COATS MARSH REGIONAL PARK

Appendices 2011-2021 Management Plan

REGIONAL DISTRICT OF NANAIMO
RECREATION AND PARKS

August 29, 2011

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Appendix A:
Ecological Features and Management Recommendations

Ecological Features and Management Recommendations for Coats Marsh Regional Park – Gabriola Island

Prepared By

Ian Moul - RPBio. and Julie Micksch, B.Sc.
Foul Bay Ecological Research Limited
1585 Birch Avenue, Comox, B.C. V9M 2N5

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Prepared for:

The Regional District of Nanaimo, Recreation and Parks Department
830 West Island Highway
Parksville, B.C.

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I SUMMARY INFORMATION

IA Introduction

The purpose of this report is to document the ecological features and condition in Coats Marsh Regional Park as part of the regional park management plan being written by staff in The Regional District of Nanaimo, Recreation and Parks Department. The requested preference for the report format was for Tables, Maps, Illustrations, and Bullet Points over in-depth narrative. The report is organised into three sections, beginning with a broad overview of the landscape and then focusing into specifics related to natural habitat, wildlife related values and concerns/recommendations for park management practices

The area around the residence was not visited as part of this report

IB Methods

- Known information and reports regarding the site were compiled and reviewed
- Local residents on neighbouring Lots 5 and 6 were contacted by telephone and asked questions on any concerns that they might have in relation to the regional park and water flow from Coats Marsh through their properties.
- Ian Moul and Julie Micksch, made two days of on-site observations and mapping on 1st and 2nd of December 2010. A follow-up visit was made by Ian Moul on the 17th of December
- The wetted depth of Coats Marsh was measured at several locations from a boat using a stick and measuring tape. The location coordinates of wetted depth locations were collected using a Trimble GeoXT GPS
- The route of watercourse 1 was determined using a Garmin 60Cx GPS.
- The Shape-file of the Hoggan Lake watershed was provided by GIS staff at the Nanaimo Regional District. The Nature Trust of BC provided georeferenced map clips of an aerial photograph and 1:20,000 TRIM detail of the park area. All other mapped information was derived from publicly available sources.
- The maps in this report should be considered as reconnaissance recognisance level for discussion purposes. Unless otherwise indicated, watercourses and habitat features were mapped at a +/- 5m range.

II ECOSYSTEM CHARACTERISTICS

IIA Underlying Geology

- Understanding base geological substrates and soil composition is important in that it forms the nutrient base and water holding matrix that supports the surface ecosystem.
- The underlying geological base material of the Coats Marsh Regional Park is Upper Cretaceous Nanaimo Group undivided sedimentary rocks (BC Geology 2010)
- Doe (2010) describes the sedimentary rock as too fractured to hold water for more than a few weeks and that water stability in wetlands on Gabriola Island are based on a layer of smectite clay known as montmorillonite.
- The following is from a Personal Communication, e-mail exchange with Nick Doe on 30 Nov 2010

I can't help you a whole lot, but what I can say is that the underlying soil is a thick layer (about a metre) of smectite-rich clay, which indicates to me that this has been a marsh for a very long time. The smectite is a weathering product of glacial silt.

In my augers samples around the marsh, I found decayed vegetable matter (probably reeds or sedges) near the bottom of the clay and just above the sandstone bedrock. If this were radiocarbon dated, it would check the theory that the marsh is old. It would cost about $400. My betting is that this material is thousands of years old.

I know that the Coats family used it (Coats Marsh) as a hay field and that the local wisdom is that the marsh is just a flooded field, but the geological evidence does not support that.

My surmise is that before the land was settled, it was a large beaver pond and that it had been that way for a very long time. Removal of the beaver dam, probably by the Hoggan family who owned it before the Coats, would have allowed the marsh to drain. The Hoggans are known to have substantially lowered the water level in Hoggan Lake, so their attempting to drain Coats Marsh would not be out of character. Beavers are, as you know, still very active at the outlet of the marsh though greatly diminished in numbers compared with a hundred years ago.

I know nothing about the history of the weir, but would be very interested to learn what's known about it.

IIB Hydrology

IIB1 Overview - Water flow through Coats Marsh Regional Park and the Hoggan Lake Watershed

- Coates Marsh Regional Park is completely within the Hoggan Lake Watershed (Map 1).
- Between 1/4 and 1/3 of the water movement within the Hoggan Lake watershed flows through Coats Marsh Regional Park.
- The overall aspect is a gentle slope to the west.
- There are three watercourses (Map 2).

Watercourse 1 flows from the wetland beyond the NE corner of the park (Photographs 1, 2 and 3) approximately parallel to the north park boundary. The first portion, to halfway across the park, at Photographs 4 and 5, had a flow of approximately 1m wide and 0.2m deep at its deepest point. Watercourse 1 most likely picks up subsurface flow from lands within the Hoggan Lake watershed to the north. The abundance of arbutus trees, as shown in Photograph 5, suggest well drained soils on the rise to the north. The upper section of the Watercourse 1 appears to be an ephemeral flow as the creek bottom was fully vegetated. Beyond a small fall, as shown in Photograph 6, the watercourse appears to have year-round flow as there is a sand and gravel streambed. Near the west park boundary is a shallow basin water catchment area (Photograph 7). Watercourse 1 exits the park at the west boundary and flows through private land to Hoggan Lake.

Watercourse 2 flows from the east through most of the centre of the park. Its origin is separated from Watercourse 1 by what might be classified as a low terrace or is possibly an old dune. The landscape is a shallow swale. Water flow appears to be ephemeral and represents a high water table as much as a true watercourse. On the 17th of December, following a few days of rain, there were many shallow ponds ranging from 0.2m to 0.4m in depth (Photograph 8). In a few locations there was no sign of surface water.

Watercourse 3 commences at the outflow of Coats Marsh. It flows from a weir (Photographs 9 and 10) at the edge of Coats Marsh through two private properties (Map 2), back into Coats Marsh Regional Park, and then north to join Watercourse 1. Conversations with the land-owners of both lots 5 and 6 suggest that this watercourse flows year-round though flows in the summer months can be minimal.

The upper section of Watercourse 3, between the weir and park road, is not a natural channel. Immediately below the weir the channel is clearly a dug or blasted trench approximately 2m

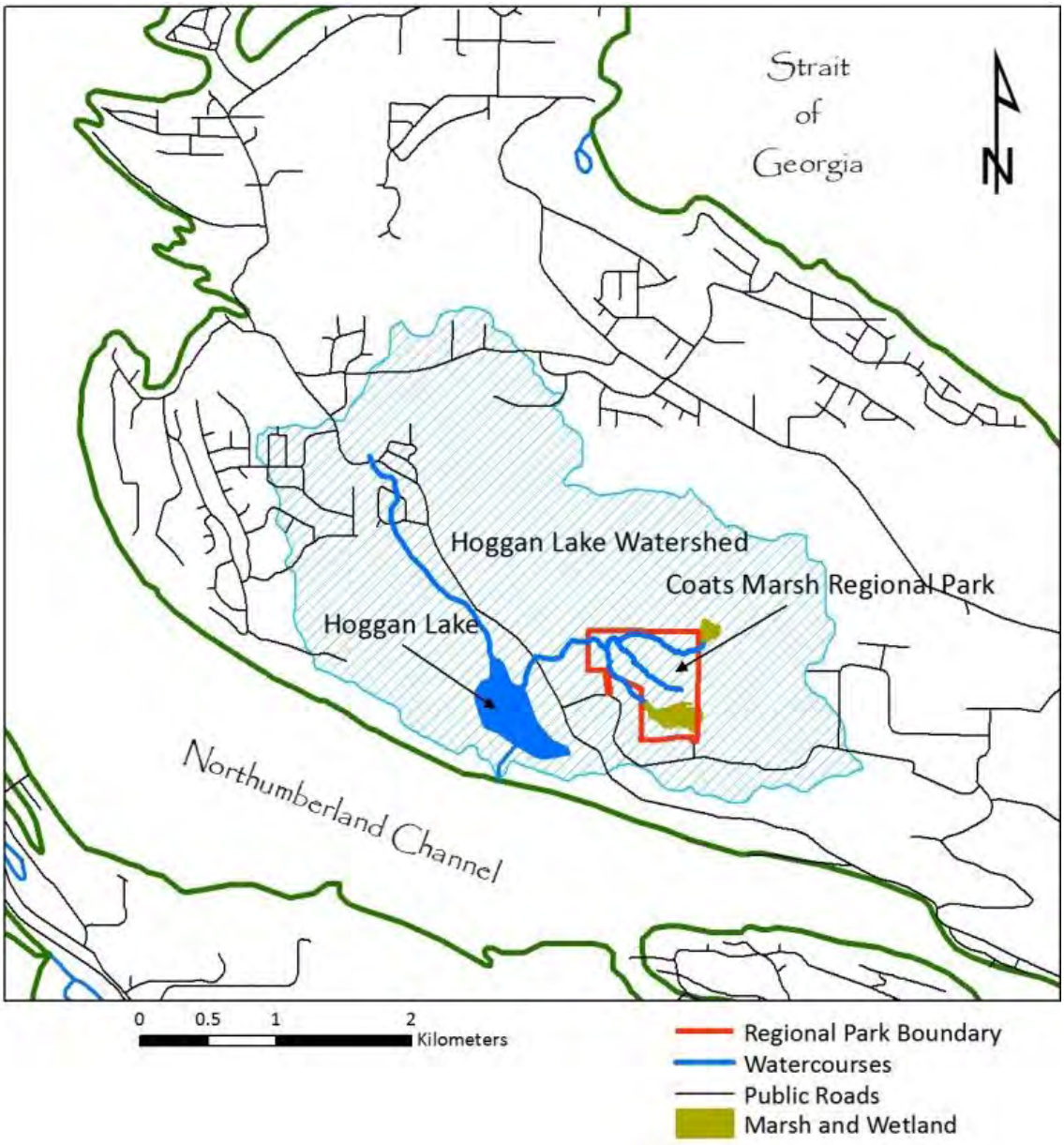
deep and 1.5m wide. Further downstream the trench is more shallow and widens out. On Lot 5 there are two dams made of loose stone, the first approximately 50m downstream from the weir, the second 90m downstream (Photograph 11). Each dam holds the water in ponds to the depth of the dug trench (Photograph 12).

Downstream of the park road (Photograph 13), Watercourse 3 flows rapidly down a naturally steeper grade before joining Watercourse 1 in a shallow water catchment basin at the site of Photograph 7.

