

The Bluffs Park Management Plan

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Ecosystem Report

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First Nations Acknowledgment

The southern Gulf Islands lie within the traditional territories of the Hul'qumi'num Treaty Group (HTG), Tsawwassen First Nation, and the SenĆóten (or Saanich) First Nations. Therefore Bluffs Park lies within the territory of these nations.

1. INTRODUCTION

1.1. Purpose of Management Plan

It was in 1948 when the Bluffs first became a park for the recreational use of the public. The intention at the time was to preserve the ecosystem and maintain its natural state and beauty. Much has changed since that time as the number of residents on the island has grown, as has the number of visitors. The definition of recreational use has broadened and the natural ecosystem has become much more precious as others have disappeared. In addition, the Capital Regional District has begun the process of developing a park management plan for Matthews Point park. Because this will have implications for The Bluffs as the neighbouring park and because the last time The Bluffs plan was reviewed was in 1988, the time has come to update the park management plan.

1.2. Property Location

The Bluffs Park Nature Conservancy Area consists of approximately 342 acres / 138.65 hectares of forest, steep cliffs, and rocky outcrops. Bluffs Park gives outstanding near views of Active Pass and Mayne Island and distant views of numerous and varied islands, including Vancouver Island. The views also include its sister park Mount Galiano, Stockade Ridge, glimpses of Georgia Straight, and the Olympic peninsula. Encompassing various landscapes from thick forests to open Garry Oak meadows, the Bluffs Park Nature Conservancy Area is a prime example of the natural beauty and rich diversity of flora and fauna for which Galiano Island is known.

1.2.1. Legal Description

The Galiano Club is the owner in fee-simple of two parcels of land described below namely:
Gulf Islands Assessment District

First: Parcel A (DD 190950-I), Section 2, Galiano Island, Cowichan District (23.03 acres, 9.32 hectares).

Second: The West 1/2 of Section 4, Galiano Island, Cowichan District, EXCEPT part in Plan 2418 (319.58 acres, 129.33 hectares)

1.2.2. Liens, Charges and Interests

Deed of Trust

The Deed of Trust is a legal document registered against the property and defines how the property can be used and managed. The relevant sections are quoted below. See Appendix 5.1 for the full document.

“ 1. To hold the lands solely and irrevocably as a nature conservancy area as defined under the Park Act ch 309, 1979, for such recreational uses and enjoyment of the general public which do not disturb or interfere directly or indirectly with the soil, vegetation or animals and their habitat, except as may be approved by the Directors of the Trustee in accordance with a continuing inventory and management plan endorsed and ratified from time to time at the annual general meeting and any extraordinary general meeting called for this specific purpose.”.

“2. To set aside the sum of eight thousand (\$8,000.00) dollars and hold the same in Trust pursuant to the provisions of the Trustee Act R.S.B.C. 1979 for the express and limited purpose of allocating and paying the interest earned therefrom for such administrative costs, rates, charges, taxes, or assessments which may be levied now or hereafter from time to time against the lands. And to make available a financial report of the operation of this fund to the membership at the annual general meeting of the Trustee.”

“3. To expend such further and other funds deemed necessary or advisable for the preservation and protection of the natural habitat of the lands from fire and other perils.”

BC Hydro

Registered 1991

Statutory Right of Way

1.2.3. Land Use Ownership and History

In the late 1930's Max Enke offered the 14 acres of Section 2 and the south 80 acres of the west half of Section 4 to the people of Galiano for the sum of one-thousand dollars. A group called “The Galiano Development Association” was formed to spear head the purchase of the lands. The organizer and leader of the initiative was Paul Scoones (Wykehamist and Eton Master).

The people of Galiano Island who came together for this purpose were to be forever registered and remembered as:

“The Original Donors”

E.J. Bambrick	G.A. Bell	L.T. Bellhouse
F.J. Burrill	T. Drew	Mrs M. Enke
F.C. Finnis	Mrs M. Finnis	A.A. Garner
O.J. Garner	G.W. Georgeson	G.F. Goodwin
A. Gordon	H.W. Harris	T. Head
Mrs A. Jack	C.E.S. Jackson	F. Johnstone
D. Macjedue	D.A. New	O.H. New
S. Page	R.A. Payne	Mrs N. Price
J. Robinson	F. Robson	B.P. Russell
A.E. Scoones	P. Scoones	I. Sinclair
R.C. Stevens	A.E. Steward	G. Steward
Mrs C.O. Twiss	C.O. Twiss	L.M. Lloyd-Walters

The required funds were eventually raised, at considerable effort. However, since most of Section 4 was not included in the offer an expensive survey had to be done. Finalizing the purchase became difficult as Max Enke was interned by the German military in various prisoner of war camps from 1940 – 1946. Upon his return to Canada Max Enke and family very generously gave the adjoining tract of land to the people of the island to be held in trust and perpetuity as a park (237 acres).

When faced with the question of how to assure that their wishes and also the wishes of Max Enke that Bluffs Park be maintained as a Public Park, for the use of the general public, it was logical for The Original Donors to assume that the Galiano Club would be the best medium to assure the success of their wishes. The Galiano Club was selected to hold title, as it was the most suitable entity capable of legally owning property and having the long term interests of the Community in mind. The Galiano Club through the generosity of The Original Donors and the Max Enke family acquired title to the Bluffs Park lands from Mr. Max Enke on November 10, 1948 in consideration of the sum of \$1,000.00.

In order to establish the history of the Park's inception and register the intent and purpose for the purchase and gift of Title, the “Bluffs Park Deed of Trust” was eventually drawn up two and one-half years after the purchase of the Bluffs Park lands.

The first clause of the 1951 Bluffs Park Deed of Trust reads:

“To hold the same as a public park, for such recreational uses of members of the general public as may from time to time be approved by the Directors Meeting of the said Galiano Club”.

Before the Original Deed of Trust could be completed another problem had to be solved – that of logging rights bought by Fred Robson from Mr. Plimly of Plimly Motors, Victoria. It was resolved when Fred Robson became the 36th member of the Original Donors group and agreed to give up cutting rights on Section 2 and to log only mature trees on Section 4.

On October 19, 1951 the directors of the Galiano Club perfected the transfer of this title to itself “In Trust” and filed a declaration.

In 1985 a three year legal review process was undertaken by the Galiano Club to examine the Original (1951) Deed of Trust. The procedure of updating the Deed of Trust was considered the most effective method to overcome financial and civil liability problems and yet, at the same time, preserve the land for recreational use by the general public.

On May 30th 1988 the directors of the Galiano Club under the President of the Galiano Club William Scoones perfected the intent of the Original Deed of Trust and filed a declaration (EB 50785) June 28th, 1988 in the Land Title Office. This is now the Deed of Trust mentioned earlier that currently defines how the property can be used and managed.

In January 1974 Galiano Island's Official Community Plan Bylaw # 128 was passed into law. The preamble of the OCP has not changed over the numerous reviews the plan has seen since that time. Sections 1 and 5 have not varied, they read:

1) The people of Galiano Island being mindful of the pressures from a growing West Coast population, and a demonstrated desire of many to find relief from the urban congestion and associated tension through a rural atmosphere, and being aware of the physical limitations of Galiano Island to accept uncontrolled population increase without degradation of the rural way of life and damage to the ecological system, deem it desirable to create a Community Plan to deal with these issues.

5) As the present generation inherited these islands in a relatively preserved state so this plan attempts to perpetuate this state and preserve the unique environment for all future generations.

1.2.4. Land Use Designation and Zoning

The Bluffs Park Official Community Plan Designation (OCP Bylaw # 108) is “Nature Protection”.

The Bluffs Park is zoned “Nature Protection” under Galiano Land Use Bylaw # 127.

See Appendix 5.3 for definitions.

1.2.5. Rationale for Acquisition

The Bluffs Park Nature Conservancy Area has been a favorite and beloved place to hike, enjoy the panoramic views, study the local biological diversity, meditate, and generally appreciate the natural wonders of Galiano Island. This lovely and cherished area was placed in “Trust” under The Galiano Club for its preservation and enjoyment by all future generations.

1.3. Public Engagement in Plan Preparation

Active Page article – February 2018

Galiano Club AGM – May 2018 – presentation of preliminary Park Management Plan

Saturday Market booth – May 26, 2018

Public Consultation Meeting – upcoming on October 28, 2018

1.4. Matthews Point Regional Park Management Plan

Matthews Point Regional Park is adjacent to Bluffs Park on the south east side. The Matthews Point Regional Park Management Plan (approved by the CRD board on September 19, 2018) recognizes that Matthews Point Regional Park is one of a larger island landscape of protected areas along the north shore of Active Pass. The vision, goals, objectives and management direction are highly complementary with those envisioned for Bluffs Park. The plan also states the intent to formalize a link between the main trail system proposed for Matthews Point Regional Park and the trail system in Bluffs Park.

See Appendix 5.2 for highlights of this plan.

2. VALUES AND ROLES OF PARK

The following sections of this plan summarize the significance of the ecological communities found in Bluffs Park, providing a systematic overview of the park's terrestrial ecosystems. These are largely intact ecosystems, whose healthy functioning is driven by energy captured from the sun flowing through microbes, fungi, plants, and animals, and by the constant recycling of nutrients by these organisms as they interact in complex ways throughout their life cycles.

2.1 Ecological Significance and Conservation Values

Approximately 139 hectares of wilderness are protected within Bluffs Park, ranking it among the largest protected areas on Galiano Island. Encompassing 12% of the island's total protected area, the park is rivalled only by Bodega Ridge Provincial Park (221 ha), Dionisio Point Provincial Park (150 ha), and the Mid-Galiano Protected Area Network (146 ha).

The landscape within Bluffs Park ranges across a spectrum of ecological diversity characteristic of the Coastal Douglas-fir (CDF) Biogeoclimatic Zone. This Mediterranean bioregion is unique within Canada and home to the highest number of ecosystems and species at risk in the province, many of which are ranked as critically imperilled at a national and global scale. Approximately 9% of the CDF is currently protected, with 49% of the land base impacted by forestry, agriculture and urbanization.¹ Today less than 1% of the CDF remains intact as old growth forest, with forests over 100 years old covering only 4% of their former extent.

From the forest canopy to the sea, Bluffs Park is host to no less than eight ecological communities and over 500 documented species, including 12 species of conservation concern. More than a quarter of Galiano's remaining old-growth coastal Douglas-fir forest is protected within the park, as well as a considerable extent of the island's diverse Garry Oak woodland and rock outcrop communities.

Despite the strong conservation ethic demonstrated by Galiano's extensive protected area network, the pressures of development pose a continual threat to the island's ecosystems. As of 2004, over 15% of Galiano's forests had been cleared to make way for agriculture, private residences, roads and utility right-of-ways.² As the integrity and extent of these ecosystems continues to be diminished by human activity, the need for protection and stewardship of our remaining natural areas becomes all the more critical. The high conservation priority placed on the CDF puts the natural heritage of Bluffs Park into perspective as both a local legacy and gift of global ecological significance.

¹ Ennis, T., D. McConkey, K. Emmings, D. Haley, P. Arcese, T. Golumbia, A. Taylor, K. Richardson, and E. Piikkila. 2015. Coastal Douglas-fir and Associated Ecosystems Conservation Partnership: conservation strategy 2015. Coastal Douglas-fir and Associated Ecosystems Partnership, Victoria. 155 pp.

