedar Salal Foxglove	Low, flat wet area. very tall, old cedar. Bracken fern taller than us	
1.6	Utica dioica Alnus rubra Polystichum munitum Claytonia perfoliata Galium aparine	Stinging nettle Red alder Sword fern Miner's lettuce Cleavers	On creek low damp area Stand of red alder is very thick.	
1.61			At sign beside main entrance gate.	
1.62	Cytisus scoparius Holodiscus discolor Pseudotsuga menziesii Pteridium aquilinum Gaultheria shallon Arbutus menziesii M. aquifolium Mahonia nervosa	Scotch broom Ocean spray Douglas-fir Bracken fern Salal Arbutus Tall Oregon grape Dull Oregon grape	At junction of Main and trail through to private land.	
1.63	Cytisus scoparius Alnus rubra	Scotch broom Red alder	Along main trail A thick stand of Red alder	Broom along sides of trail. Cut and piled
1.64	Cytisus scoparius Alnus rubra Verbascum thapsus	Scotch broom Red alder Common Mullen	Along main trail A thick stand of red alder	Broom along sides of trail. Cut and piled
1.65	Verbascum thapsus Alnus rubra Cytisus scoparius	Common Mullein Red alder Scotch broom	Along main trail where creek crosses road	Broom along sides of trail. Cut a Cut and piled.
1.66	Alnus rubra Thuja plicata Cytisus scoparius	Red alder Western red cedar Scotch broom	Cairn marking trail to left.	Broom found sporatically among alder and along trail. Cut and piled
1.67	Cytisus scoparius	Scotch broom	#4 Landing, 30 X 30 m. Larger in red	Clearing of thick stand of broom.

Alnus rubra	Red alder	alder stand	Cut, piled and burned.
1.68 Cytisus scoparius	Scotch broom	On trail 1/2 way between private land	Broom on sides of trail and in
Alnus rubra	Red alder	and pond	brush on both sides
Holodiscus discolor	Ocean spray		Cut, piled and burned.



#1, P. B: Broom cutting in a typical Broom and Conifer mixed site.



#2, P. C: Typical area of Alder, Ocean Spray and Broom with Sword Fern growing along the creek. Very little understory.





#3, P. D: Pond in midsummer. Dense stand of Alder with tall Fd in the distance. Broom in the foreground along the edge of the pond.



#4, P. D: Pond in winter. Broom has been removed and sword fern are exposed. Dense alder stand is out- competing with conifer seedlings.





#5, P. D: Clearing beside pond.  
Landing site #3. Broom seedlings  
are in the foreground while the  
larger Broom in the distance is  
in bloom



#6, P. D: Piles of cut broom are being burned.



#7, P. D: Cutting Broom at the edge of the clearing.  
Young alder are mixed in with some small Fd.  
Broom is suppressing conifer seedling growth.





#8, P. E., #9, P.T., #10, P.F: Broom has been cut and piled ready for burning. Dense stand of small alder with FdCw seedlings mixed in. Large Fd in distance are along trail.







#11, P.G: An Arbutus grove along the trail mixed with large Fd and Ocean Spray. A view of Mt. Maxwell is in the distance.



#12, P. L: Trail bordering Crown land with ground cover of Salal. Salal is suppressing growth of conifer seedlings.





#13, P. J: Mixture of Ocean Spray, Alder, Salal and Broom. Conifer seedlings are able to grow among the Ocean Spray.



#14, P. J: Ground cover of Salal with Ocean Spray and Broom. Salal is suppressing conifer seedlings. Larger nos. of Fd in distance are in P. K. Trail here enters Crown Land.





#15, P. M: Predominately Alder with large FdCw in area  
The alder is shading growth of the understory.



#16, P. M: Standing water in winter with seasonal creek running through  
Potential pond site.





#17,, #18, #19, P. N: Rocky outcropping just inside main entrance gate. A good example of Fd covering a rocky site. Removing some Fd will allow more bulbs and flowers to grow here. Similar areas in the Crown land support Garry Oak.







#20, P. P: The clearing at Landing Site #1 with a viewscape of Burgoyne bay in the distance.



#21, P. P: Very dense alder at Landing Site #1. Thinning of the alder will allow the small FdCw(BbHw) to grow.