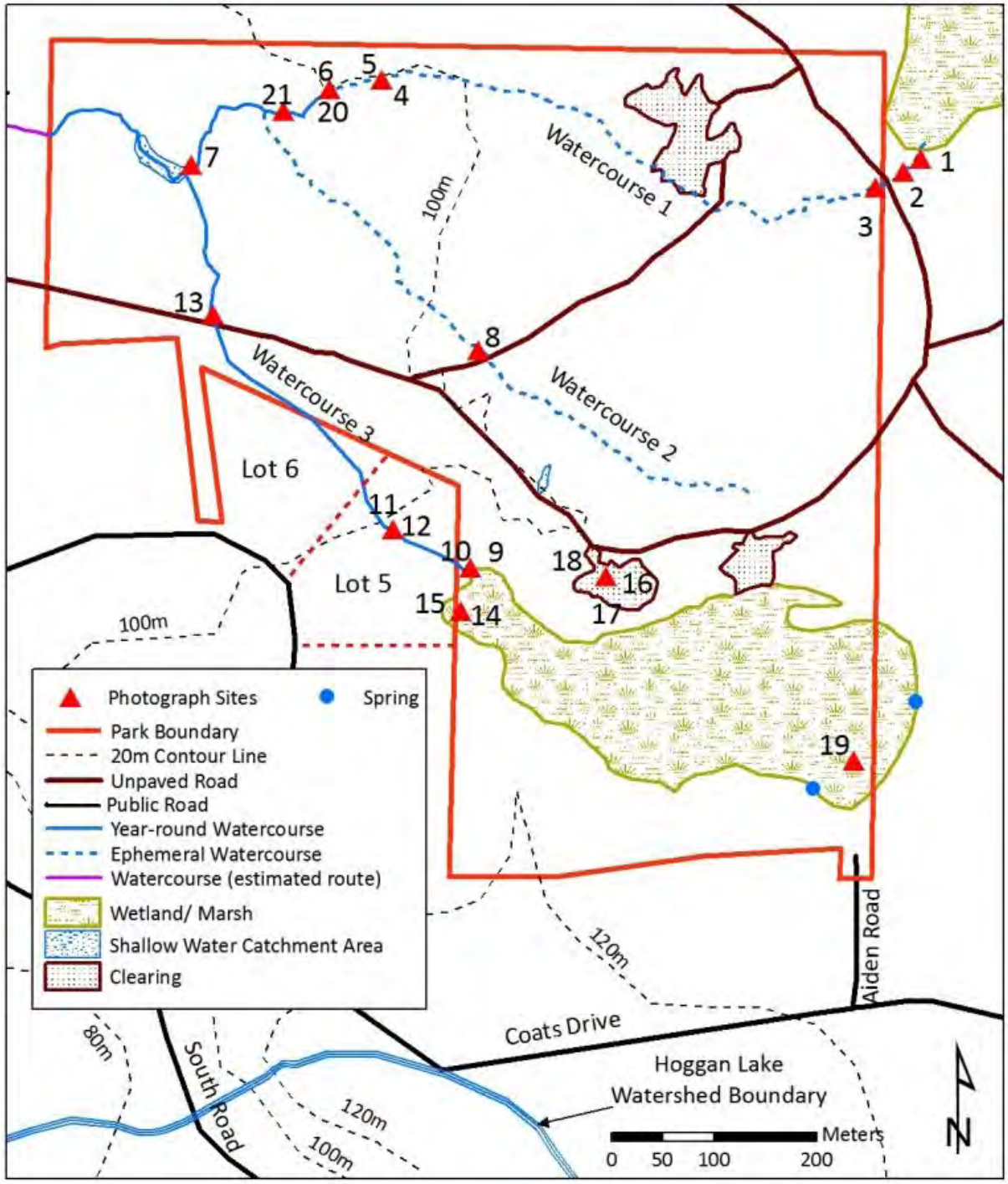
The origin the water in Coast Marsh and Watercourse 3 appears to be subsurface flow that is ponded in the marsh. Given the underlying sandstone bedrock and the topography of the surrounding lands there is really no chance this is from a more distant source. This is supported by Doe (2010). Two Springs were identified in the Draft Coats Marsh Regional Park Management Plan (Bufo 2010). These springs have not been confirmed and the source of this information is unknown. Given the high water levels in December, it is not likely they would be easy to locate in the field. The springs have been noted on Map 2.

- When considering the overall topography of the land and the contour lines on the provincial Terrain Resource Inventory Management (TRIM) maps, there is a possibility that before the trenching of Watercourse 3, the marsh/ wetland area may have been higher and drained along the route of Watercourse 2.

- The combined watercourses exit the park at the west boundary near the northwest corner. While the course of the streambed was not walked beyond this point, the land contours suggest its route to a culvert under South Road (Map 1).



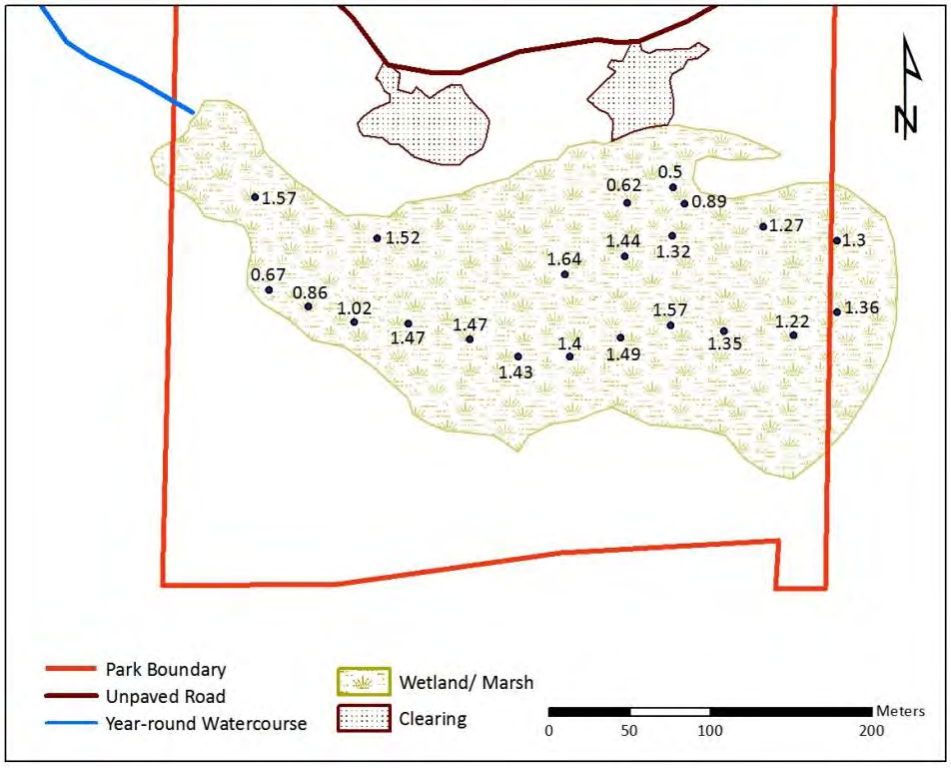
Map 1: Coats Marsh Regional Park within the Hoggan Lake Watershed on Gabriola Island



Map 2: Watercourses and photograph sites in Coats Marsh Regional Park

IIB2 Water Level in Coats Marsh

- The water depth in Coats Marsh was measured at 22 locations using a stick and a measuring tape. The location of each depth measure is illustrated on Map 3 and location coordinates are presented in Table 1.
- The baseline water level of Coats Marsh was established by a measurement from the top surface of the concrete weir.
- On December 2nd 2010, from the top of the concrete weir to the top of the wooden baffle was 64.4 cm. The beaver dam was holding the water level at 15cm below the top of the concrete of the weir. The entrance to the 8"diameter (20cm) PVC pipe was fully submerged and the pipe was running at full volume (Photograph 9). The level of Coats Marsh at the weir site was 44.4cm above the wooden baffle.
- All measurements in Table 1 are 0.44m greater then would be at the lowest water level in summer when the water is held at the top of the wooden baffle.
- In the summer at low water, the water depth over the majority of the marsh area would average at one metre.



Map 3: Water depth (metres) in Coats Marsh on 1 December 2010

Table 1: Water Depth in Coats Marsh on 1 December 2010				
Site	Depth (m)	Easting	Northing	Horizontal Precision (+/-m)
1	0.50	440829	5444687	0.33
2	0.62	440800	5444678	0.36
3	1.52	440645	5444656	0.31
4	1.57	440570	5444681	0.31
5	0.67	440578	5444624	0.32
6	0.86	440603	5444614	0.29
7	1.02	440631	5444604	0.30
8	1.47	440665	5444603	0.30
9	1.47	440703	5444594	0.30
10	1.43	440733	5444583	0.29
11	1.40	440765	5444583	0.33
12	1.49	440796	5444594	0.30
13	1.57	440827	5444602	0.32
14	1.35	440861	5444598	0.29
15	1.22	440904	5444596	0.35
16	1.36	440931	5444610	0.29
17	1.30	440931	5444654	0.31
18	1.27	440885	5444663	0.30
19	0.89	440836	5444677	0.30
20	1.32	440829	5444657	0.28
21	1.44	440799	5444645	0.29
22	1.64	440762	5444634	0.28

IIB3 Issues around Flooding onto Surrounding Lands

- The watercourse flowing out of Coats Marsh leaves the Regional Park at the east boundary of Lot 5 and re-enters the Regional Park on the north boundary of Lot 6 (Map 2).
- The landowner of Lot 6 has no concerns regarding flooding or water flow across the property.
- The Landowners of Lot 5 are concerned about the encroachment of water from Coats Marsh. While it was mentioned that they enjoyed the environmental values of the nearby marsh, they would like to be able to fence, remove trees, and develop their property to the property lot line. It was noted that the increase in water level has killed trees (Photograph 14) and there are concerns that the high water table may pose a threat to the septic system. An interest was expressed in some form of berm, dyke, or filling of the land between the property and the marsh.

- While on-site at Lot 5 the closest distance between a building (which appeared to be a garage or an out-building) and the wetted edge of the marsh was measured at 18m (Photograph 15).
- The closest distance between the same building and the property line is 30m.
- The wetted depth at the property boundary flagging (as shown in Photograph 14) on 2 Dec 2010 was 0.62m.
- Based on the marsh shoreline as of 17 Dec 2010, as measured with a Trimble GPS (average horizontal precision of 0.5m), 294m^2 of Lot 5 was underwater.
- Given the vegetation types, even if the water level were lower, the marsh shoreline as of 17 Dec 2010 appeared very close to a shoreline that would be determined in a full wetland assessment.
- Given that Hoggan Lake is known to contain fish, both Coats Marsh and the watercourse flowing from the Marsh into Hoggan Lake would be defined as a "stream" under the Riparian Area Regulation (RAR) because of the connection to Hoggan Lake by surface water flow (BC Ministry of Environment 2006).
- Under RAR, any new residential, commercial or industrial activities or construction on Lot 5 would require on average a 30m zone of protection, described as a Streamside Protection and Enhancement Area (SPEA), to be established around the edge of the marsh at high water mark including 1 in 5 year flood events.
- While this report represents a reconnaissance level assessment, we suggest that the landowners would have a difficult time getting approval to add fill and do any development any closer to the marsh than their existing buildings.
- While the location of the septic system on Lot 5 was not known, looking at the slope of the land we would expect it to be below the lawn to the north-west of the residence, away from where it might get driven on by vehicles. Given the depth of the watercourse (in a 1m to 2m deep trench) and how the dam (Photograph 11) and pond (Photograph 12) on Lot 5 has raised the water table, we would suggest that any perk issues are not related to the wetland. Though this is not our area of expertise.

IIC Soil Composition

- The Nature Trust dug five soils pits in locations away from the flooded areas of the marsh, as shown on Map 4 (TNT 2008).
- All five sites have soils described as being of morainal (glacial deposited) origins, and are a mixed substrate of sand, gravel and boulders in an unconsolidated blanket, greater than one metre thick over bedrock (terminology from MOELP 1998).
- The rooting depth ranged between 38 and 50cm.
- All sites were described as having a primary water source being precipitation, with water draining from the sites readily but not rapidly.
- Soils were not examined along the low ridge between Watercourse 1 and 2. The presence of sand and gravels in this area would most likely classify this landform as a terrace. The presence of sand (the absence of gravel or stones) might classify it as a dune, originating from windblown sediments.

IID Plant Communities

The history of the site has been previously documented in a report by Ursus Environmental (Materi 2006) and will not be repeated here.

IID1 Forested Plant Community

- Under the Biogeoclimatic Ecosystem Classification (BEC) System, the Coats Drive property is located in the Georgia Depression Ecoprovince, and the South Gulf Islands Ecosection (Demarchi 1996).
- Forest cover is primarily second and third growth Douglas-fir classified by BEC as Coastal Douglas-fir moist maritime subzone (CDFmm).
- 54,800ha (21.9%) of the total CDFmm zone falls within the Nanaimo Regional District, of which 1.9% is protected under provincial or regional of park status (Hectares BC 2010).
- Much of the park south of Watercourse 1, including all of the area of Watercourse 2, appears to have been logged between 50 and 60 years ago (Photograph 8). It is naturally regenerating and would be classed as a Young Forest - self-thinning evident, canopy layers developed, generally 40 to 80 years (Table 2)
- The area north of Watercourse 1 and west of the forest surrounding the residential area would be classed as being in the Shrub/herb or Pole/sapling stages of forest regeneration (Photograph 5).