² Emmings, K. and K. Erickson. 2004. *Galiano Land Classification and UP-CLOSE Workshops Series Final Report*. Galiano Conservancy Association, Galiano Island. 89 pp.

This report provides a summary of the proportional representation of the island's ecosystems that remain protected within Bluffs Park. Several maps of the park are featured, based on current orthophotographs,³ terrestrial ecosystem (TEM) and sensitive ecosystem mapping (SEM) data,⁴ validated through inventory work conducted in 2018. These maps outline the ecological communities represented in the park, as well as anthropogenic impacts and other areas of conservation concern. An inventory of the Park's species diversity is also provided, with special attention given to sensitive ecosystems and species at risk. General conservation guidelines are considered for the CDF, in addition to several site-specific recommendations for Bluffs Park's rare species and sensitive areas.

2.2. Ecological Designation

2.2.1. Climate

Galiano Island lies in the Georgia Depression, cast in the rain shadow of the mountains of Vancouver Island and the Olympic Peninsula. The regional climate may be described as Mediterranean, characterized by warm dry summers and mild wet winters. The average annual rainfall recorded at the North Galiano Atmospheric Environment Service Station is 954 mm (from 1975 to 2018), with an average of 24 mm falling in July and 153 mm in November. July and August are the warmest months, with mean temperatures of approximately 22 degrees Celsius for the same time period. The coldest mean temperatures of ~6 degrees Celsius occur in the months of December and January.⁵

The combined effects of low precipitation and warm temperatures often results in an annual moisture deficit on the island, reaching extreme drought conditions in summer months—especially in southern to southwestern aspects.⁶ These conditions cause severe vegetation stress and forest fire hazard, which are expected to worsen under future climate change scenarios.

Climate modelling currently projects an average annual warming of 3° in the Capital Regional District by the 2050s. As the climate warms, increasingly dry summers and wet winters are expected. Among the risks posed by these climatic extremes are prolonged seasonal drought, forest fire and flash floods, all of which may have serious ecological and economic consequences.

2.2.2. Geology, Hydrology and Soils

The bedrock beneath Galiano Island is composed of fractured sedimentary rocks of the Late Cretaceous Nanaimo Group complex: an alternating sequence of northeast dipping, interbedded

³ Aerial imagery provided by Islands Trust Fund (2018).

⁴ Terrestrial Ecosystem Mapping dataset based on inventory work conducted by Madrone Environmental Services Ltd. in 2008, according to the Biogeoclimatic Classification System methodology; Sensitive Ecosystem Mapping data based on mapping work subsequently carried out in 2009 by Keith Erickson, Galiano Conservancy Association, and Robert Kojima and Mark van Bakel of Islands Trust Fund, using the TEM dataset.

⁵ Data retrieved from Environment Canada, September 2018.

⁶ Harrison, D. 1994. Galiano Groundwater Study, 1994 – A Review of Well Development and Groundwater Conditions on Galiano Island.

layers of sandstone/siltstone-dominant and mudstone/shale-dominant sediments. Four formations of this complex have been mapped locally, including the Gabriola Formation (sandstone), the Spray Formation (mudstone/shale), the Northumberland Formation (mudstone/shale) and the Geoffrey Formation (conglomerate). The conglomerate sediments of the Geoffrey Formation form the foundation and namesake of Bluffs Park, featuring prominently in the rock outcrops which lie below the Park lookout area.

Conglomerate rock is a type of coarse-grained sedimentary rock containing gravel-sized pebbles and cobbles cemented within a finer-grained sandstone matrix. The sediments that formed these rocks were laid down under the sea approximately 70 million years ago and subsequently uplifted, tilted, and folded by tectonic forces. The conglomerate layers are more resistant to weathering and erosion than the sandstone layers and thus form the “head” of the bluffs, which rises above Active Pass toward the southern extent of the Park.

As with other terrestrial ecosystems, the soils derived from underlying bedrock form the basis for the ecological communities established in the Park, in addition to materials brought in by wind, water, and the glaciers that left this area only about 12,000 years ago. In Volume 3 of the Soils of the Gulf Islands of British Columbia (Report No. 43, British Columbia Soil Survey, 1989), these soils are mapped as “eroded” and “rough mountainous land”, comprising steeply sloping bedrock and shallow soils with variable drainage.

Bluff Park’s topography shapes the flow of water and accumulation of organic and mineral sediments over the landscape, resulting in considerable variation in the structure and composition of its forested ecosystems. The bedrock of Bluffs Park is exposed as outcrops at the southern extent of the Park but elsewhere much of it is overlain by a thin layer of soil. Deeper soil pockets are found in the areas between ridges, resulting from glacial deposits and subsequent erosion.

Northward of the steep 120-metre rise from Active Pass to the Bluffs Park lookout, the land surface of the Park continues to rise and fall, varying from 160 to 60 meters in elevation. Throughout the Park the moisture regime varies accordingly, from relatively dry habitats composed mainly of Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*) and Oregon beaked moss (*Kindbergia oregana*), to richer, moist riparian forests composed of western redcedar, western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), foamflower (*Tiarella trifoliata*), and, in the wettest sites, skunk cabbage (*Lysichiton americanus*). The former, drier areas occur on steep to gently sloping sites, having soils which are imperfectly to moderately-well drained, and grade into the latter, richer habitats which are found at toe positions at the base of slopes and along creeks where soils tend to be deeper and richer with greater amounts of loamy silt, and silty clay loam.

See Appendix 5.3 for complete ecosystem report.

2.2.5. Sensitive Ecosystems

A total of 22.2 hectares of Bluffs Park are mapped as sensitive ecosystems, representing approximately 16% of the total park area (see Map 3). These sensitive ecosystems include oldgrowth coastal Douglas-fir forests, woodlands and associated rock outcrop communities, a

small amount of wetland which lies along the northeastern, western and southwestern boundaries of the park and the park's rocky shoreline.

Oldgrowth Conifer Forests



Bluffs Park protects 2.4 ha or approximately 36% of Galiano Island's remaining oldgrowth coastal Douglas-fir forests. Oldgrowth conifer forests include areas of the park that have not been previously logged. Trees in the dominant canopy have large diameters, are tall and have thick bark, sometimes scarred by past wildfires. Densities are relatively low but timber stock is high because of the large volume of timber a single tree can contain.

Areas mapped as oldgrowth include a stand retained at the Park's height of land (Plot 10, shown above left) and moist mixed and coniferous forests established on slopes to the southwestern extent of the park (Plot 13). Much of the woodland described below also classifies as oldgrowth, including Plots 15 & 16, as well as an impressive stand of Douglas-fir to the southwest of Plot 16 (shown right). This community has been classified as woodland, however, owing to its shallow soils and the resulting open character of the stand.

A small portion of the park's remaining oldgrowth coniferous forests occurs at the height of land within the park (Plot 10), an upland area qualifying as mesic, or zonal CDF conifer forest. The greater extent of oldgrowth, however, has been retained in a water-receiving depression toward the southwestern border of the park (Plot 13), representing a moister forest type dominated by western redcedar. These patches are estimated to be 150–500 years old and were likely retained because they presented little value as timber, or because slopes made harvesting challenging.

Woodlands and Associated Rock Outcrop Communities



Approximately 17.3 ha of woodland and conglomerate rock outcrops make up the popular lookout area of Bluffs Park, with steep rocky slopes descending south to the shoreline below. While this area represents less than 13% of the entire park area, it features an exquisite exhibit of biodiversity. Of all the terrestrial ecosystems represented in Bluffs Park this complex of ecosystems is the most diverse, providing habitat for 87% of the park's reported lichen, bryophyte and vascular plant diversity.

The structure and composition of Bluffs Park's woodlands and associated rock outcrop communities varies significantly according to this area's complex topography.

North of the lookout, woodlands transition to zonal CDF forest along gentle moisture-receiving slopes of a cool northern aspect (Plot 15) that contrasts with dry woodlands on the southern slopes of the park (Plot 16). Soils are shallow yet relatively moist, giving rise to trees of robust stature and a diverse moisture-loving herbaceous plant community, including enchanter's nightshade (*Circaea alpina*), little western bittercress (*Cardamine oligosperma*), meadow nemophila (*Nemophila pedunculata*), and native grasses such as Alaska onion grass. Released from the shade and competition of surrounding forests Douglas-firs develop a unique growth form, retaining and extending their lower branches. In this aspect, Douglas-firs, Garry oaks (*Quercus garryana*) and arbutus are all comparably larger than those seen on the steep rocky slopes below, supporting a diverse epiphytic community of mosses and lichens.

On the outcrops and slopes descending below the park lookout, soils become more rocky and shallow and the vegetation more stunted and sparse. Open meadows are dominated by exotic grasses and a diverse herbaceous community of drought-tolerant native lupines (*Lupinus* spp.), clovers (*Trifolium* spp.), and onions (*Allium* spp.). Yet along the bases of outcrops, where water tends to seep, a niche opens up for moisture-loving herbaceous plants such as Menzies' larkspur (*Delphinium menziesii*), grassland saxifrage (*Micranthes integrifolia*), and monkeyflowers (*Erythranthe* spp.). Outcrops also support an extremely diverse nonvascular community, including no less than 42 moss species. Many of these moss species are drought-adapted, enabling them to occupy a selective niche within this dry woodland environment.

The steep southern slopes and outcrops of Bluffs Park descend from 140 m to sea level, leveling out into a series of gradual moisture-receiving slopes and narrow plateaus before dropping precipitously to the sea. A stand of oldgrowth Douglas-firs covers about 4.7 ha of these lower slopes toward the park's southeastern extent. This magnificent stand includes many large diameter Douglas-firs which exhibit structurally complex crowns and low live-branch density. One large fallen tree with an obliterated crown was measured to be 40–50m in height; another live-standing tree's circumference was measured at 5.2 m (1.65 m diameter). The stand exhibits many of the attributes of oldgrowth Douglas-fir forest yet has been mapped as woodland because of its relatively open spacing, which contrasts with the mature conifer forests established throughout the rest of the park.

Wetlands



Wetlands toward the northeast (Plot 3, shown left) and southwest park boundary, and along the western extent of Bluff Road (Plot 6, right), are dominated by red alder and western redcedar trees. The canopy is open and understory plants indicators of moist-to-wet / medium-to-rich conditions. Swordfern is abundant on all sites. Salmonberry and skunk cabbage are mostly present along the road.

Wetlands form a marginal part of the ecological mosaic of Bluffs Park, comprising approximately 1.2 ha or 1% of this protected area. These wetlands occur as cedar swamps, with an assemblage of skunk cabbage, salmonberry (*Rubus spectabilis*) and lady fern (*Athyrium filix-femina*), as well as seasonally inundated floodplains dominated by slough sedge (*Carex obnupta*). Both plots sampled during this vegetation inventory are characteristic of cedar swamplands. Floodplains represent a much more marginal community similar in composition to cedar swamplands but with less of a shrub and tree component.

Littoral



Bluffs Park features nearly one kilometer of rocky shoreline along the northwestern shores of Active Pass. This ocean-side or “littoral” community covers about half a hectare and is host to its own distinct assemblage of coastal species, interfacing with the richest ecosystem of the Salish Sea: the marine environment. This area is difficult to access and was not inventoried as part of the Bluffs Park Management Plan.