- Forest plant communities may be described as "Site Series," – the Mature forest plant community that will most likely develop given the site specific soil and moisture regimes.
- Five BEC field plots inventoried by the Nature Trust on 29 May 2008 (TNT 2008) were all classed as site series CDFmm/01 Douglas-fir / dull Oregon-grape
- The CDFmm/01 site series is red listed in British Columbia (CDC 2010).
- A summary of Nature Trust plots is in Table 3.
- Nature Study Plot sites are shown on Map 4
- The Coats Drive property represents a second, and in some areas a third growth forest falling into structural stage classes ranging from Shrub/herb through Young Forest. These roughly correspond to The Nature Trust BEC plots and also with the Timber Type Descriptions described by Giesbrecht (2007)
- Protection of this site over time should allow for the natural development of Mature forest and Old forest characteristics.

A plant inventory was not completed during the December2010 site visit as it was not a good time of year to observe many of understory species.

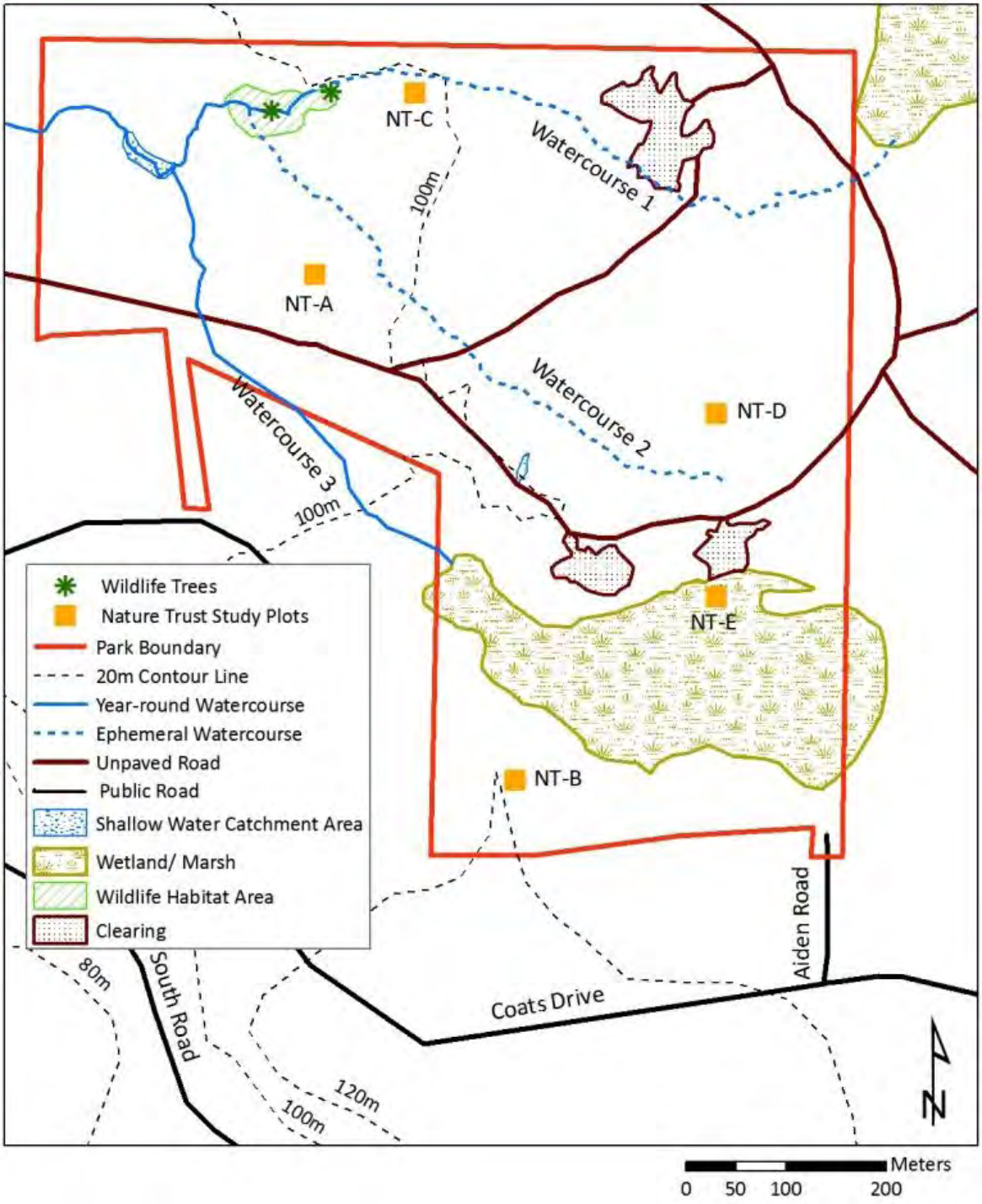
Table 2: Forest structural stage classes (adapted from MOELP 1998)

Class	**Description**
Non-vegetated	< 10% cover of vascular plants
Herb	herb dominated communities, < 10% tree cover, < 25% shrub cover
Shrub/herb	< 20 year old forest, dominated by shrubs <10 m tall including conifer regeneration, tree cover < 10%, < 20 years
Pole/sapling	trees > 10 m tall and overtopping shrub and herb layer, generally 20 to 40 years
Young forest	self-thinning evident, canopy layers developed, generally 40 to 80 years
Mature forest	co-dominant trees mature, well developed understory often including advanced regeneration, generally 80-250 years
Old forest	old, structurally complex stands with snags and coarse woody debris, generally >250 years

Table 3: Summary information on site inventory field plots completed by The Nature Trust on 29 May 2008 (TNT 2008)

Site ID	Easting	Northing	Plot Representing	Site Notes[1.]
NT-A	440397	5445016	Second growth Douglas fir with salal understory	Logged about 60 years ago.
NT-B	440601	5444520	Area partially logged for 2nd time: Douglas fir and bracken	Called structural stage: Shrub/Herb, but several trees were not cut during most recent logging. 6-7 years ago. Moisture regime: Submesic (Water removed readily in relation to supply; water available for moderately short periods following precipitation) but there is a wetter area at the north end of the plot. Originally logged about 60 years ago.
NT-C	440497	5445191	Douglas fir forest logged twice in 60 years. Natural regeneration.	Originally clear-cut 60 years ago, then about 90% of trees logged again 5 years ago. Most grand fir left behind.
NT-D	440800	5444878	Open Douglas fir forests with some arbutus and salal understory	Ground slopes gently away in all directions. A few trees seem to have been removed about 10 years ago.
NT-E	440746	5444746	Disturbed area regenerating with Douglas fir; two Douglas fir vets remain	Moved plot out from swamp - water level rising - young trees around swamp recently dead. Two big burn areas on either side of plot. Structural stage: Shrub/Herb, but has a couple of tall standing trees

1. All site description codes have been typed out based on corresponding definitions in MOELP (1998).



Map 4: Locations of sensitive Wildlife habitat and Nature Trust Study plots

IID2 Wetland/Marsh Plant Community

- By definition a marsh is a permanently to seasonally flooded wetland dominated by herbaceous vegetation (MacKenzie and Moran. 2004).
- In the case of Coats Marsh, the marsh provides a transition between Shallow Water and Treed Swamp wetland communities.

A suggestion has been made to dredge Coats Marsh to maintain it as open shallow water habitat

- Before any consideration of dredging the marsh area, sediment depth to bedrock would need to be determined. The watercourse leaving the marsh area was excavated or blasted out of bedrock. An e-mail exchange with Nick Doe (see section IIA above) and a review of his paper (Doe 2010) suggest a high likelihood that marsh sediments are shallow, approximately one metre, and that dredging may not be feasible. As the sandstone bedrock may be permeable, a disturbance of the clay base of the marsh area may reduce its water holding ability.
- Beyond the geophysical limits of the marsh, there are ecological reasons supporting a recommendation to not dredge Coats Marsh (Reviewed in Darnell et al. 1976):

1) Dredging the wetland will greatly impact wildlife species that live and forage within wetland substrate and vegetation. This includes waterfowl, amphibians, and the invertebrates on which they depend.

2) Dredging is likely to introduce and increase the spread on non-native, invasive species. Aquatic species are extremely difficult to control because seeds are water borne, chemical application are typically not used, and mechanical removal can be challenging.

3) Dredging will greatly affect the hydrology of a wetland, which may cause ill effects such as increased flooding or drying which will in turn affect the current species assemblages and dependencies.

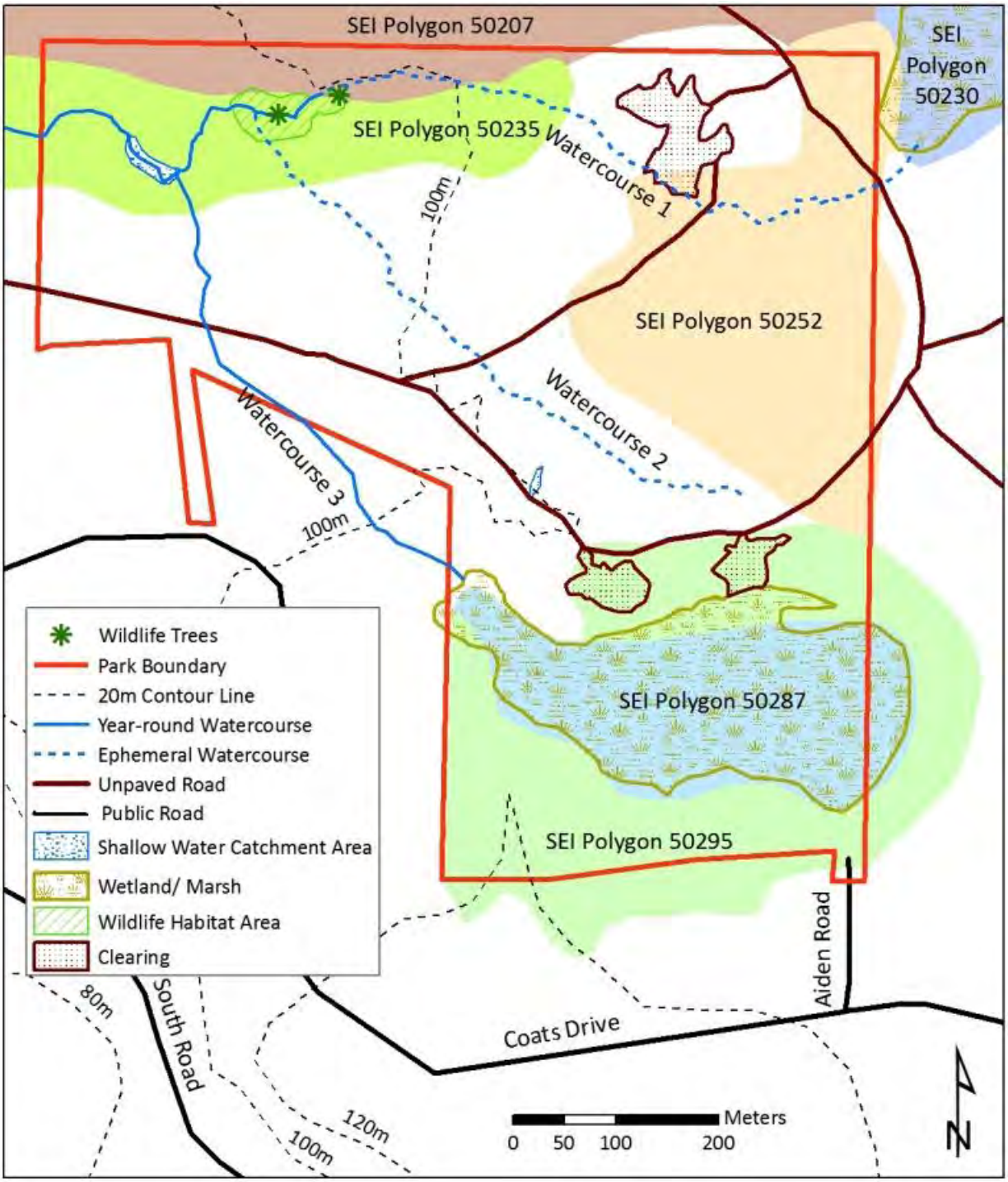
4) At other sites, wetland substrate disturbance during dredging has impacted downstream watercourses connected by surface water flow. If not carefully managed this can have serious effects on fish and their habitat. Dredging typically provides temporary results with few gains for undetermined or inconclusive benefits. Dredging of natural wetland habitat should be discouraged without further research or sound justification for recommending this action.