2.2.6. Species at Risk

Twelve species of conservation concern are reported for Bluffs Park, including 5 species of birds, 2 butterflies, 2 mosses, and 3 vascular plants. Among the most vulnerable species found in the Park are the endangered Lindley’s false silverpuffs (*Uropappus lindleyi*) and the rare moss *Triquetrella californica*: a species critically imperilled on a global scale (G1).

Within Canada, *Uropappus lindleyi* (1-E SARA 2010) is only known from southeastern Vancouver Island and the adjacent Gulf Islands, with a range that extends south to California and east to Texas and Utah.⁷ This species is protected under the Species at Risk Act (SARA). Only 4 subpopulations have been documented on the island, all occurring within Bluffs Park and Mathews Point Regional Park Reserve. An area surrounding these protected areas has been designated as critical habitat for this species under SARA.

⁷ Parks Canada Agency. 2012. Recovery Strategy for the Lindley’s False Silverpuffs (*Uropappus lindleyi*) in Canada [PROPOSED]. *Species at Risk Act Recovery Strategy Series*. Parks Canada Agency, Ottawa. vi + 29 pp.

First located by Olivia Lee in April 2017, the Bluffs Park population of *Triquetrella californica* is currently the only population of this vulnerable moss known throughout all of Canada, with a range otherwise limited to California and Oregon. Because it was only recently documented, it is not yet provincially nor nationally listed as a Species at Risk. In 2018 subsequent efforts were made by Olivia Lee, Steve Joya and Andrew Simon to locate this rare moss elsewhere within the Park, but were unsuccessful. Bluffs Park is also host to one SARA-listed moss species, the twisted oakmoss (*Syntrichia laevipila*), which was documented during surveys conducted by Andrew Simon in 2016. The twisted oakmoss is a Species of Special Concern under SARA, ranked as blue-listed (S3 2015) in British Columbia.

The Propertius duskywing (*Erynnis propertius*) is a red-listed (S2 2013) butterfly species frequently seen throughout Galiano Island's Garry oak woodlands, documented during the 2018 Bluffs Park inventory. Another blue-listed butterfly species, the moss' elfin (*Callophrys mossii mossii*, S2S3 2013), was reported for Bluffs Park by Gerald Straley in 1981 but has not been reported since.

Also reported for Bluffs Park are the threatened olive-sided flycatcher (*Contopus cooperi*, 1-T SARA 2010),⁸ common nighthawk (*Chordeiles minor*, 1-T SARA 2010)⁹ and barn swallow (*Hirundo rustica*, 1-T 2017),¹⁰ which are protected under the Species at Risk Act (SARA) in Canada. The band-tailed pigeon (*Patagioenas fasciata*, 1-SC SARA 2011)¹¹ and the peregrine falcon (*Falco peregrinus*, 1-SC SARA)¹² are reported as Species of Special Concern. However, it is not known whether Bluffs Park is host to either of the subspecies of peregrine falcon (*F. p. anatum* & *F. p. pealei*) protected under SARA and considered vulnerable at the provincial scale. All of these bird species occur commonly on Galiano Island.

Two provincially-ranked vascular plant species were recorded during the 2018 inventory of Bluffs Park, including the blue-listed Ozette coralroot orchid (*Corallorhiza maculata* var. *ozettensis*, S3 2018) and leafless wintergreen (*Pyrola aphylla*, S2S3 2015). The former species

⁸ Environment Canada. 2015. Recovery Strategy for Olive-sided Flycatcher (*Contopus cooperi*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vi + 51 pp.

⁹ Environment Canada. 2015. Recovery Strategy for the Common Nighthawk (*Chordeiles minor*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vi + 48 pp.

¹⁰ COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa. ix + 37 pp.

¹¹ Environment and Climate Change Canada. 2016. Management Plan for the Band-tailed Pigeon (*Patagioenas fasciata*) in Canada [Proposed]. Species at Risk Act Management Plan Series. Environment and Climate Change Canada, Ottawa. iii + 14 pp.

¹² COSEWIC. 2007. COSEWIC assessment and update status report on the Peregrine Falcon *Falco peregrinus* (*pealei* subspecies - *Falco peregrinus* and *pealei anatum/tundrius* - *Falco peregrinus anatum/tundrius*) in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa. vii + 45 pp.

appears to be locally abundant on Galiano Island; the latter is currently only known to Bluffs Park, though its taxonomic status is currently in question.

Note: Species of Special Concern are not afforded the same protection status as species ranked as Endangered or Threatened under SARA.

Species at Risk Reported for Bluffs Park

Species	Common Name	Group	Conservation Rank
<i>Contopus cooperi</i>	olive-sided flycatcher	Bird	Threatened (SARA 1-T 2010)
<i>Chordeiles minor</i>	common nighthawk	Bird	Threatened (SARA 1-T 2010)
<i>Falco peregrinus</i>	peregrine falcon	Bird	Species of Special Concern (SARA 1-SC)
<i>Hirundo rustica</i>	barn swallow	Bird	Threatened (SARA 1-T 2017)
<i>Patagioenas fasciata</i>	band-tailed pigeon	Bird	Species of Special Concern (SARA 1-SC)
<i>Callophrys mossii mossi</i>	Moss' elfin	Butterfly	Blue-listed (S2S3 2013)
<i>Erynnis propertius</i>	Propertius duskywing	Butterfly	Red-listed (2013)
<i>Syntrichia laevipila</i>	Twisted oakmoss	Moss	Species of Special Concern (SARA 1-SC)
<i>Triquetrella californica</i>	California triquetrella	Moss	Globally Critically Imperilled (G1)
<i>Corallorhiza maculata</i> var. <i>ozettensis</i>	Ozette coralroot orchid	Vascular Plant	S3 2018
<i>Pyrola aphylla</i>	Leafless wintergreen	Vascular Plant	S2S3 2015
<i>Uropappus lindleyi</i>	Lindley's false silverpuffs	Vascular Plant	1-E SARA 2010

Table 1. Species at Risk reported for Bluffs Park. Note: it is not known whether Bluffs Park is host to either of the subspecies of peregrine falcon (*F. p. anatum* & *F. p. pealei*) protected under SARA and considered vulnerable at the provincial scale.

2.2.7. Management Recommendations

Species at Risk

Many of the species at risk in Bluffs Park can be managed through a hands-off approach, though Scotch broom (*Cytisus scoparius*) removal and monitoring is recommended. Stewardship emphasis should be placed on the vulnerable subpopulation of Lindley's false silverpuffs that is currently at risk of disappearing from Bluffs Park.

Among the threats to Lindley's false silverpuffs encroachment by invasive plants ranks the highest, followed by habitat loss and degradation, and grazing by goats and deer. According to the recovery strategy for this species, the number one priority is the maintenance of our local subpopulations. This goal can be achieved through active conservation, stewardship, control of invasive species, and monitoring of population numbers in the area.

Inventory work to assess the status of the Bluffs Park subpopulation of Lindley's false silverpuffs was last conducted in June 2003, when Harvey Janszen reported a healthy population of more than 390 healthy and vigorous plants over 512 square metres, on dry slopes toward the

southwestern extent of the park.¹³ Well over 1,400 plants were also reported from Mathews Point around that time.¹⁴ However, in 2018 only 75 plants were seen in Bluffs Park after a thorough assessment of the same sites visited by Harvey Janszen in 2003. This recent assessment of the subpopulation's decline has been reported to the BC Conservation Data Centre.

Judging by the amount of Scotch broom seen in this area, it is quite possible that the Bluffs Park subpopulation of Lindley's false silverpuffs has been reduced by encroachment from this invasive species. Removal of Scotch broom from this area is therefore highly recommended. However, it should be conducted carefully by someone familiar with this precarious cliff-side site, to avoid injury and to minimize any further disturbance to the subpopulation. Ideally broom control on rock outcrops should be conducted in the early season while soil is still moist and disturbance of the shallow soil profile can be minimized. The Bluffs Park subpopulation of Lindley's false silverpuffs should be monitored to ensure its recovery.

The rare moss *Triquetrella californica* should also be monitored. The population that was found in Bluffs Park occurs in a highly transited area to the east of the main outlook. Little is known about the life history of this species, which has never been found to produce reproductive sporophytes. Because of this dearth of knowledge, the risk posed by human and other disturbances is unknown. It is possible that disturbance due to hikers and grazing by ungulates may even benefit the dispersal of this species, for it is locally abundant on a well-trodden plateau within the .

While care should be taken to minimize disturbance of other species, many of those identified in Map 3 are protected by virtue of the steep rocky slopes that comprise their habitat, which offer no easy footing. Park-goers should nevertheless be discouraged from traversing these steep slopes and rock outcrops, which provide habitat for several rare species. Not only are these outcrops dangerous; they are easily eroded. Trailing through these areas brings the risk of further dispersing seed from exotic species. Decommissioning trails leading south from the main look-out area is therefore encouraged.

Dieback

Several areas exhibiting dieback around Bluffs Park were identified from satellite imagery (see Map 3), arising amidst stands of Douglas-fir to the western extent of the property, and among stands of western redcedar to the southeastern extent. Dieback may be due to root rot caused by saprophytic fungi such as *Phellinus weirii* or *Armillaria*, which, as noted previously, are part of the natural disturbance regime of coastal Douglas-fir forests. Alternatively, dieback may be drought-related.

Field surveys revealed dieback to be especially concentrated among young western redcedar trees established on sites with well-draining shallow soils to the southeastern extent of the Park. Across Galiano Island it is expected that climate change may cause a further decline in drier, low-elevation sites similar to those found in Bluffs Park. Western redcedar in the moister areas

¹³ Harvey Janszen, personal communication, 2018.

¹⁴ Marta Donovan, Conservation Data Centre of BC, personal communication, 2018.

of the park do not show signs of stress and are likely to be more resilient to the impacts of climate change.

No evidence was found for the presence of laminated root-rot in the areas of Douglas-fir dieback, though it is likely present in some areas of the Park.

Dieback amidst Douglas-fir and western redcedar dominated areas currently do not require active management. Gaps created by dying trees increase the structural and species diversity of the forest. Standing dead trees are also an important food source for species such as the pileated woodpecker. Areas of dieback are relatively small and natural regeneration will eventually close these gaps in the canopy. These areas should be monitored, however, as sudden dieback of larger extent may require more active management. Silvicultural treatments such as stand thinning might also be considered for some younger, dense stands of coniferous forest, which may present an increasingly serious fire risk under conditions of extreme seasonal drought.

Invasive Species

A total of 60 exotic species are reported for Bluffs Park (see Appendix 5.6). Many of these species pose no serious risk to the Park ecosystems, however several are considered to be particularly invasive and should be controlled—particularly where they threaten endangered species. Only Scotch broom and spurge laurel (*Daphne laureola*) present a serious management concern at present, but others such as broad-leaved helleborine (*Epipactis helleborine*), holly (*Ilex aquifolium*), purple toadflax (*Linaria purpurea*) and upright hedgeparsley (*Torilis japonica*) should be monitored to ensure they do not become more of a concern. Climate change may render certain ecosystems more vulnerable to invasion by alien species in the future. Ongoing adaptive management of these communities is therefore recommended. However, certain exotic species, including the grasses which dominate the woodlands of Bluffs Park, will likely prove impossible to control.

2.3. Cultural Heritage

2.3.1. Japanese Pit Kiln

Japanese pioneers coming to British Columbia in the late 1800s and early 1900s established communities in Steveston on the banks of the Fraser River, in the Gulf Islands and along the BC coasts, where they engaged in logging, fishing and farming. Many who settled in Steveston and on Galiano Island were from Wakayama Prefecture in Japan, where the ancient technology of charcoal making was practiced.

The 1901 Galiano Island Census lists 9 Japanese charcoal makers and 14 Japanese wood cutters. Charcoal was a part of daily life, used by many for domestic cooking and heating, in blacksmithing, the manufacture of explosives and soap, and in BC's booming salmon canning industry.

In 1981-82, Steve Nemtin rediscovered five Japanese charcoal pit kilns on the island and over a period of 20 years researched and restored two. Due to Steve's efforts of documentation the Bluffs kiln is now an official historic Japanese Canadian archaeology site.

2.3.2. Garbage Dump

A garbage dump was created when The Galiano Club took on the management of the newly created Bluffs Park in 1951. It was a time when most islanders either burned or buried their small amounts of household garbage in private burn barrels and "in the forest somewhere". However, the larger pieces of junk such as unrepairable old cars and farm machinery and broken household appliances were dumped at this location. On August 1, 1967 an uncontrolled fire burned for two weeks. This suggests that toxic materials would have been burned at the time. Materials were no longer deposited at the site after the fire. The dump was officially closed in 1971.

Outflow into Georgeson Creek is being monitored by CRD and a recent sampling indicated no results of concern.

A pit exists near the garbage dump and is approximately 6 feet by 8 feet by 10 feet deep. This represents a hazard to the public.

2.3.3. Shelter

A three-sided log structure with a corrugated metal roof was constructed on the viewpoint ridge in 1950 by islander and skilled axe-man, Fritz Revelj, as the newly created Bluffs Park was being established. The building became a very popular stop for visitors to the lookout area with the log walls becoming a favourite place to carve personal initials. During the winter of 2016 a wind storm seriously damaged the roof, exposing some much weakened walls. The decision was made to remove the remaining roof and lower the walls to three remaining logs. This has now become a preferred place to sit.

2.3.4. Archeological Site

A registered archeological site exists on the property. In order to protect the site, the exact location is not public.

Under contract with the Capital Regional District an archaeological firm inadvertently went beyond the Matthews Point boundary and found evidence of a potential sub-surface archeological deposit on the viewpoint trail within Bluff Park. The consultant's recommendation was that any trail improvements within this area should be designed to avoid impacts to the ground. Further, she noted that if any proposed improvements within the archaeological area of potential requires ground disturbance, an Archaeological Impact Assessment (AIA) level study should be completed in advance of construction (an AIA requires a Heritage Inspection Permit from the Provincial Archaeological Branch, MFLNRO).

2.4. First Nations History

For millennia before Spanish and British explorers first saw the Gulf Islands in the 1790s, or the first settlers arrived on Galiano in the 1850s, indigenous people occupied the islands and harvested the resources of the land and sea.

The archaeological research conducted on the Active Pass shoreline at Georgeson Bay on Galiano¹⁵, and Helen Point on Mayne Island¹⁶, shows that indigenous peoples have traveled through Active Pass on their seasonal rounds and lived along the shoreline of the Pass for at least 5000 years.

These peoples fished, collected shellfish, and hunted marine mammals in the Pass, and foraged and hunted in adjacent forest and meadow lands. Deer would have been hunted on the lands that now comprise Bluffs Park, and the high bluffs would have been an important view point to observe movements of marine animals and people through Active Pass.¹⁷

The southern Gulf Islands are within the traditional territories of several Coast Salish First Nations. Three groups of these First Nations have made land claims and/or asserted aboriginal harvesting rights either to the southern portion of Galiano Island, or to the entire island. These include the Hul'qumi'num Treaty Group (HTG), the Tsawwassen First Nation, and the SenĆoten (or Saanich) First Nations. The Hul'qumi'num Treaty Group includes the Penelakut First Nation, which holds a reserve at the north end of Galiano. The SenĆoten include the Tsartlip First Nation, which holds the Helen Point reserve on Mayne Island directly across Active Pass from Bluffs Park.

In the Hul'qumi'num language the name of Active Pass is *Sqthaqa'lh*, which means “bigger passage or entrance”, in contrast to *Sqtheq* (“narrows”) which is the name for Porlier Pass at the north end of Galiano.¹⁸ There is a story in Hul'qumi'num oral tradition about *Xeel's*, the “Transformer”, who stepped across to Vancouver Island from Washington State on a mythic journey and left his giant footprint (*Shxixnetun*) along the Galiano shoreline of Active Pass.¹⁹

2.5. Bluff and Viewpoint Roads

Bluff Road was built in 1926 and is the first and oldest road on the island. It is a one lane dirt road with a number of pullouts should two oncoming vehicles meet. It is the only alternative route to Sturdies Bay should Sturdies Bay road be blocked. Traffic control is required to manage the flow of vehicles on Bluff Road in the event that Sturdies Bay Road is not passable.

The 2018 Ministry of Transportation and Infrastructure (MoTI) classification of Bluff Road is 6C. MoTI has advised that Mainroad South Island is responsible for traffic control using an individual with traffic control certification. MoTI have no jurisdiction beyond the actual road bed however they have indicated they would be willing to install signs related to the road (such as ‘no parking’ and ‘slow’).

¹⁵ Test Excavation at Georgeson Bay, British Columbia, by James C. Haggarty and John H.W. Sendey. 1976. British Columbia Provincial Museum, No. 19 Occasional Papers Series.

¹⁶ Excavations at Helen Point on Mayne Island, by Roy L. Carlson. 1970. BC Studies 6/7.

¹⁷ Cowichan Tribes elder Luschiim (Arvid Charlie), quoted in Matthews Point Regional Park Draft Management Plan, 2018, Capital Regional District.

¹⁸ Hul'qumi'num Peoples in the Gulf Islands: Re-Storying the Coast Salish Landscape, by Ursula Abramczyk, 2017. MA Thesis, University of Victoria.

¹⁹ Shxunutun's Tu Suleluxwtst: In the Footsteps of our Ancestors. 2005. Hul'qumi'num Treaty Group.

Under current provincial law the surface of Bluff road is owned and maintained by the province. Maintenance of the road and any improvements are the responsibility of Mainroad South Island.

The Viewpoint road is owned and maintained by The Galiano Club.

2.6. Fire Prevention

The fire access road within the park consists of Canter Road, Jumping Mouse trail and Owl Tree trail. The access is from Bluff Road on the south side, Whaler Bay Strata property on the north side and Winstanley road on the east side. The roads must have clearances of 12 feet wide and 13 feet high. There is a 5,000 gallon below ground tank at the bottom of the Viewpoint road with a padlock on the lid. The South Galiano Fire Department has the key and maintains the water in the tank. The fire pond is in the middle of the park and is accessible by Canter Road.

Bluffs Park is on the regular annual inspection schedule for the South Galiano Fire Department. An inspection notice will be issued to The Club noting any concerns.

3. MANAGEMENT DIRECTION

3.1. Management Vision

The 1988 revised Deed of Trust identifies the vision for this property as:

“To hold the lands solely and irrevocably as a nature conservancy area as defined under the Park Act Ch. 309, 1979, for such recreational uses and enjoyment of the general public which do not disturb or interfere directly or indirectly with the soil, vegetation or animals and their habitat, except as may be approved by the Directors of the Trustee in accordance with a continuing inventory and management plan endorsed and ratified from time to time at the annual general meeting and at any extraordinary general meeting called for this specific purpose.”

The intent of this vision is to build, update and add any new components as may be suggested by the community providing it is consistent with the above statement.

The Bluffs is also considered to be a spiritual place offering experiences to refresh the soul in nature, as such it is invaluable to the people of Galiano.

3.2. Objectives for the Property

3.2.1. Conservation

- a. To establish a protected area for the conservation of the Coastal Douglas-fir biogeoclimatic zone.
- b. To create connections establishing a network of protected areas with the adjacent Crown lands and Matthews Point Regional Park.
- c. To extend protection to Active Pass where the high tideline, the water and foreshore are zoned for protection.
- d. To maintain and conserve the diversity of ecosystems and ecological processes in their natural successional development.

- e. To identify, protect and enhance (if consistent with park intent) the ecosystem/ecological services²⁰ provided.
- f. To protect the watershed dynamics and the groundwater supply for neighbouring properties.
- g. To be aware and monitor the impact of the garbage dump on the park property.
- h. To determine the fire hazard risk to the park and develop mitigation strategies and actions.
- i. To be aware of and monitor the presence of invasive species.
- j. To improve protection of sensitive habitats.
- k. To gain a better understanding of the impacts of climate change on the park and respond using adaptive management.

3.2.2. Recreation

- a. To define appropriate low impact recreational activities in the park and provide examples.
- b. To maintain, enhance where desirable, and reduce impacts of permitted recreational activities.
- c. To encourage activities that provide health, well being and spiritual benefits.
- d. To work with adjacent land owners and agencies to provide seamless recreational experiences that are consistent with the objectives of this management plan.
- e. Drones are not permitted anywhere in the park without prior approval from The Club.

3.2.3. Education

- a. To encourage public awareness and understanding of the park purpose, objectives, history and permitted activities.
- b. To facilitate park management activities by encouraging and developing information and activities that build awareness and appreciation of the Park's natural environment and history.
- c. To encourage appreciative behaviour in the Park (e.g. avoid trampling sensitive ecosystem areas).
- d. To encourage organized public participation and volunteerism to achieve Park objectives.
- e. To allow schools, educational institutions and learning centres to develop and offer public programs explaining the natural and cultural history of the Park.
- f. To augment visitor safety by providing general information about the hazards in the park according to generally accepted practices.

²⁰ Ecosystem Services: Benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits.

3.3. Management Policies

The general policy statements for Bluff Park are defined as follows:

1. In recognition of the rare and endangered status of the Coastal Douglas Fir Biogeoclimatic zone contained within Bluffs Park, protection of the ecosystem shall be a primary consideration and context for management decision-making.
2. The Galiano Club shall apply the precautionary principle (21) in decision making.
3. Adaptive management (22) techniques and procedures shall be used.
4. No flora shall be removed, wildlife shall be protected, and no hunting is permitted.
5. Within the context of the above, compatible, low-impact outdoor recreation activities such as walking on designated trails, nature appreciation, and educational activities are permitted.
6. To facilitate these activities the existing basic trails shall be maintained and managed to cause minimal impact or disturbance to fragile, endangered or otherwise protected habitats, species and landscapes.
7. Equestrian use shall be limited to designated trails in the north and east side of Bluff Road.
8. Camping, fires, structures of any kind; and any type of motorized vehicles, other than on Bluffs Road and the access to the viewpoint, or by emergency vehicles, are not permitted.
9. Fire roads and other fire mitigation activities shall be developed and implemented in consultation with the Fire Chief.
10. The Galiano Club in consultation with the Fire Chief shall have great discretion in taking actions such as patrolling and even closing the Park in cases of extreme fire hazard or other risks.
11. Research, data gathering and monitoring activities that aid in management decision-making shall be permitted with the approval of the Galiano Club.
12. In keeping with the original wildland intent of the Park, with the exception of the viewpoint parking lot, no structures or barriers shall be placed along the cliff edge to detract from the wildland experience.
13. For the safety of park users dangerous trees located along the trails, Bluff Road and the road to the viewpoint parking lot shall be professionally assessed and rendered safe when required.
14. Appropriately located signage shall warn visitors of the steep cliff edges.