IID3 Identified Sensitive Ecosystem Polygons

- Six Sensitive Ecosystem (SEI) Habitat Polygons are in association with Coats Marsh Regional Park (Table 4)(Map 5)(SEI 2007)(McPhee et al. 2000)
- Habitat areas are identified as SEI polygons using air photo interpretation and knowledge of local areas. Not all SEI polygons are ground truthed. The presence of six SEI polygons in association with Coats Marsh Regional Park adds credibility to its importance as a protected area; however, the lack of a designation as an SEI polygon does not suggest that an area may lack highly important natural habitat.
- The forested area along Watercourse 2, while not designated as a SEI Polygon (Map 5) is an excellent example of young maturing Coastal Douglas-fir forest that will only improve over time.

Table 4: Sensitive Ecosystem Inventory Polygons associated with Coats Marsh Regional Park

SEI Polygon Number	Location	SEI Description
50207	Along the north park boundary and extending to the north	80% Non-sensitive Douglas fir – salal, shrub/herb structural stage; 20% Woodland: conifer dominated Douglas fir - Shore pine – Arbutus, shrub/herb structural stage
50230	The wetland area Immediately to the NE of the NE park boundary	100% Wetland: swamp Western Red Cedar – Indian Plum, pole/sapling structural stage
50235	Along north boundary along the route of Watercourse 1	50% Wetland: swamp Western Red Cedar – Indian Plum, young forest structural stage 50% Wetland: swamp Western Red Cedar – Indian Plum, shrub/herb structural stage
50252	Mostly within the park, along the east boundary	100% Wetland: swamp Western Red Cedar – Vanilla Leaf, young forest structural stage
50287	Coats Marsh	60% Wetland: marsh Cattail Marsh, herb structural stage 40% Wetland: shallow water Open Water <2m, no structural stage
50295	The perimeter of Coats Marsh on the north, east and south sides	90% Wetland: swamp Western Red Cedar – Indian Plum, young forest structural stage 10% Non-sensitive Rural Residential, no structural stage



Map 5: Sensitive Ecosystem Inventory (SEI) habitat polygons associated with Coats Marsh Regional Park (SEI 2007).

IID4 Invasive Plant Presence

- Invasive plant presence was not inventoried in the residential clearing.
- Six species of Invasive plants were observed during the December site visits (Table 5). An additional four invasive plant species were observed on neighbouring lot 5.
- Bufo 2010, also documents the presence of evergreen blackberry and English Ivy
- Plants are considered invasive when they are not naturally found in an area and when established are able to out compete the local native species. Invasive plants often upset the "natural" nutrient and substrate balance such that indigenous plants, animals and fish have lower productivity and survival rates.
- Information on invasive plant removal may be found on the Invasive Plant Council of BC Website at: http://www.invasiveplantcouncilbc.ca/ , and a BC Ministry of Forests and Range Publication: Pest Management Plan for Invasive Alien Plant and/or Noxious Weed Control on Provincial Crown Lands Within South Coastal British Columbia, 2009
- The main focus of terrestrial invasive plants is within the two burn pile clearings. At this time the opportunity exists to contain, maintain and potentially eradicate some of the invasive species.
- With most invasive plants, disturbance of the soil will lead to increased infestation. If the burn pile clearing are to remain as clearings, then regular mowing will likely keep the invasive plants in check. To return the burn pile areas to natural vegetation typical of the surrounding area, mechanical removal of invasive plants, as described below, coupled with the planting of native species will likely be successful.
- Often shade can become a strong limiting factor for invasive plants. Bigleaf Maple planted within the burn pile clearing along the edges of marsh could help limit light to invasive plants, emulate the CDFmm-11 (western red cedar – skunk cabbage) site series and also maintain a more open appearance in these sites.

Invasive Plants in the Burn Pile Clearings

- Scotch Broom was observed as a few isolated plants along the roadways and in larger density within the two burn pile clearings (Photograph 16). In comparison to other sites, the infestation of scotch Broom would be considered very manageable. Scotch Broom becomes established when soil is disturbed. Tilling the soil and attempting to remove the roots may increase the problem. The accepted method for removal at this scale of site would be to cut plants off at ground level just as the plants have flowered but before seed pod production. If this is repeated each year for three to five years the scotch broom would likely be eliminated.

- Canadian Thistle was also observed in burn pile clearing (Photograph 17). Canada thistle spreads rapidly through horizontal roots, As with Scotch Broom, it is best to not disturb the soil, as small roots can grown into new plants compounding the problem. Mowing or cutting plants at the bud stage may be the most effective measure for this site.

- Himalayan blackberry was observed in an isolated patch around the perimeter of the westernmost burn pile area (Photograph 18). At this time, the infestation of Himalayan blackberries appears minimal as compared to other sites in the local area. Mowing or manual cutting is likely the best method for removal on this site. This would require more frequent cutting than broom or thistle (i.e. mowing or cutting multiple times in a year).

- Common Mullein was observed as a few isolated stalks within the area infested by Canadian thistle. Mullein seeds can stay viable in the soil for 100 years (Remaley 2005). As with most invasive plants, disturbing the soil can promote the spread. Hand pulling of individual plants would likely be the most effective removal measure at this site.

- Common Tansy or Tansy Ragwort was observed as isolated plants in the burn pile clearing. The difference is not easily distinguished in the fall-winter season. The infestation did not appear severe, though an additional inventory in the spring and summer would confirm the distribution. Tansy seeds can remain viable in the soil for 15 to 25 years. The recommended removal method, for either species on this site would be hand pulling wearing gloves.

Invasive Plants in the Wetland and Marsh Areas

- Reed canary grass has established along most of the shore of Coats Marsh area and throughout the wetland north-east of the park. Reed canary grass is very aggressive and once established can achieve near total dominance over native wetland species (IP SWBC 2010). Reed canary grass is very difficult to remove without the use of chemicals that may cause even greater harm to the infested area. Invasive plants within the wetland/marsh areas will be difficult to remove on account of spread via rhizomes. Pulling these species is an ongoing effort that typically requires extensive manpower. Most importantly, the spread of invasive plants beyond these clearing should be monitored. Where individual plants are found beyond these impacted, cleared areas, they should be manually removed by the roots and the area monitored for reoccurrence. It is suggested that hand removal in specific locations, coupled with planting of native shrubs and trees may produce enough shade to outcompete some areas of reed canary grass. There is no easily successful solution here.

- There is a reasonable high potential for yellow-flag iris (*Iris pseudacorus*) within the marsh area. Its presence would need to be determined in the spring or summer.

Invasive Plants Observed on Neighbouring Lot 5

- Most invasive plant infestation is caused by spreading from residential gardens. The source of many invasive plant infestations is garden debris dumped in natural areas.
- While walking the marsh shoreline in Lot 5 (with permission from the owners) four species of 'naturalised' domestic plants were observed (Table 5). While the presence of these species is undesirable, as long as the natural vegetation in the regional park where it borders on Lot 5 remains present, there is limited risk of these plants spreading.
- The ideal situation would be for these land-owners to recognise the disadvantages of these plants and for them to work towards eradication. If the land-owner expressed an interest to see these plants removed, parks staff might offer encouragement and advice.

Table 5: Invasive plant species observed within or in the vicinity of Coats Marsh Regional Park, December 2010

	Common Name	Scientific Name
Burn Pile Areas	Scotch broom	*Cytisus scoparius*
	Canadian thistle	*Cirsium arvense*
	Himalayan blackberry	*Rubus armeniacus*
	Common Mullein	*Verbascum thapsis*
	Tansy sp.	*Tanacetum sp., Senecio sp.*
Wetland and Marsh Areas	Reed canary grass	*Phalaris arundinacea*
Neighbouring Lot 5	Sowthistle sp.	*Sonchus sp.*
	Bull thistle	*Cirsium vulgare*
	Lamium	*Lamium galeobdolon*
	Periwinkle	*Vinca sp.*

IIE Wildlife Characteristics

IIE1 Fish Presence in Coats Marsh

- The presence of fish in Coats has not been confirmed either by this report or by any other known investigation.
- On 1 Dec 2010, four minnow traps, bated with salmon eggs, were placed in Coats Marsh and left for 24 hours. No fish were trapped. This does not eliminate the possibility that fish are present. A far more extensive search effort would be needed to definitively demonstrate presence or absence of fish.

- Downstream of Coats Marsh are three significant barriers to fish passage. The first is the concrete weir structure with a 2m fall between the top of the baffle and the water surface below the weir (Photograph 9). A second barrier, approximately 50m downstream from the weir, is a 1.5m constructed rock dam filling the trench of watercourse 3. The third, approximately 90m downstream from the weir is another 1.5m constructed rock dam (Photograph 11) resulting in a pond (Photograph 12).
- Fish presence has been demonstrated in Hoggan Lake; it was stocked with Cutthroat Trout in 1924 and 1927 (FISS 2010). Both Cutthroat Trout and Rainbow Trout were observed in Hoggan Lake in 1972 (FISS 2010).

IID2 Amphibians and Reptiles

- Early December, following a week of cold weather, is possibly the worst time and conditions to document the presence of amphibians and reptiles.
- The presence of red-legged frogs has been documented elsewhere.
- The presence the other listed species (Appendix 1) has not been systematically inventoried.

IID3 Birds

- Twenty-three bird species were recorded as encountered but not systematically inventoried (Table 6)
- An anecdotal list of birds observed in other seasons is presumably very similar as in the 707 management plan.
- Aside from the marsh, an area of high value avian wildlife habitat is shown on Map 4. This area has many dead or decaying trees that are very important to wildlife, especially cavity nesting birds and bats. Two trees are identified on Map 4, a cedar snag (Photograph 20) and a veteran Douglas fir (Photograph 21).
- The Conservation Data Centre (CDC 2010) publishes list of species with designated protected status. Seventeen birds species, listed either federally (COSIWIC) or provincially (Red, Blue, or Yellow list) are potentially found within Coats Marsh Regional Park or have some aspect of their life cycle supported by the park habitat (Appendix 1).
- While in the vicinity of the veteran Douglas fir noted on Map 4 (Photograph 21), two Bald Eagles arrived, perched in the tree top and called repeatedly. While no nest was observed, the crooked aspect of the tree top has potential to support a nest. The tree might have better nest tree qualities if the top were to blow off.