²¹ Precautionary principle – definition - When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. The precautionary principle denotes a duty to prevent harm, when it is within our power to do so, even when all the evidence is not in.

²² Adaptive management – definition - A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices.

15. The Galiano Club acknowledges that Bluff Road is managed by the Ministry of Transportation and Infrastructure and will cooperate with the Ministry to ensure that the Road provides a functional emergency connection between Sturdies Bay and the rest of Galiano Island.
16. The decommissioned garbage dump will be monitored and water quality reports published by government inspection agencies for the watershed will be regularly reviewed to ensure that any changes linked to the dump are understood.
17. Volunteer activities under the direction of or with the permission of the Galiano Club shall be sought and utilized to assist with the management of the Park.
18. As part of its responsibility to the community the Galiano Club shall seek public input and Galiano Club membership approval before implementing any new management activities that are not in the management plan.
19. No park development of any kind will take place in any archaeological sites.
20. An Archaeological Impact Assessment study shall be completed prior to any development in the view point trail area.

3.3.1. Conservation

- a. Scotch broom will be removed annually;
- b. Bluff Park to be closed under the direction of the Galiano Fire Chief to close Galiano Island Forests. The Galiano Club would then post signs at the park entrances and assign volunteers to patrol the park.

Trails and Roads

- a. park-goers should be discouraged from traversing the steep slopes and rock outcrops below the ridge;
- b. trails leading south from the main look-out area be decommissioned;
- c. trails within the parks will be limited in number and location to protect the Coastal Douglas Fir forest;
- d. for the protection of the Coastal Douglas Fir ecosystem, all travel through the park is to remain on Bluff and view point roads and designated trails;
- e. trails will be maintained consistent with Natural Trail Standard Type 1 (Juan de Fuca Community Parks and Recreation, Community Parks Trail Standards) to protect the Coastal Douglas fir ecosystem and for use by the public;
- f. existing trails can be closed and/or relocated to protect the Coastal Douglas Fir ecosystem;
- g. closed trails will be allowed to return to a natural state;
- h. no new trails will be built or existing trails be altered without appropriate public consultation and oversight and reference to the park management plan;
- i. except for emergency vehicles, no motorised vehicles will be permitted on trails or fire access roads;

- j. the park will be patrolled regularly during the summer months and weekends throughout the year as per the 1981 Galiano Club policy;
- k. a process be established for considering new trails within Section 4 and no new trails in Section 2;
- l. standing dead trees are to be left if they are not close to trails in the park to promote wildlife habitat;
- m. the province will be encouraged to keep Bluff road well maintained as a single lane gravel road that has limited impact on the surrounding park land.

Parking

- a. vehicle parking access will have a non paved maintained gravel surface;
- b. as demand for vehicle parking spaces can have a significant impact on surrounding park land:
 - i. parking spaces will be limited in number;
 - ii. parking spaces will be located only in areas of previous development; the viewpoint, the entrance to the old dump road and the horseshoe pullout;
 - iii. no new parking spaces will be built or existing spaces altered without appropriate public consultation and oversight and reference to the park management plan;
 - iv. no parking will be permitted off the edge of the public road that traverses the park.

Emergency Access Lanes

- a. a limited number of undeveloped, vehicle width Emergency Access lanes, deemed sufficient for emergency purposes, shall be kept passable within the park;
- b. emergency access lanes can enter from both public and private lands;
- c. gates will be placed and maintained at the entrance of the emergency access lanes. These gates will be kept locked with keys given to appropriate emergency agencies.

3.3.2. Recreation

- a. no bicycles on trails;
- b. domestic pets must be controlled at all times;
- c. horses will only be permitted to use the area of the park north and east of Bluff Road;
- d. the equestrian policy will be reviewed if there is significant damage caused by horses;
- e. no benches anywhere in the park;
- f. trails will only enter the park from public lands or public roads and not from private lands;
- g. no commercial ventures allowed anywhere in the park;
- h. a major stem trail approach from Sturdies Bay trail to Section 4 of Bluffs Park be identified. This achieves the following:
 - i. guides visitors to enjoy the most pristine walk through Section 4;
 - ii. does not encourage visitors to walk by the old garbage dump;
 - iii. does not encourage visitors to stumble upon the fire pond off Canter Trail;

- iv. keeps visitors away from the residential development that is taking place off Robson Way, near the back border of Bluffs Park.
- v. provides relief for the people of Galiano Island from urban tension as Galiano's tourist industry grows.
- vi. provides a pedestrian route instead of Burrill road.

Signage

- a. directional signs to direct people to the lookout, Mt Galiano and the Japanese kiln. This would provide direction for people coming from the Sturdies Bay trail but not encourage those to come in from the lookout area to the north west section of the park;
- b. no map signs except at the kiosk. The map should not show Canter Road or Owl Tree trail;
- c. “caution steep cliff” signs to be posted on the trail coming from Matthews Point, Lookout area and the pullout;
- d. “nature protection area” signs to be posted at each entrance to the park;
- e. “single lane unpaved road” signs to be posted at each end of Bluff road;
- f. where possible signs will be constructed from untreated cedar;
- g. speed limits appropriate to the type and condition of the road be posted.

3.3.3. Education

The Galiano Club will inform the public of the purpose of the Park, management policies, permitted activities, safety messages and any other information the Club deems appropriate and required utilizing communication media and techniques.

3.4. Management Responsibilities

3.4.1. Management Planning

The Management Plan for Mount Galiano (March 1992) states:

“(proposed changes to the Galiano Club constitution – Appendices J1 & J2) “The Directors shall appoint two (2) directors to form a permanent committee to manage Bluffs Park and Mount Galiano according to Section 2, Paragraph c of the Constitution.”

A committee of at least 2 board members be responsible for implementing, monitoring and updating the management plan.

3.4.2. Public Relations

A public relations strategy be tasked with the following:

- a. promote purpose and focus of park
- b. promote management plan
- c. identify a PR director to assist management committee in communication

3.4.3. Liability

Potential liability issues are identified as follows:

- a. high, steep cliffs
- b. tree falls
- c. constructed infrastructure (trails, signs, fire access roads)
- d. old garbage dump

According to The Galiano Club's insurance underwriters, the Club has a responsibility to warn the public of any dangers in the park as part of their due diligence.

3.4.4. Mitigation of Fire Hazard

- a. develop a fire management plan for the park;
- b. fuel load reduction in the face of trees (currently cedars) dying due to climate change and the warming, drying and new forest pests that result;
- c. conduct an annual fire prevention inspection by a qualified professional;
- d. the fire management plan requires consultation with an ecosystem expert on fuel load reduction.

3.4.5. Access, Infrastructure and Facilities

- a. access via designated trails and Bluff Road only;
- b. infrastructure – trails, fire roads, and Bluffs Road only;
- c. facilities – parking areas(s), information kiosk, water tank and pond, signs.

3.4.6. Financial Responsibilities

- a. insurance;
- b. maintenance of existing infrastructure and facilities;
- c. signage and other information materials;
- d. forest management (fuel load and fire management).

3.4.7. Cooperation with Other Agencies and Groups

- a. Capital Regional District
 - i. South Galiano Volunteer Fire Department
 - ii. Regional Parks - Matthews Point Regional Park, South Gulf Island Regional Trails Plan
 - iii. Galiano Island Parks and Recreation Commission – Sturdies Bay Trail, Winstanley Trail Access
- b. Province of BC
 - i. Crown Lands
 - ii. Ministry of Transportation and Infrastructure
- c. Galiano Trail Society
- d. First Nations

3.4.8. Documentation

Documentation be completed in the following areas:

- a. issues

- b. incidents
- c. decisions
- d. actions
- e. outcomes

3.5. Community Responsibilities

3.5.1. Input to Plan by Galiano Community

3.5.2. Approval of Plan by The Galiano Club Membership

3.5.3. Volunteer Efforts to Put Plan Into Action

1. assemble core group of volunteer patrollers to clear and maintain trails
2. identify Club contact in charge

4. PLAN IMPLEMENTATION

4.1. Priority Strategies and Actions

1. The Club's policy be amended to state that a committee of at least 2 board members be responsible for implementing, monitoring and updating the management;
2. a public education strategy be defined to inform the public of the vision and objectives of the park;
3. the information kiosk content be updated to reflect the management plan;
4. all fire access roads be cleared at a width of 12 feet and height of 13 feet;
5. the vehicles and metal debris be removed from the garbage dump;
6. the pit near the garbage dump be filled in;
7. "caution steep cliff" signs to be posted on the trail coming from Matthews Point, Lookout area and the pullout.
8. "nature protection area" signs to be posted at each entrance to the park.
9. signage to direct hikers from Sturdies Bay trail along Jumping Mouse trail to the lookout;
10. signage include 'recreational trail, please stay on marked trail';
11. the gates at each side of Bluff Road be moved to the bottom of the lookout road and the entrance to Canter trail;
12. the shelter information sign be erected to explain the history of that structure;
13. a request be made to MoTI to post "slow, single lane road" signs at each end of Bluff road;
14. no parking sign be erected in front of Canter Road gate to allow fire truck access;
15. the road contractor be asked to have a traffic control plan in place in the event that Sturdies Bay road is blocked;
16. the existing trail from Winstanley road down the slope to Jumping Mouse trail be decommissioned and the alternative trail be maintained;

17. the fire road from Winstanley will remain in place for fire access but not shown on public maps;
18. the Moss trail be decommissioned;
19. an annual broom cutting program be implemented that is consistent with current practices;
20. a Certified Danger Tree Assessor be contracted with to do an annual inspection or in the event of trees of concern;
21. a summer and weekend, volunteer patrol program be implemented to control overnight parking and camping;
22. the volunteer guardian program be resurrected to assist in supervising and maintaining the park. See Appendix 5.6 for Guardianship Role description;
23. the well at the top of Highland road be decommissioned.

5. APPENDICES

5.1. Deed of Trust

5.2. Mathews Point Regional Park Management Plan highlights

5.3. Ecosystem Report

5.4. Land Use Bylaws

5.5. Guardianship Program

5.6. Biological Inventory

Appendix 5.2: Matthews Point Regional Park Management Plan

The vision and priority management actions for Matthews Point are as follows:

Vision:

“Matthews Point Regional Park is recognized as a small gem within the larger landscape. The park maintains the natural character of a portion of the north shore of Active Pass, providing a natural view-scape for those travelling on the water. Further, it provides Galiano residents and island visitors opportunities to connect with nature and helps protect the Coastal Douglas-fir ecosystem. Together with adjacent natural areas, the regional park is part of a wider natural area network that facilitates a healthy community.”

Management Actions:

- “Remove the former land owner’s shed and related infrastructure.
- Formalize the Ridge Trail route, linking the two park access points, as the main trail opportunity in the park.
- Formalize a trail link to the adjacent Bluffs Park and close the dead-end informal path beyond that point.
- Create a small parking area (3 – 4 cars) at the north park entrance.
- Work with appropriate groups, such as local or regional conservation non-government organizations or universities, to develop and implement a restoration plan for the park.
- Link the Ridge Trail to the proposed Regional Trail along Bluff Road East (identified in the Gulf Islands Regional Trails Plan) to create a loop trail opportunity.”

Appendix 5.3: Ecosystem Report – Andrew Simon

Bluffs Park Ecological Communities

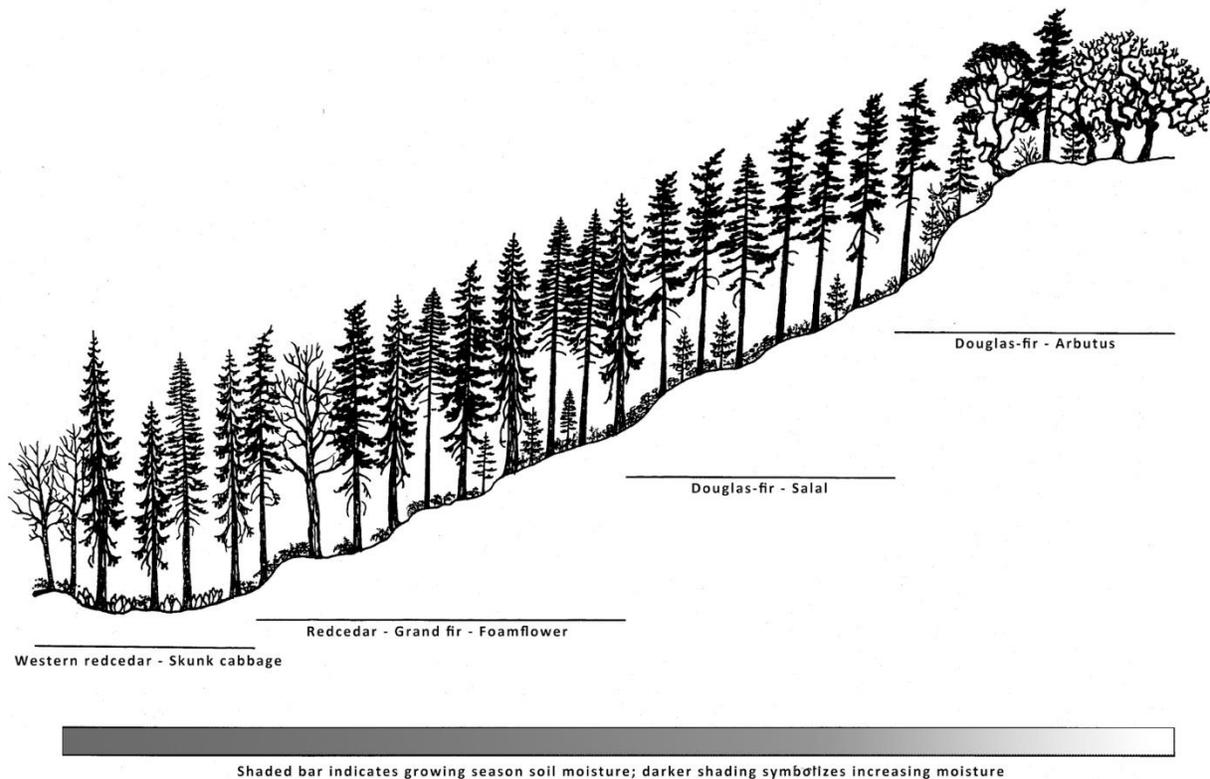


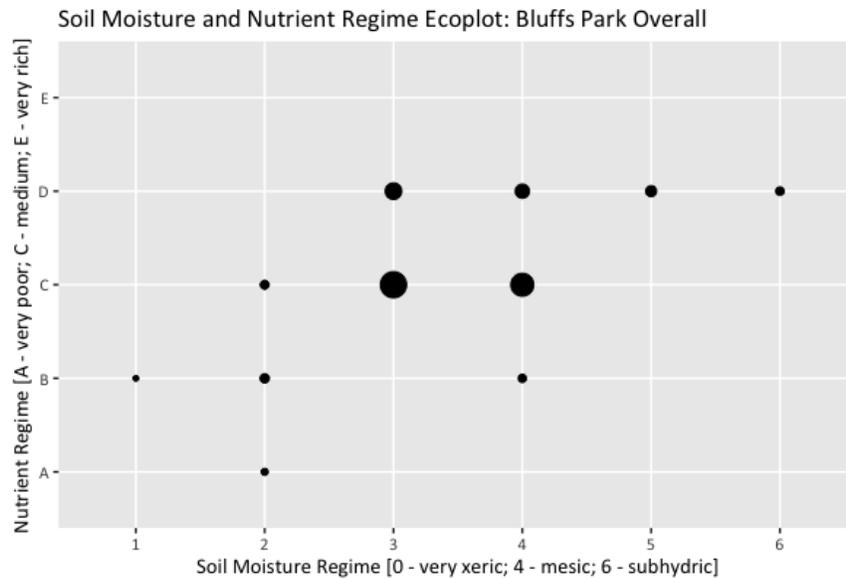
Fig.1. Soil moisture profile of CDF forests, adapted from Meidinger & Pojar (1991). Profile shows four dominant site associations of representative vegetation found across the topographic profile of Bluffs Park.

The following section provides a summary of Bluffs Park’s ecological communities, which are collectively represented in Map 2. These communities were mapped during inventory work conducted from April through August 2018 by Andrew Simon and Quirin Hohendorf. A preliminary map of the Park ecosystems was first compiled using available Terrestrial Ecosystem Mapping (TEM) data and 16 vegetation plots subsequently established on May 23, 2018, to assess the structure and composition of each ecological community. Community composition was measured in percent cover of vascular plant species identified within each plot, from the canopy to the understory layer. Forest age and structural stage was estimated and stand density measured using a cruising gauge to determine the mean basal area of dominant tree species. Stand basal area data are reported in m^2 /hectare in Table 9.

Community composition is reported in table format, summarizing the percent cover, relative abundance and frequency of occurrence of species within plots representative of each mapped ecological community.²³ In addition to these tables, “ecoplots” are presented to visualize the soil moisture and nutrient regime of each site according to the percent cover of key indicator species.

²³ Note these data are not reported for each layer, but instead summed across layers for the sake of economy. For a summary of the plant composition of each plot by layer, see raw data.

Species at risk are identified in Section 2.2.6. A comprehensive inventory of Bluffs Park’s flora and fauna based on historical data and community inventory work conducted since 2016 is provided in Appendix 5.6.



Ecoplot 1. Bluffs Park Overall. Note: Soil Moisture Regime values do not extend beyond moist (subhydryc) conditions as the Park ecology does not host indicator species reflective of wetter hydric conditions. On average, dominant vegetation throughout the Park’s forested ecosystems reflect a submesic-mesic soil moisture and medium soil nutrient regime.

Ecoplots use ecological data derived from E Flora (<http://ibis.geog.ubc.ca/biodiversity/eflora/>), which is based on the research of the BC Ministry of Forests and Range. Details regarding these classifications can be found in the Field Manual for Describing Terrestrial Ecosystems (BC Ministry of Environment Lands and Parks and BC Ministry of Forests, 1998).

Dots represent ecological preferences of vascular plant species recorded during vegetation plot assessment, with dots scaled to visually represent the abundance of species. Dots in the lower left corner represent species that are commonly found in very dry (xeric) and very poor soil nutrient conditions. In contrast, dots in the upper right corner represent species associated with saturated (hydryc) and very rich soils. The distribution of species across each ecoplot provides an indication of the prevailing soil conditions of the ecological community.

The ecological communities of Bluffs Park span a range of soil moisture and nutrient regimes, represented in the “Bluffs Park Overall” plot. Species associated with very dry (very xeric) to moderately wet (subhydryc) conditions are present, with the soil nutrient preferences of each species reaching from very poor to rich. These values provide a baseline for monitoring future climate impacts as community composition may be expected to shift in the future, with species indicative of moist conditions predicted to decrease in abundance and those indexing relatively dry conditions predicted to increase in abundance.

In addition to the 16 vegetation plots established throughout the forested ecological communities Bluffs Park, 8 (2x15m) belt transects were monitored over five discrete sampling periods during

the months of April, May, June, July and August. Species occurrences were measured at each 1m interval as counts of flowering shoots and soil moisture conditions measured using a Field Scout soil moisture probe at 1, 5, 10 and 15 m intervals. This dataset captures a high-resolution picture of the phenology of flowering plant communities represented in the woodlands and associated rock outcrop communities of Bluffs Park. These data are represented in several graphs showing the relative diversity of native vs exotic species flowering over the course of the time series, with species phenology varying as a function of diminishing soil moisture availability.

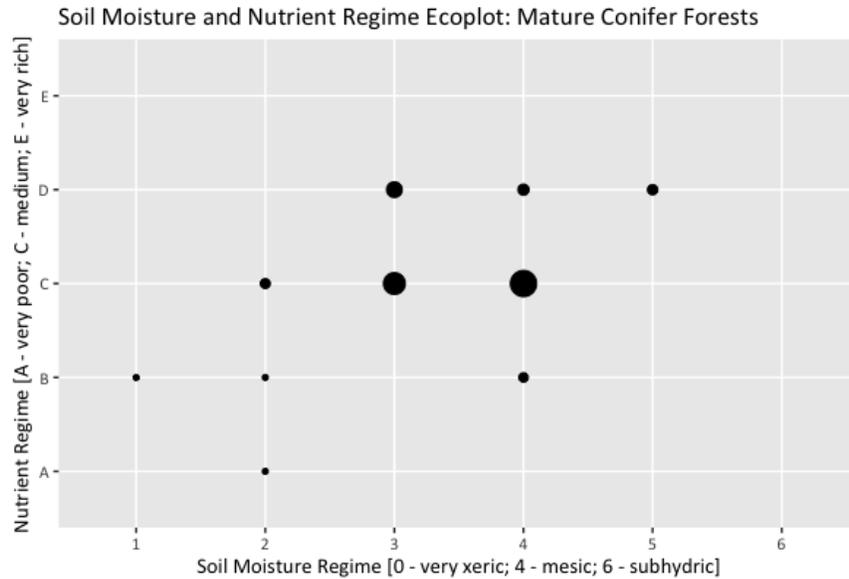
Mature Forests



Natural windfall creates small to medium sized canopy gaps promoting diversity in the mature forests of Bluffs Park by providing light for the understory and deciduous trees such as *Acer macrophyllum* and *Prunus emarginata*.

The majority of Bluffs Park (84.3 ha) consists of mature conifer forests dating to around the turn of the 20th century. These conifer forests largely classify as the “zonal” forest ecosystem typical of the CDF Biogeoclimatic Zone and make up about 60% of the parkland.