Table 6: Bird species observed or heard during site visits to Coats Marsh Regional Park on the 1st and 2nd of December 2010. (listed in phylogenetic order)

Common Name	Scientific Name	Four letter Provincial ID code
Trumpeter swan	*Cygnus buccinator*	TRUS
Mallard	*Anus platyrhynchos*	MALL
Bufflehead	*Bucephala albeola*	BUFF
Bald Eagle	*Haliaeetus leucocephalus*	BAEA
Sharp-shinned Hawk	*Accipiter striatus*	SSHA
Belted kingfisher	*Ceryle alcyon*	BEKI
Red-breasted Sapsucker	*Sphyrapicus ruber*	RBSA
Downy Woodpecker	*Picoides pubescens*	DOWO
Hairy Woodpecker	*Picoides villosus*	HAWO
Northern Flicker	*Colaptes auratus*	NOFL
Pileated Woodpecker	*Dryocopus pileatus*	PIWO
Steller's Jay	*Cyanocitta stelleri*	STJA
Common Raven	*Corvus corax*	CORA
Chestnut-backed Chickadee	*Parus rufescens*	CBCH
Red-breasted Nuthatch	*Sitta canadensis*	RBNU
Winter/Pacific Wren	*Troglodytes troglodytes*	WIWR
Golden-crowned Kinglet	*Regulus satrapa*	GCKI
American Robin	*Turdus migratorius*	AMRO
Varied Thrush	*Ixoreus naevius*	VATH
Grosbeak (undetermined species)	*Pheucticus sp.*	
Rufous-sided Towhee	*Pipilo erythrophthalmus*	SPTO
Song Sparrow	*Melospiza melodia*	SOSP
Dark-eyed Junco	*Junco hyemalis*	DEJU

IIE4 Mammals

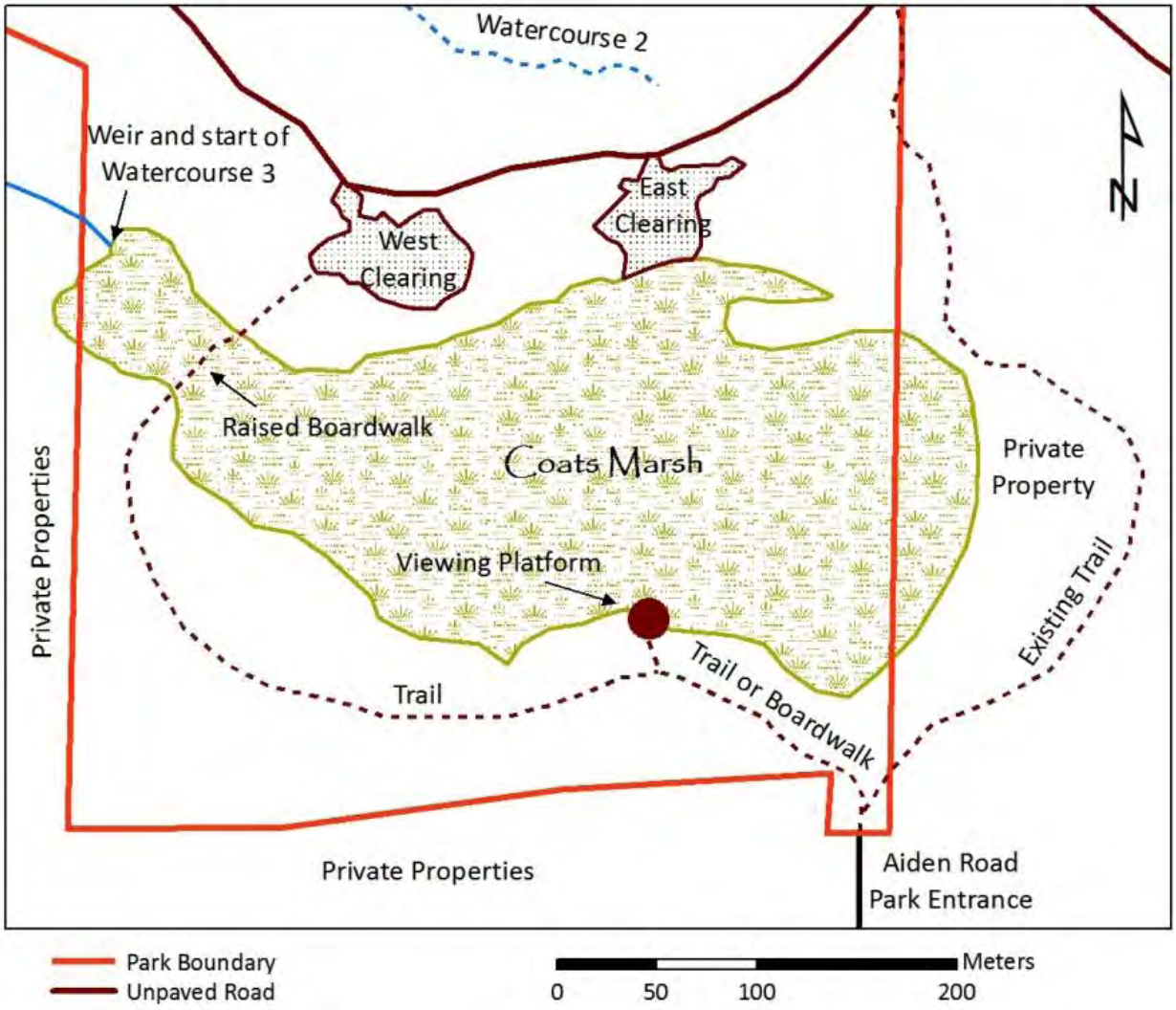
- Four provincially red or blue listed species are potentially supported by habitat found in Coats Marsh Regional Park (Appendix 1), these species were not observed during the December site visits.

III PARK MANAGEMENT RECOMMENDATIONS

IIIA Trails and Wildlife Viewing

- It is recognised that within a park there must be a balance between preserving environmental values and allowing the public to view and appreciate those values.
- It is understood that local residents will want a trail system that traverses the property, joining the 707 Park with access to South Road. Initially this may be accommodated along existing roadways and the easement from the south boundary to Coats Road. The acquisition of the property immediately to the east of Coats Marsh would both offer further protection to the marsh and allow trail access around the marsh and through to the 707 park. There is an existing, though rather crude, trail from Aiden Road through private property and back to the east boundary of Coats Park.
- A trail through the forest along the south shore of the marsh, rejoining the main park by a boardwalk or bridge near the weir would be possible as the marsh is little more than a metre deep.
- It is recommended that there not be full perimeter trail or boardwalk around the shore of Coats Marsh, but that trails remain back from the marsh protecting wildlife from human disturbance.
- Most wildlife, have a good tolerance towards the presence of humans when focused from a single direction (personal observations). Birds and wildlife view humans as a threat. They watch us and go about their activities most comfortably if there is place for them to retreat or hide. When they have to keep track of us from two directions they appear to have a much higher stress level and will normally leave the area or hide.
- The marsh area offers an excellent opportunity for wildlife viewing. The two clearings that were formally used for burn piles offer more distant but pleasant views of the marsh area.
- A section of boardwalk and a viewing platform off of Aiden Road (in the vicinity of Photograph 19) would offer excellent long views of the marsh area with good light aspects for photography (Map 6). If in the future a trail is planned around the east shore of the marsh it should be back from the open marsh and give the occasional pocket views. Ideally these viewpoints could be concealed such that they are not visible from each other.
- The wildlife habitat area as shown on Map 4 has a large proportion of mature, dying, and dead alder and maple, plus a cedar snag and a veteran fir. All of these trees have high wildlife value. These trees are potentially more hazardous to park users than trees in most other area of the park. We suggest that this area not be identified on park maps

and that trails not be located in immediate proximity to this area. It would be best to not bring attention to this area and to leave it to the birds, bats and other wildlife.



Map 6: Recommended trail, boardwalk and wildlife viewing locations at Coats Marsh

IIIB Forest Management and Enhancement

- The forest is regenerating naturally and will only improve as it grows into a fine example of a mature Douglas fir forest. Aside from spot locations of invasive species removal the best management of the forested areas of the park is to leave it alone.
- We recommend removal of invasive plants in the burn pile areas as soon as possible.

- Information on invasive plant removal may be found on the Invasive Plant Council of BC Website at : http://www.invasiveplantcouncilbc.ca/

IIIC Marsh/Wetland Management and Enhancement

- The ultimate goal of any management or enhancement activities with Coats Marsh should result in a marsh/wetland system that functions naturally and requires limited or no ongoing maintenance.
- From the evidence at hand, it appears that Coats Marsh evolved out of local geological conditions as a shallow palustrine basin wetland. Over the past century it was drained, farmed, and then re-flooded. It appears that for the past 15 to 20 years it has been allowed to naturally redevelop wetland characteristics.
- At this time there are four decisions that will direct the short term and ongoing management of this area:

IIIC1 The maximum allowable water level

- The concrete weir sets the water level of Coats Marsh. A lower water level could reduce flooding onto private land (Lot 5) but would at the same time reduce the open water surface area. Less depth in the marsh would result in a plant community resembling a treed swamp.
- The weir is vulnerable to vandalism. A choice needs to be made between installing a permanent water levelling device or renovating the existing structure such that it may be locked. We suggest that the structure be inspected by a qualified engineer.

IIIC2 To increase the water depth by dredging

- The suggestion that the marsh area might be dredged to maintain and enhance an open water habitat has been discussed in section IID2, above.
- We recommend that no dredging occur at this time. Any plans to reengineer the ecosystem of the current marsh area should be proceeded by an in-depth survey of the wetland ecological community.

IIIC3 To allow for fish passage between Hoggan Lake and Coats Marsh

- There are both advantages and disadvantages to allowing for or encouraging fish presence in Coats Marsh.
- Given the disconnection between Hoggan Lake and Marine waters, the Hoggan Lake Watershed did not historically support a population of anadromous fish.
- Coats Marsh without the presence of fish is excellent habitat for amphibians and reptiles and will support a diverse community of plants and animals.
- We recommend that the marsh be observed and have a more in-depth species inventory before a decision is made to allow for fish passage.

IIIC4 Invasive Plant Removal

- Removal of reed-canary grass in the marsh area may not be cost effective. Vegetation in the wetland should be inventoried, mapped and observed over time to help with any decision regarding marsh enhancement.

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V PHOTOGRAPHS

Photograph 1: Wetland area north-east of Coats Marsh Regional Park

Photograph 2: Watercourse 1 leaving a wetland area and flowing into Coats Marsh Regional Park at the north-east park boundary.

Photograph 3: Watercourse 1 looking downstream near the north-east park boundary

Photograph 4: Looking upstream along Watercourse 1 near the centre of the north park boundary.

Photograph 5: Looking north towards the park boundary from Watercourse 1. The shrub-like growth in the near distance is a thicket of young arbutus trees

Photograph 6: View of a small rock fall along the Watercourse 1. It is at this point that the watercourse appears to switch between ephemeral and permanent.

Photograph 7: Water catchment area near the west park boundary. High wildlife value

Photograph 8: Watercourse 2 looking downstream from the park road

Photograph 9: Water discharge from Coats Marsh at the weir.

Photograph 10: Water discharge from Coats Marsh looking downstream of the weir.

Photograph 11: Watercourse 3, dam and pond on Lot 5.

Photograph 12: Watercourse 3 and constructed pond on Lot 5

Photograph 13: Watercourse 3 where it flows under the park road in culvert.

Photograph 14: Flagging showing the submerged property line between the park and Lot 5

Photograph 15: View of buildings on Lot 5 from the marsh shoreline.

Photograph 16: Scotch broom along the edge of one of the Burn pile clearings.

Photograph 17: Canadian thistle within a burn pile clearing.

Photograph 18: Himalayan Blackberry within the western burn pile clearing.

Photograph 19: The south-east portion of Coats Marsh in the vicinity of Aiden Road. Flagging at the park boundary is visible near the centre of the photograph.

Photograph 20: Western red cedar snag/ wildlife tree

Photograph 21: Veteran Douglas fir in a stand of mature red alder and bigleaf maple. This is high value wildlife habitat.

VI

Appendix 1

Legally designated, "listed" vertebrate species that have the potential to be located in or supported by the habitat of Coates Marsh Regional Park.

Conservation Data Centre Ecosystem Explorer (CDC 2010) search parameters were set at: Vertebrates/Region District of Nanaimo/Coastal Douglas fir zone/ Phylogenetic order. Of the 44 resulting records, 15 were eliminated for being out of the possible range of this site.