Douglas-fir, western redcedar and a small component of grand fir and western hemlock form the canopy of this forest ecosystem, with patches of deciduous trees sporadically occurring in gaps and in other areas of disturbance, such as along the Park road. Salal (*Gaultheria shallon*), Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*) and trailing blackberry (*Rubus ursinus*) comprise the understory, alongside broad-leaved starflower (*Lysimachia latifolia*), sword fern (*Polystichum munitum*) and bracken fern (*Pteridium aquilinum*), with a layer of moss beneath dominated by *Kindbergia oregana*, *Hylocomium splendens* and *Rhytidiadelphus triquetrus*. Soils are morainal and occasionally colluvial or marine, with the soil nutrient regime predominately medium to slightly poor. This zonal or typical CDF ecosystem class transitions on forest ecosystems in both drier and wetter conditions, situated at the moisture-shedding crests and on moisture-receiving slopes and depressions respectively.



Ecoplot 2. Mature Conifer Forests (Douglas-fir dominated, Plots 4, 5, 12, & 15)

At the dry end of the spectrum, transitioning on woodlands to the south, is the Douglas-fir-arbutus site association. Douglas-fir and arbutus (*Arbutus menziesii*) form a moderately open canopy, with oceanspray, snowberry (*Symphocarpus albus* and *S. mollis*) and dull Oregon grape in the understory, alongside trailing blackberry and baldhip rose (*Rosa gymnocarpa*). These dry forested ecosystems occasionally open up as herbaceous clearings characterized by Alaska onion grass (*Melica subulata*), occurring alongside herbaceous plants such as Pacific sanicle (*Sanicula crassicaulis*), yerba buena (*Clinopodium douglasii*), big-leaved sandwort (*Moerhingia macrophylla*), and white fawn lily (*Erythronium oregonum*).



Toward the southern extent of Bluffs Park mature conifer forests becomes more open and grassy, transitioning into a woodland environment. Trees are smaller, reflective of shallower soils, and the canopy consists almost exclusively of Douglas-fir, with arbutus occurring sporadically. Understory vegetation almost fully covers the forest floor, composed of a mosaic of grasses, mosses and herbaceous species.

At the wetter end of the spectrum, zonal conifer forests transition on moist forests of mixed coniferous and deciduous composition, featuring Douglas-fir, grand fir, bigleaf maple (*Acer*

macrophyllum) and Pacific yew (*Taxus brevifolia*) at mid-slope and western redcedar at the toes. Mosses such as Menzies' tree moss (*Leucolepis acanthoneuron*) and badge moss (*Plagiomnium insigne*) are good indicators of this relatively moist forest type. The historical decline of this mixed forest ecosystem is due largely to the forestry industry, which placed high value on the large volumes of timber yielded from its relatively richer soils.

Coastal Douglas-fir conifer forests, when allowed to regenerate naturally, typically mature with 30-50% canopy closure, developing a complex canopy structure. Natural disturbances are primarily driven by forest fire, laminated root rot (*Phellinus weirii*), and to a lesser extent honey fungi (*Armillaria*). Forest fire was particularly important historically in maintaining open woodland environments, such as those found about the Park lookout. In contemporary times, however, due to intensive forestry and fire suppression practices, these natural successional patterns have been altered, giving rise to forests with denser canopies.



Canopy closure ranges from open to dense and understory vegetation varies accordingly. Beneath canopy openings salmonberry, oceanspray and salal make up a rather dense shrub layer. Under a closed canopy, understory vegetation is sparse and consists mainly of sword fern and various herbaceous plants. The mature areas of the forest have high volumes of large coarse woody debris: a sign of mature forest structure. Coarse woody debris and understory vegetation provides important habitat for birds, mammals, and arthropods.

Mature conifer forests: vascular plant community composition by plot

Taxon	1	4	5	9	12	14	Abundance	Frequency
<i>Abies grandis</i>			5				scattered	infrequent
<i>Acer macrophyllum</i>						5	scattered	occasional
<i>Achlys triphylla</i>			+	+		1	scattered	common
<i>Alnus rubra</i>						15	scattered	infrequent
<i>Anisocarpus madioides</i>					+		scattered	infrequent
<i>Anthoxanthum odoratum</i> *					+		scattered	infrequent
<i>Arbutus menziesii</i>	5						scattered	infrequent
<i>Berberis nervosa</i>	+		5	+		5	scattered	common
<i>Crataegus douglasii</i>	+						scattered	infrequent
<i>Festuca occidentalis</i>	+						scattered	infrequent
<i>Galium aparine</i>					+	+	sparse	occasional
<i>Galium triflorum</i>				+		2	scattered	occasional
<i>Gaultheria shallon</i>			5		20	70	patchy	common
<i>Hieracium albiflorum</i>					+		scattered	infrequent
<i>Holodiscus discolor</i>					10	2	scattered	occasional
<i>Ilex aquifolium</i> *	+			+			scattered	occasional
<i>Lonicera hispidula</i>	+		+	+	+		scattered	common
<i>Lysimachia latifolia</i>			+		1		scattered	occasional
<i>Melica subulata</i>					70		patchy	occasional
<i>Nemophila parviflora</i>						+	scattered	occasional
<i>Polystichum munitum</i>		+	+	5	1	15	patchy	common
<i>Pseudotsuga menziesii</i>		75	55		40	10	abundant	dominant
<i>Pteridium aquilinum</i>			+			+	scattered	occasional
<i>Rosa gymnocarpa</i>					+		scattered	occasional
<i>Rubus ursinus</i>				+	+		scattered	occasional
<i>Sanicula crassicaulis</i>					+		scattered	infrequent
<i>Thuja plicata</i>	90	20	35	95		50	abundant	dominant
<i>Tsuga heterophylla</i>			11				scattered	infrequent
<i>Vaccinium ovatum</i>	10						scattered	infrequent
<i>Vicia sativa</i> *					+		scattered	infrequent

Table 2. Percent cover of vascular plant species reported for plots within the Mature Conifer forest community. Abundance describes the proportional cover of species within the community and frequency indicates the likelihood of a species occurrence across samples sites (+ indicating trace occurrences). Exotic species are indicated with an *. See Appendix for more information on classifications, conservation status and common names of plant species.



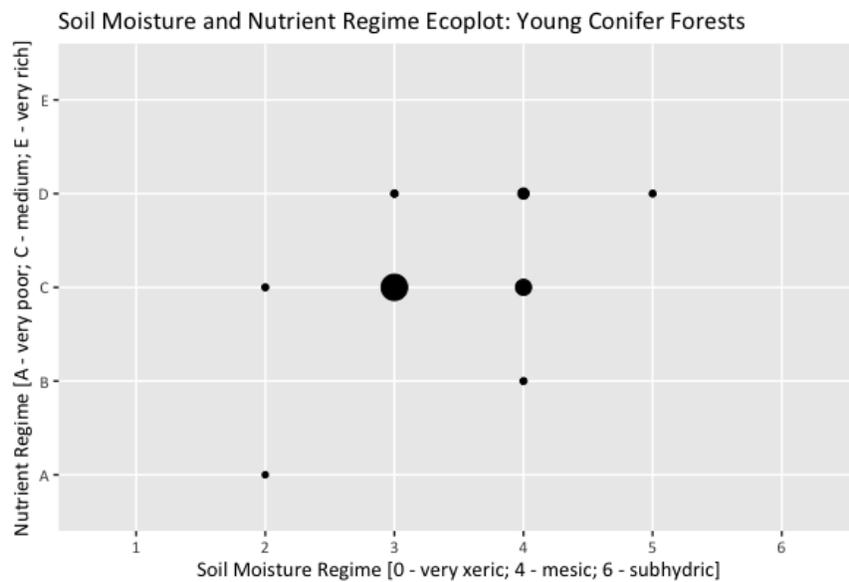
Old stumps of large diameter Douglas-fir trees can be found throughout the mature conifer forests of Bluffs Park testament to past logging. Notches for springboards are indicative of logging practices that predate the widespread adoption of chainsaws (ca.1950).

Young Forests



Young coniferous forests tend to be dominated by even-aged Douglas-fir trees. However, this age class takes on a mixed composition on slopes toward the central region of the Park (Plot 7), where western redcedar dominates the canopy.

Approximately 29.7 ha of Bluffs Park consists of young forests dating to *ca.* 1950s and representing about 22% of the total Park area. Much of this young forest is coniferous, dominated by even aged stands of Douglas-fir, with mixed late seral communities dominated by bigleaf maple and red alder (*Alnus rubra*) occurring prominently along gradual, moisture-receiving slopes to the north of the height of land.



Ecoplot 4. Young Conifer Forests (Plots 2, 7, 8 & 11)

Stands are dense within young conifer forests and little light penetrates the canopy, so conifers tend to shed their lower boughs. Throughout much of the young forest, the forest floor is dominated by a dense moss layer. Yet the natural death of trees continues to create slight canopy gaps where salal dominates the understory. Small accumulations of coarse woody debris occur as evidence of self-thinning and stumps from past logging are also present in these sites. Ecological succession will proceed in mixed young forests as red alder dies back over the coming decades, with young stands maturing along a trajectory similar to young coniferous forests to become mature zonal CDF forest. Some of these young stands, however, will likely retain a mixed composition, maturing as relatively moist forests in moisture-receiving pockets of the landscape.



Young mixed forests have similar characteristics to young coniferous forest, but the canopy layer includes a significant percentage of deciduous trees. In old canopy gaps mature bigleaf maples are still present and relatively large red alder add to the diversity of canopy trees.

While vegetation plots in the Young Forest class locally supported existing TEM data, it proved difficult to assess the perimeter of this forest type as distinct from surrounding mature conifer forests. Ground surveys suggested recent harvesting events to be somewhat more extensive along slopes north of the road toward the eastern extent of the Park. However, it would be necessary to reference historical aerial photography to resolve these boundaries with any degree of certainty. Existing TEM data indicates these areas had previously been ground-truthed with a high degree of certainty, yet some areas did not resolve as formerly mapped, including a small stand of mixed young forest along the road near the entrance to the Park lookout (now mapped as coextensive with the mature conifer forest class). Heterogeneity in the structure of these young forests suggests multiple harvesting events resulting in stands of uneven age. For lack of historical aerial photography and tree coring data, the original outline of the Young Forest class has for the most part been conserved in the final map, with some minor adjustments made based on ground surveys.

Young coniferous and mixed forests: community composition by plot

Taxon	2	7	8	11	Abundance	Frequency
<i>Acer macrophyllum</i>		20		+	sparse	occasional
<i>Achlys triphylla</i>	+	3	2		scattered	common
<i>Berberis nervosa</i>	3		+	2	scattered	common
<i>Calypso bulbosa</i> var. <i>occidentalis</i>	+				scattered	infrequent
<i>Campanula scouleri</i>			+		scattered	infrequent
<i>Cardamine hirsuta</i> *		+			scattered	infrequent
<i>Epipactis helleborine</i> *				1	scattered	infrequent
<i>Festuca occidentalis</i>	+				scattered	infrequent
<i>Galium aparine</i>		20	+	1	sparse	common
<i>Galium triflorum</i>		1			scattered	infrequent
<i>Gaultheria shallon</i>	1	3	+		sparse	common
<i>Goodyera oblongifolia</i>	+		+		scattered	occasional
<i>Ilex aquifolium</i> *		1		+	scattered	occasional
<i>Lonicera hispidula</i>	+		+	1	scattered	common
<i>Lysimachia latifolia</i>	+	+	2	+	sparse	common
<i>Melica subulata</i>				2	scattered	infrequent
<i>Mycelis muralis</i> *			+		scattered	infrequent
<i>Nemophila parviflora</i>	+	+	+		scattered	common
<i>Osmorhiza berteroi</i>		+			scattered	infrequent
<i>Polypodium glycyrrhiza</i>	+				scattered	infrequent
<i>Polystichum munitum</i>	+	5	+	+	sparse	dominant
<i>Pseudotsuga menziesii</i>	80	20	70	120	abundant	dominant
<i>Thuja plicata</i>	10	40	21	2	abundant	dominant
<i>Trisetum cernuum</i>				10	sparse	infrequent
<i>Vaccinium ovatum</i>	1				scattered	infrequent
<i>Vaccinium parvifolium</i>	+				scattered	infrequent

Table 3. Percent cover of vascular plant species reported for plots within the Young Conifer and Young Mixed Forest communities.