English Name	Scientific Name	BC Status List[1]	COSEWIC Status[2]	CF Priority[3]
Amphibians				
Western Toad	*Anaxyrus boreas*	Yellow	SC (2002)	2
Northern Red-legged Frog	*Rana aurora*	Blue	SC (2004)	1
Northwestern Salamander	*Ambystoma gracile*	Yellow	NAR (1999)	1
Common Ensatina	*Ensatina eschscholtzii*	Yellow	NAR (1999)	2
Western Redback Salamander	*Plethodon vehiculum*	Yellow	NAR (2001)	3
Reptiles				
Northern Alligator Lizard	*Elgaria coerulea*	Yellow	NAR (2002)	3
Western Painted Turtle - Pacific Coast Population	*Chrysemys picta pop. 1*	Red	E (2006)	2
Northwestern Garter Snake	*Thamnophis ordinoides*	Yellow	NAR (2003)	3
Birds				
Sooty Grouse	*Dendragapus fuliginosus*	Blue		2
Great Blue Heron, *fannini* subspecies	*Ardea herodias fannini*	Blue	SC (2008)	1
American Bittern	*Botaurus lentiginosus*	Blue		2
Green Heron	*Butorides virescens*	Blue		4
Northern Goshawk, *laingi* subspecies	*Accipiter gentilis laingi*	Red	T (2000)	1
Northern Harrier	*Circus cyaneus*	Yellow	NAR (1993)	2
Bald Eagle	*Haliaeetus leucocephalus*	Yellow	NAR (1984)	6
Peregrine Falcon, *pealei* subspecies	*Falco peregrinus pealei*	Blue	SC (2007)	1
Band-tailed Pigeon	*Patagioenas fasciata*	Blue	SC (2008)	2
Barn Owl	*Tyto alba*	Blue	SC (2001)	2
Short-eared Owl	*Asio flammeus*	Blue	SC (2008)	2
Northern Pygmy-Owl, *swarthi* subspecies	*Glaucidium gnoma swarthi*	Blue		1
Western Screech-Owl	*Megascops kennicottii*	No Status		2
Common Nighthawk	*Chordeiles minor*	Yellow	T (2007)	2
Olive-sided Flycatcher	*Contopus cooperi*	Blue	T (2007)	2
Barn Swallow	*Hirundo rustica*	Blue		2

Vesper Sparrow, *affinis* subspecies	*Pooecetes gramineus affinis*	Red	E (2006)	1
Mammals				
American Water Shrew, *brooksi* subspecies	*Sorex palustris brooksi*	Red		1
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Blue		2
Keen's Myotis	*Myotis keenii*	Red	DD (2003)	1
Ermine, *anguinae* subspecies	*Mustela erminea anguinae*	Blue		2

1. Species are assigned to provincial lists depending on their Provincial Conservation Status**:** Red = Extirpated, Endangered, or Threatened status in British Columbia; Blue = species or subspecies considered to be of Special Concern (formerly Vulnerable) in British Columbia; and Yellow = species that are apparently secure and not at risk of extinction. Yellow-listed species may have Red- or Blue-listed subspecies.

2. Each COSEWIC (Committee On the Status of Endangered Species In Canada) rank is followed by the date that the rank was last reviewed. Ranks have the following meanings: XX = EXTINCT: A species that no longer exists; XT = EXTIRPATED: A species that no longer exists in the wild in Canada, but occurring elsewhere; E = ENDANGERED: A species facing imminent extirpation or extinction; T = THREATENED: A species that is likely to become endangered if limiting factors are not reversed; SC = SPECIAL CONCERN: A species of special concern because of characteristics that make it is particularly sensitive to human activities or natural events; NAR = NOT AT RISK: A species that has been evaluated and found to be not at risk; DD = DATA DEFICIENT: A species for which there is insufficient scientific information to support status designation.

3. The conservation priority assigned to each species or ecological community under the Conservation Framework. A species or ecological community receives a conservation priority of 1 (highest) through 6 (lowest) for each of the three Conservation Framework Goals are: 1 - Contribute to global efforts for species and ecosystem conservation; 2 - Prevent species and ecosystems from becoming at risk; and 3 - Maintain the diversity of native species and ecosystems. The value shown here represents the highest priority across the three Goals.

Appendix B:
Coats Marsh Regional Park Building Condition Report 2010

Building Name: Coats Marsh Regional Park Caretakers Dwelling

Date of Inspection: June 14th 2010

Inspection Conditions / Notes: Clear/Dry

Building Area: Approx 625 sq ft excluding covered porch areas	**Building Age:** Older building, estimated age 80 yrs.
Occupancy Classification: C Historic value not established.	**Services:** None. No water, Sanitary, or Electricity.
Building Purpose/Current use: Residential use cabin.	

Building Description,
A small, rustic, vertical log cabin set in a clearing and similar to a pioneer or seasonal type cabin. The Interior is demised into four rooms comprised of a kitchen/eating area, living room, bedroom, and storage room. The interior is minimally finished with wood on the floors, walls and ceilings, some with painted surfaces.
There are no plumbing or electrical facilities, and a pit toilet is located outside of the cabin. The house is currently occupied as a dwelling unit.

Building Condition Summary:
The building is in poor overall condition, and not considered suitable for continued occupancy without repairs and improvements.

Noted issues of concern include:

- Deterioration and decay of wooden structural members, especially those in close contact with the ground. The extent of the deterioration requires further investigation, but appears quite severe in some locations, including sill logs and support posts. Failure to repair may compromise the structural integrity of the building.
- Structural components of the building show signs of insect damage and a Carpenter Ant infestation was observed in the attic area.
- Metal roofing is in poor condition and leaks.
- The rear porch structure is in very poor condition and requires immediate attention or replacement. Failure to repair may result in injury.
- An old and unused brick chimney shows signs of mortar deterioration above the roof line. This condition could allow bricks to dislodge and fall, possibly damaging the building or causing injury. This unused chimney should be removed to at least below the roofline, and permanently sealed at the flue opening.

Further assessment of deteriorated structural components should be completed by Professional Engineer, due to the unconventional (log) construction style.

From initial observations this building would require a moderate amount of repair to remain in service for a short term, and would require a significant level of restoration if the service life is projected beyond five years.

The building has no established historic significance, and is at the end of its life.
Long or short term repair costs will exceed the value of the building.

Major Component	**Description / Notes**	**Condition**
Foundation	Wood posts on grade. Enclosed dirt-floor crawlspace	Poor – Decay in support posts
Walls	Vertical log exterior constructed on sill log with sawn upper plate	Poor – Decay in wall sections.
Roof Frame & Cover	Milled lumber framing (Rafters and Ceiling Joists) and metal roof coverings Fibreglass insulation installed in attic.	Frame - OK Roofing – Poor condition & leaks
Windows & Doors	Windows are single-pane, wooden sash type. Doors are of wood construction	Windows – Poor.
Interior	Minimal finishing, wood surface finish throughout. Some painted surfaces.	Condition - Fair
Site & Drainage	Natural vegetation state with surface drainage.	No issues observed.

Chimney	Original brick chimney no longer in use. Double wall steel chimney in-use	Poor Un confirmed

Functionality:
The house has neither operable plumbing nor a potable source of drinking water; there is no wiring or electrical service, and no indoor sanitary facilities.

- Water is sourced from an open, shallow well near the house. Water storage is provided by an exterior cistern and a various array of barrels.
- Sanitary facilities comprise of a partially enclosed pit toilet.
- Heating is provided by an air-tight wood stove located in the center of the house, vented through a newer double wall steel chimney.
- A small, propane fired stove provides for cooking requirements.
- Illumination is provided by the occupant's use of oil lamps.

The cabin lacks the fundamental conveniences associated with modern standards, including requirements considered necessary for the occupants health and safety.

Construction Notes:
The house on the Coats Park Property is unique in that the lower portion of the building is constructed similar to that of an early "settler" type cabin, utilizing logs as the primary building component. However, the roof framing is constructed with sawn and surfaced dimensional lumber, and all visible nails used in the structure are of the round-wire type common to 20th century production and availability.
Vertical log construction has the advantage of using shorter logs and does not require notched or fitted joinery. Instead logs of similar dimension are cut to length and fastened to a top and bottom plate and stood vertically, creating a wall section. Interior partitions are constructed and surfaced using conventional sawn and surfaced milled lumber.

Code Compliance:
Construction of the cabin pre-dated Building Code requirements.
Future renovations that involve structural components of the foundation, floors and exterior walls may require design and supervision by Structural Engineer, as much of the original construction is outside of prescriptive requirements contained within the Building Code.

Environmental:

- Painted surfaces within the cabin may contain lead.
- Water from the well is subject to surface contamination and is untested.

Fire & Safety:

- Wood heat and Oil lamps present an increased fire hazard risk.
- Response time for Emergency vehicles may be hampered by location and site access conditions.
- Clearance and protection around and above the propane stove are inadequate and should be improved to at least minimum code requirements.

- Battery operated smoke detectors should be installed and a test/maintenance schedule documented.

Operations & Maintenance:
Short Term Major Asset Maintenance Requirements.

Structural Repairs to damaged and deteriorated building components	$5000.
Install well and hand-pump.	$3000.
Replace Roof Covering & Remove Brick Chimney to below roof line.	$3000.
Install enclosed pit-toilet complete with holding tank.	$4000
Provide surface protection around gas-stove and install smoke detectors. Improve protection around wood stove.	$500.
Provide covered fire wood storage area.	$1000.
Pest control to arrest further damage to the structure.	$500
Structural Assessment by P.Eng.	$600.

Short Term Major Maintenance Costs **$17600.**

Long Term Major Asset Maintenance & Improvement Requirements. (Additional)

Structural Restoration of Building Components, and weather-proof log structure	$6000.
Install Solar Power System and Low Voltage LED Lighting.	$10,000
Install High Efficiency Water Pump, UV Treatment and Plumbing.	$10,000 including power system upgrade.
Install Propane Operated Refrigerator.	$1500.
Long Term Asset Improvement Costs.	**$27500.**

Building Name: Coats Marsh Regional Park Barn

Date of Inspection: June 14th 2010

Inspection Conditions / Notes: Clear/Dry

Building Area: Approx 644 sq ft	**Building Age:** Older building,.
Occupancy Classification: N/A Historic value not established.	**Services:** None. No water, Sanitary, or Electricity.
Building Purpose/Current use: Barn / Accessory Building – No longer in use, and not usable.	

Building Description,
An old, dilapidated barn type building of post-framed construction with rough-sawn vertical lumber cladding. The interior has a small loft area at one end. Floors are a mix of partial wood and dirt. The building may have previously been used for a variety of purposes, including housing livestock. The building no longer serves any purpose and contains a considerable amount of debris.

Building Condition Summary:
The building is in very poor overall condition and caution should be exercised prior to entry. Further hazard evaluation is warranted prior to carrying out any work on or around the building.

The building frame shows signs of age related deterioration, structural sag, and exposure damage from environmental elements.
Roof failure has contributed to the level of deterioration within the structure.
The loss of structural integrity due to decay and deterioration will eventually reduce the buildings ability to resist environmental forces resulting in collapse.
This building is beyond a reasonable level of repair, and has no asset value.


Interior view of barn.

Interior view of Barn.

Open surface well at Coasts Caretakers House.

Open Pit Toilet at Coats Caretakers House

Rear view of house and back porch

Roof and brick Chimney are in poor condition.

Appendix C:
First On-line Survey, June 2010 - January 2011

surveygizmo

Online Surveys, Data Collection and Integration
www.SurveyGizmo.com

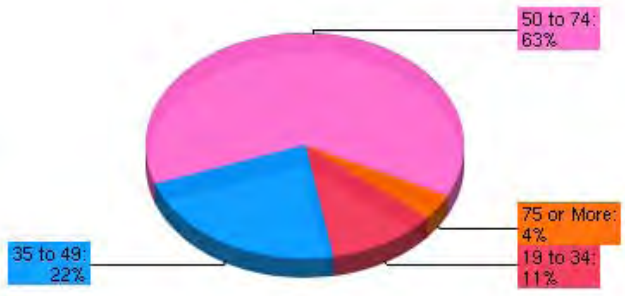
Summary Report - Jan/10/2011

Survey: Survey: Coats Marsh Regional Park Survey

Which best describes where you live?

Value	Count	Percent %
Village Area of Gabriola Island	2	7.4%
North End of Gabriola Island	11	40.7%
South End of Gabriola Island	2	7.4%
East Side of Gabriola Island	2	7.4%
West Side of Gabriola Island	6	22.2%
I do not live on Gabriola Island	4	14.8%

Statistics	
Total Responses	27



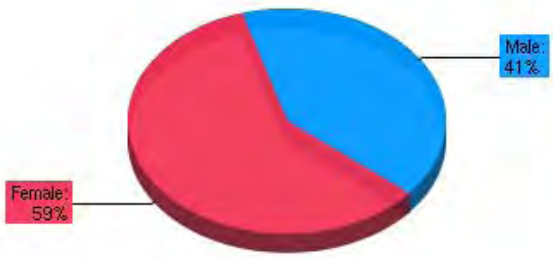
In which age group are you?

Value	Count	Percent %
19 to 34	3	11.1%
35 to 49	6	22.2%
50 to 74	17	63%

Statistics	
Total Responses	27
Sum	1,192.0

Value	Count	Percent %
75 or More	1	3.7%

Statistics	
Average	44.1
StdDev	12.07
Max	75.0



What is your gender?

Value	Count	Percent %
Female	16	59.3%
Male	11	40.7%

Statistics	
Total Responses	27

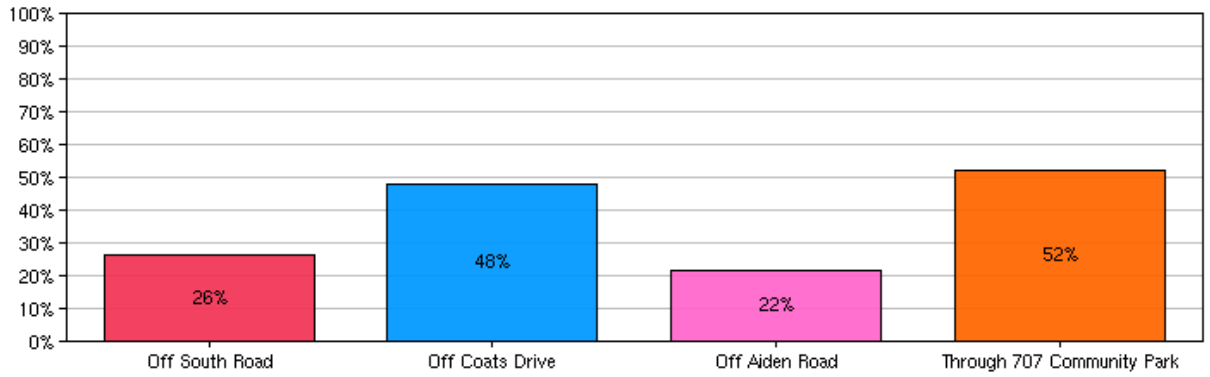
Have you ever visited Coats Marsh Regional Park?

Value	Count	Percent %
Yes	23	85.2%
No	4	14.8%

Statistics	
Total Responses	27

If you answered yes, on average, how many times a year do you visit the park?

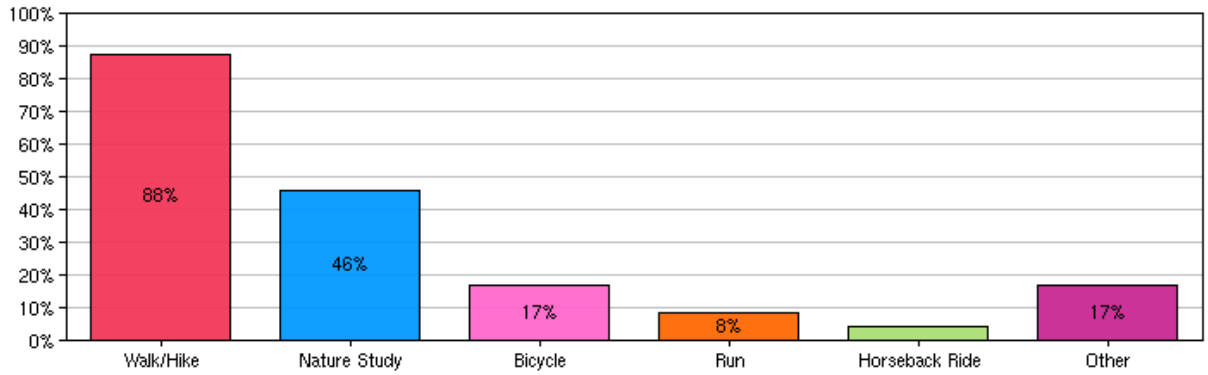
Count	Response
5	
1	1
2	10
1	10-15
1	12
1	2
1	2-3
1	20
1	200 +
2	3
1	4
1	4 times
2	5
1	500
1	6-10
1	8-10
1	About once a month
1	only once
1	several times each year
1	two



When visiting Coats Marsh Regional Park, how do you access the park?

Value	Count	Percent %
Off South Road	6	26.1%
Off Coats Drive	11	47.8%
Off Aiden Road	5	21.7%
Through 707 Community Park	12	52.2%

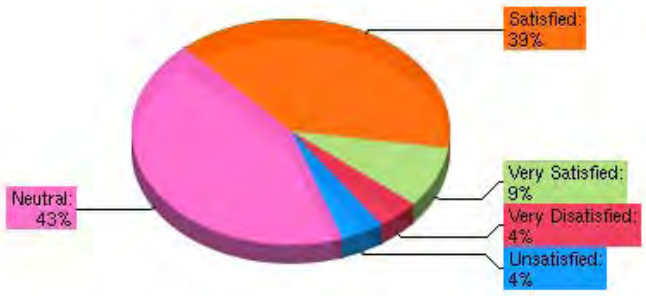
Statistics	
Total Responses	23



What do you typically do in the park?

Value	Count	Percent %
Walk/Hike	21	87.5%
Nature Study	11	45.8%
Bicycle	4	16.7%
Run	2	8.3%
Horseback Ride	1	4.2%
Other	4	16.7%

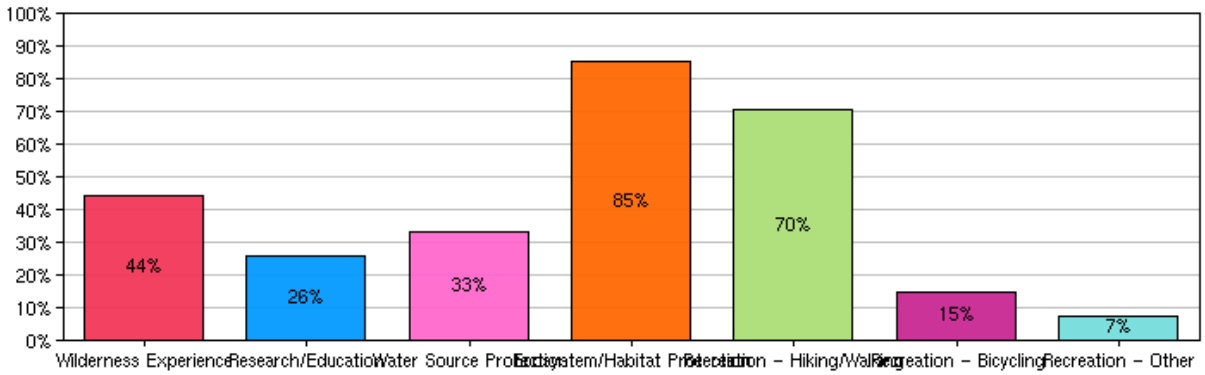
Statistics	
Total Responses	24



What is your level of satisfaction with the trail conditions?

Value	Count	Percent %
Very Disatisfied	1	4.3%
Unsatisfied	1	4.3%
Neutral	10	43.5%
Satisfied	9	39.1%
Very Satisfied	2	8.7%

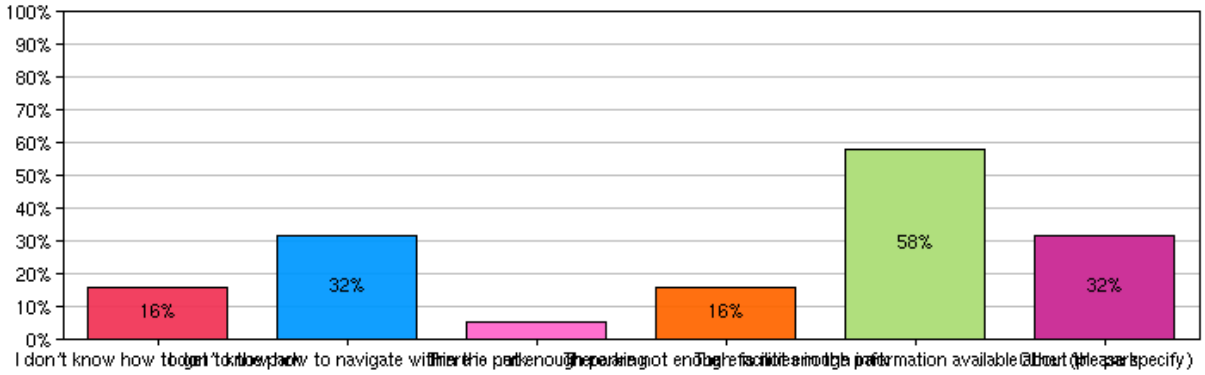
Statistics	
Total Responses	23



What do you feel are the most significant functions the Coats Marsh Regional Park provides? (please select up to three)

Value	Count	Percent %
Wilderness Experience	12	44.4%
Research/Education	7	25.9%
Water Source Protection	9	33.3%
Ecosystem/Habitat Protection	23	85.2%
Recreation - Hiking/Walking	19	70.4%
Recreation - Bicycling	4	14.8%
Recreation - Other	2	7.4%

Statistics	
Total Responses	27

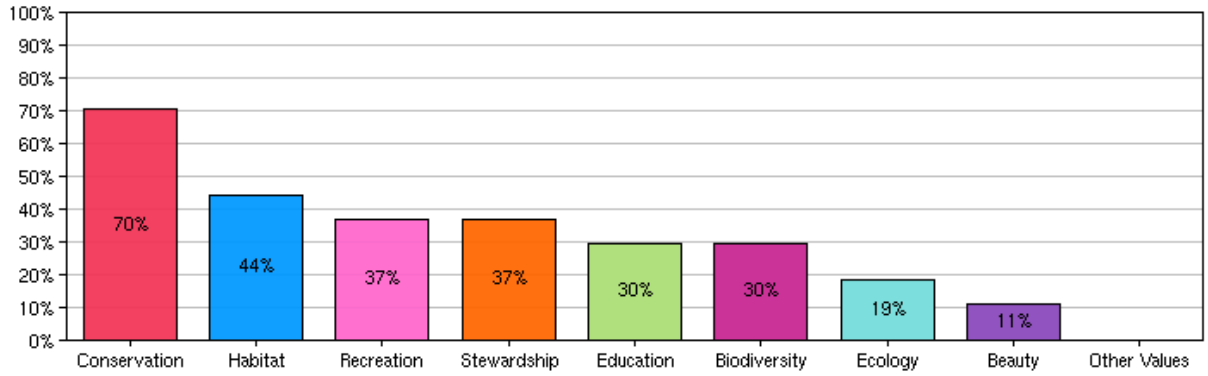


What, if anything, limits your use of Coats Marsh Regional Park? (If nothing limits your use please continue to the next question.

Value	Count	Percent %
I don't know how to get to the park	3	15.8%
I don't know how to navigate within the park	6	31.6%
There is not enough parking	1	5.3%
There are not enough facilities in the park	3	15.8%
There is not enough information available about the park	11	57.9%

Statistics	
Total Responses	19

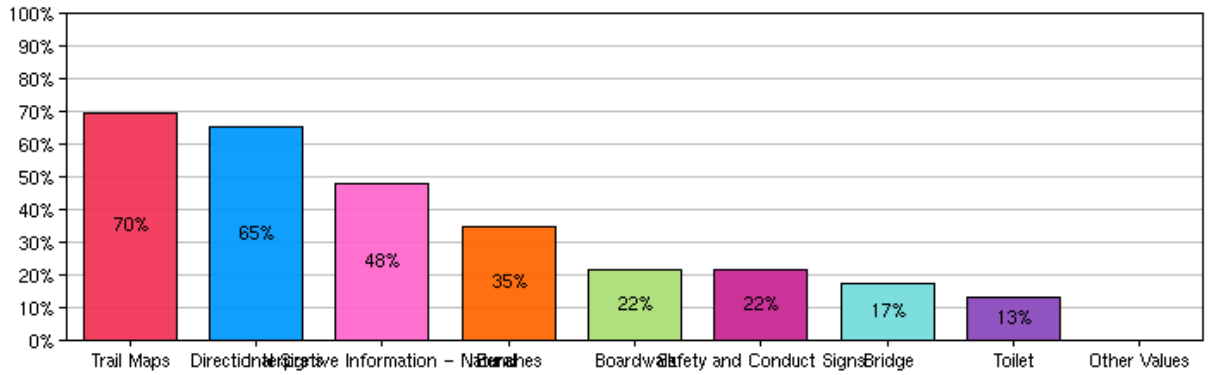
Value	Count	Percent %
Other (please specify)	6	31.6%



A vision statement unique to Coats Marsh Regional Park will help guide the policies and actions of the Management Plan. Please help us create a vision statement by identifying three words from the list below that you feel best describe your vision fo the future of the park. (please select up to three)

Value	Count	Percent %
Recreation	10	37%
Conservation	19	70.4%
Habitat	12	44.4%
Stewardship	10	37%
History	1	3.7%
Community	2	7.4%
Beauty	3	11.1%
Education	8	29.6%
Sustainability	2	7.4%
Biodiversity	8	29.6%
Ecology	5	18.5%
Other	1	3.7%

Statistics	
Total Responses	27



Should any of the following amenities be considered for Coats Marsh Regional Park?

Value	Count	Percent %
Directional Signs	15	65.2%
Safety and Conduct Signs	5	21.7%
Interpretive Information - Natural	11	47.8%
Interpretive Information - Cultural/Historical	2	8.7%
Trail Maps	16	69.6%
Benches	8	34.8%
Shelter	1	4.3%
Bridge	4	17.4%
Boardwalk	5	21.7%
Toilet	3	13%

Statistics	
Total Responses	23

1.

Count	Response
8	
1	Designate specific trails for community use so surrounding land is respected
1	Don't over advertise it. Keep it quiet & not well used. Leave it fo people enjoying nature
1	I think gaining access from one side of the marsh to the other is important
1	Keep it as it is
1	Maintain present water level.
1	Recognition of Mr. Coats wishes for the future of the park and land
1	Safety & conduct signs
1	There is a need for weed control along the north side of the marsh.
1	Very little needs to be done. No boardwalks please.
1	connectivity to 707
1	leave it as natural as possible
1	lightest use possible, no disturbance by noisy activities, no motorized vehicles/equipment

Count	Response
1	more online information is needed about all RDN parks
1	protect existing ecosystem
1	provide trails that connect to both sides of the marsh and to 707 community park
1	the removal of invasive species
1	wildfire control
1	At this juncture there is an opportunity to make Christine McKim a caretaker, one who knows the property better than anyone.
1	what is going to happen to the old house and barn? If Christine is evicted the house and barne should be considered for their cultural significance.

2.

Count	Response
14	
1	An actual signed and developed trail is needed along the south side of the marsh.
1	Conservation andpeace, minimal management to maintainmarsh habitat
1	Keep dogs on leash. No boats, no vehiclaes of any kind
1	Link a bike trail to south rd.
1	Protect Christine's privacy.
1	Some clean up of garbage on the north side might be in order.
1	cleaning up manmade waste (old burn sites) other garbage
1	do NOT overdevelop
1	protect wetlands with boardwalk and with informational signs so people understand about it
1	provide for a boardwalk to facilitate views of the marsh without damaging the environment
1	signs (sensitive to the environment)
1	It would really help if the community was more involved rather than having the government be the primary manager, involve us who use it.
1	short interpretive boardwalk to a hide wherein people can sit quietly to appreciate the beauty & wonder of the marsh

3.

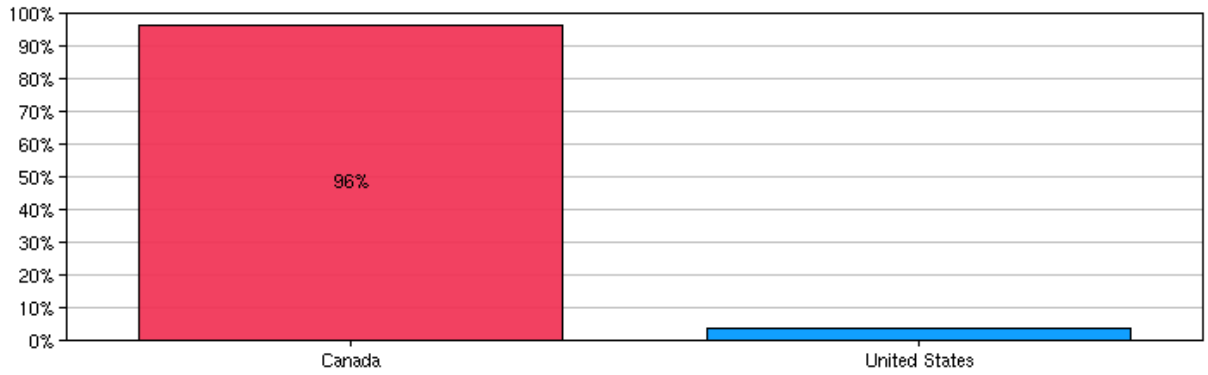
Count	Response
17	
1	"No disturbance of wildlife" should be an over-riding priority
1	It should be a very high priority to make a legal trails connection to 707 Community Park.

Count	Response
1	Maintain dogs on leash policy for parks.
1	No horses, bikes, etc, limited advertising to avoid ignorant use
1	benchs should be rustic
1	encourage responsible use
1	keep trails uncomfortable to keep out noisy hikers
1	monitoring of water quality
1	trail signs that inform about the land/plants/history/culture are wonderful
1	There is also an opportunity here to use the park which has been logged to set up a demonstration site for restoration.

Do you have any other comments or ideas you would like to share?

Count	Response
10	
1	
1	Glad to see this park plan.
1	I am going to Gabriola Island soon to check this park out.
1	I love to sit beside the marsh and listen to all the birds and insects. It is a special place.
1	Perhaps rustic blinds would facilitate bird watching at the marsh.
1	Please do not promote for tourism.
1	If the Lock Bay density transfer goes through, management should be aligned with the 707 management plan. Specifically another marsh area in the 707 would provide further water security in the event of a series of dry years. A circuit trail from the 707 thrugh an area to view the Coat's Marsh should be incuded. Bird watchers would love a viewing stand.
1	Where is the Coats Rd access? Put a small stone marker on pavement. Acknowledge Mt. Coats who partially donated the land and a bit of the history of this area and early Gabriola.
1	The house and barn have cultural significance for the island as the old Stump Farm hippie hangout.
1	I think an interpretive kiosk or shelter near aiden road to reflect the sensitive ecosystem and habitat would be extremely beneficial.
1	Natural habitats in Gabriola are decreasing. Wetlands are disappearing. Noise is increasing. Interpretive signs needed to explain plants, animals and avoiding disturbance. Also importance of health of environment and people. Get the plant list for the area. I hope there is not heavy use - our feet can severely affect the ground causing compaction and vegetation destruction. Don't improve the trails is one way to keep heavy use down.Big change since the last time I was there (before development at top of Coats Road. Heard a bird - a rail? (not Virginia Rail or the bittern).
1	I would like to see Christine McKim stay on at the cottage on the property in a caregiver role. She is qualified to assist you with with activities such as species counts, pond level monitoring, eradication of invasive plant species, etc. She has lived lightly and with respect on this property

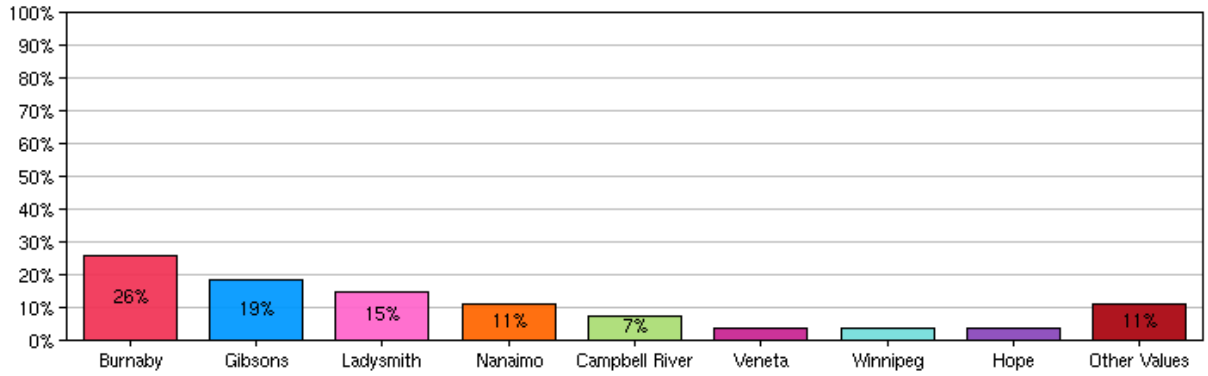
Count	Response
	for around 20 years. It is her home and you will never find anyone who cares as much about the ecology of that Park as she does.
1	Instead of "negotiating" with Mr Rooks about doing a density exchange for the property on the north side of the marsh, how about negotiating for his property on the east side, allowing access to the 707 Park? It has a good water access & a good view of the marsh. Though, we should protect all sides of the marsh ultimately.
1	Once again, the property should be "managed" by someone who is really involved like Christine McKim. Having lived there for 20 years she lives and breathes with the property, unlike having a government employee manage it. Lets face it, the government employee has no interest other than "a job" while Christine sees it as a calling. You only have to look at the way she lives on the property. We should all be so low impact and attuned to nature. Also, Christine is an integral part of our community, known and loved by many for her music and her integrity. Open your mind to a new and creative way of involvement with our resources. This is a chance to create a special project which melds government and small community. Thank You, Darryl Receveur (250) 247-9366
1	I hope my answer to question 5 does not skew the survey result. I am a frequent visitor to the park because I live adjacent to it. The trail as indicated on the map goes through the existing wetlands, and therefore, is not passable by unequipped hikers. Chest waders would be advisable. For this trail to exist as indicated, the extent of the wetland would have to be modified. Otherwise, hikers who try to circumnavigate the wetland would be trespassing on private property to the south and west. As property owners, we have a keen interest in preserving the natural ecology of the area and feel that overuse by recreational users would compromise the area. A limited trail system would allow visitors to enjoy the park, while preserving the habitat of native species. Visitors to the park should be made aware that the park is bordered in part by private property, and that it is not alright to trespass if the trail becomes difficult. Perhaps park boundaries could be identified where private property is adjacent to the park.
1	I think that Christine McKim should be allowed to remain living in the park as a caretaker and protector.
1	Conservation of natural resources and recreational use of land are not mutually exclusive. People who use and enjoy land will help to preserve and take care of it. Conservation of the wetlands and other delicate areas can be easily managed by providing trails that are near enough to see and appreciate it and information posted on the trails will make people feel part of maintaining it's beauty. Restricting or forbidding access doesn't work on Gabriola-the people who currently use it feel entitled to continue to do so. Involve the community, don't dictate to them. Use of designated trails helps keep them from being overgrown, and keeps them defined so people don't make new ones all over the place. Bicycists and horseback riders help to maintain safe trails all over the island, and as long as they are given access to some trails will respect walking-only trails through the more sensitive terrain. Let's try to work together as a community to insure that the wonderful network of trails that exist on Gabriola continue to be available for use by ALL members of the community.



Source Countries

Value	Count	Percent %
Canada	26	96.3%
United States	1	3.7%

Statistics	
Total Responses	27



Source Cities

Value	Count	Percent %
Burnaby	7	25.9%
Campbell River	2	7.4%
Coquitlam	1	3.7%
Duncan	1	3.7%
Edmonton	1	3.7%
Gibsons	5	18.5%
Hope	1	3.7%
Ladysmith	4	14.8%
Nanaimo	3	11.1%
Veneta	1	3.7%
Winnipeg	1	3.7%

Statistics	
Total Responses	27