Proportional representation of ecosystems protected in Bluffs Park

Ecosystems	Bluffs Park	Galiano Island	% Bluffs Park	% Galiano
Oldgrowth conifer forest	3.7 ha	11.3 ha	3	33
Mature conifer forest	84.3 ha	1544.1 ha	60	5
Young conifer forest	18.7 ha	1057.1 ha	14	2
Young mixed forest	11.1 ha	301.1 ha	8	4
Woodlands / rock outcrop	17.3 ha	131 ha	12	13
Wetlands	1.2 ha	94.7 ha	1	1

Table 4. Proportional representation of Galiano Island's terrestrial ecosystems protected within Bluffs Park, based on available TEM data as adjusted through recent survey work. Note: the littoral ecosystem is not considered here. Approximately 2% of the parkland is otherwise classified as ruderal or developed.

Sensitive Ecosystems

A total of 22.2 hectares of Bluffs Park are mapped as sensitive ecosystems, representing approximately 16% of the total Park area (see Map 3). These sensitive ecosystems include oldgrowth coastal Douglas-fir forests, woodlands and associated rock outcrop communities, a small amount of wetland which lies along the northeastern, western and southwestern boundaries of the Park, and the Park's rocky shoreline.

Oldgrowth Conifer Forests

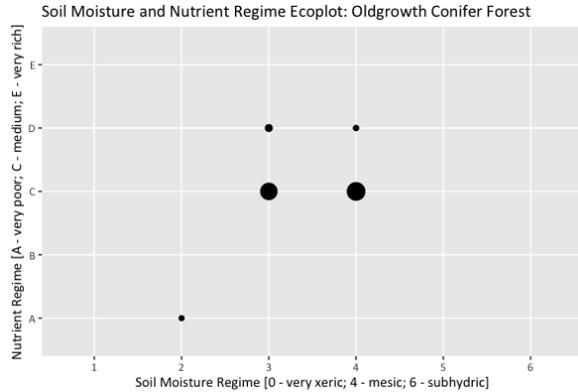


Areas mapped as oldgrowth include a stand retained at the Park's height of land (Plot 10, shown left) and moist mixed and coniferous forests established on slopes to the southwestern extent of the park (Plot 13). Much of the woodland described below also classifies as oldgrowth, including Plots 15 & 16, and an impressive stand of Douglas-fir to the southwest of Plot 16 (shown right). This community has been classified as woodland, however, owing to its shallow soils and the resulting open character of the stand.

Bluffs Park protects 3.7 ha or approximately 36% of Galiano Island's remaining oldgrowth coastal Douglas-fir forests. Oldgrowth conifer forests include densely forested areas of the park that have not been previously logged. Trees in the dominant canopy have large diameters, are tall and have thick bark, sometimes scarred by past wildfires. Densities are relatively low but timber stock is high because of the large volume of timber a single tree can contain.

In accordance with the wishes of the Galiano Club management committee, trees were not cored in undertaking the Park inventory. Forest age was estimated based on available TEM data and community knowledge of the Park's history, and oldgrowth status surmised based on forest structure and composition. In addition to these factors, a lack of stumps was taken to be a prime indicator of oldgrowth, serving as indirect evidence that logging had not proceeded in a given area.

A small portion of the Park's remaining oldgrowth coniferous forests occurs at the height of land within the Park (Plot 10), an upland area qualifying as mesic, or zonal CDF conifer forest. The greater extent of oldgrowth, however, has been retained in a water-receiving depression toward the southwestern border of the Park (Plot 13), representing a moister forest type dominated by western redcedar. These patches are estimated to be 150–500 years old and were likely retained because they presented little value as timber, or because slopes made harvesting challenging.



Ecoplot 5. Oldgrowth Conifer Forests (Plots 10 & 13)

Oldgrowth conifer forests: community composition

Taxon	10	13	Abundance	Occurrence
<i>Acer macrophyllum</i>		+	scattered	occasional
<i>Achlys triphylla</i>	+		sparse	occasional
<i>Berberis nervosa</i>	5	+	patchy	common
<i>Daphne laureola</i> *		+	scattered	occasional
<i>Galium aparine</i>	10		scattered	occasional
<i>Gaultheria shallon</i>	70		patchy	common
<i>Ilex aquifolium</i> *		+	scattered	occasional
<i>Lysimachia latifolia</i>	+		scattered	occasional
<i>Melica subulata</i>	5		patchy	occasional
<i>Mycelis muralis</i> *		+	scattered	occasional
<i>Nemophila parviflora</i>	1		sparse	common
<i>Polystichum munitum</i>	1	+	patchy	common
<i>Pseudotsuga menziesii</i>	65	10	abundant	dominant
<i>Rumex acetosella</i> *	+		scattered	occasional
<i>Thuja plicata</i>		90	abundant	dominant

Table 5. Percent cover of species reported for plots within the Young Conifer and Young Mixed Forest communities.

Woodlands and Associated Rock Outcrop Communities



The woodland communities of Bluffs Park vary significantly across the Park's topographic profile, from gradual north-facing meadow slopes to steep south-facing outcrops and shaded seeps.

Approximately 17.3 ha of woodland and conglomerate rock outcrops make up the popular lookout area of Bluffs Park, with steep rocky slopes descending south to the shoreline below. While this area represents less than 13% of the entire Park area, it features an exquisite exhibit of biodiversity. Of all the terrestrial ecosystems represented in Bluffs Park this complex of ecosystems is the most diverse, providing habitat for 87% of the Park's reported lichen, bryophyte and vascular plant diversity.

In effort to do justice to this area of high biodiversity, 8 transects were established along the Park's upper outcrops and slopes and monitored through the months of April, May, June, July &

August, in addition to the two vegetation plots established in this ecological community in May 2018. Further intuitive searches were conducted throughout the area by bryologists Olivia Lee, Steve Joya in April of the same year to document bryophytes in the area. The Park was also visited by entomologist Scott Gilmore in the summers of 2017 and 2018, contributing to an inventory of the Park’s arthropod diversity. Historical biological inventory data from this area span five decades and are reported in Appendix 5.6.

The structure and composition of Bluffs Park’s woodlands and associated rock outcrop communities varies significantly according to this area’s complex topography.

North of the lookout, woodlands transition to zonal CDF forest along gentle moisture-receiving slopes of a cool northern aspect (Plot 15) that contrasts with dry woodlands on the southern slopes of the Park (Plot 16). Soils are shallow yet relatively moist, giving rise to trees of robust stature and a diverse moisture-loving herbaceous plant community, including enchanter’s nightshade (*Circaea alpina*), little western bittercress (*Cardamine oligosperma*), meadow nemophila (*Nemophila pedunculata*), and native grasses such as Alaska onion grass. Released from the shade and competition of surrounding forests Douglas-firs develop a unique growth form, retaining and extending their lower branches. In this aspect, Douglas-firs, Garry oaks (*Quercus garryana*) and arbutus are all comparably larger than those seen on the steep rocky slopes below, supporting a diverse epiphytic community of mosses and lichens.

Woodlands: community composition by plot

Taxon	15	16	Abundance	Occurrence
<i>Acer macrophyllum</i>		10	scattered	occasional
<i>Achlys triphylla</i>	+		scattered	occasional
<i>Bromus vulgaris</i>		15	sparse	occasional
<i>Cardamine oligosperma</i>	+		scattered	occasional
<i>Cerastium glomeratum*</i>		1	scattered	occasional
<i>Claytonia perfoliata</i>	10	1	sparse	common
<i>Clinopodium douglasii</i>	+		scattered	occasional
<i>Corallorhiza striata</i>		+	scattered	occasional
<i>Daphne laureola*</i>		+	scattered	occasional
<i>Festuca occidentalis</i>		5	scattered	occasional
<i>Galium aparine</i>	20	5	sparse	common
<i>Gaultheria shallon</i>	50		patchy	common
<i>Lonicera hispidula</i>	+	10	sparse	common
<i>Lysimachia latifolia</i>	1		scattered	occasional
<i>Melica subulata</i>	50	80	patchy	dominant
<i>Mycelis muralis*</i>	+	2	scattered	occasional
<i>Nemophila parviflora</i>	1	1	scattered	common
<i>Osmorhiza berteroi</i>	+	15	sparse	common
<i>Polystichum munitum</i>	1		scattered	occasional
<i>Pseudotsuga menziesii</i>	85	90	abundant	dominant
<i>Quercus garryana</i>		20	scattered	occasional
<i>Rosa gymnocarpa</i>	1	1	scattered	occasional
<i>Rubus ursinus</i>	1		scattered	occasional
<i>Sanicula crassicaulis</i>		15	sparse	occasional
<i>Silene coronaria*</i>		1	scattered	occasional

Table 6. Percent cover of vascular plant species reported for plots within the Woodland community.

On outcrops and slopes descending below the Park lookout, soils become more rocky and shallow and the vegetation more stunted and sparse. Open meadows are dominated by exotic grasses and a diverse herbaceous community of drought-tolerant native lupines (*Lupinus* spp.), clovers (*Trifolium* spp.), and onions (*Allium* spp.). Yet along the bases of outcrops, where water tends to seep, a niche opens up for moisture-loving herbaceous plants such as Menzies' larkspur (*Delphinium menziesii*), grassland saxifrage (*Micranthes integrifolia*), and monkeyflowers (*Erythranthe* spp.). Outcrops also support an extremely diverse nonvascular community, including no less than 42 moss species. Many of these moss species are drought-adapted, enabling them to occupy a selective niche within this dry woodland environment.

The steep southern slopes and outcrops of Bluffs Park descend from 140 m to sea level, leveling out into a series of gradual moisture-receiving slopes and narrow plateaus before dropping precipitously to the sea. A stand of oldgrowth Douglas-firs covers about 4.7 ha of these lower slopes toward the Park's southeastern extent. This magnificent stand includes many large diameter Douglas-firs which exhibit structurally complex crowns and low live-branch density. One large fallen tree with an obliterated crown was measured to be ~40–50m in height; another live-standing tree's circumference was measured at 5.2 m (1.65 m diameter). The stand exhibits many of the attributes of oldgrowth coastal Douglas-fir forest yet has been mapped as woodland because of its relatively open spacing, which contrasts with the mature conifer forests established throughout the rest of the Park.

As these descending rock outcrops approach the shoreline they become more precipitous, and vascular plant communities undergo a subtle shift to include species such as the lanceleaf stonecrop (*Sedum lanceolatum* ssp. *Nesioticum*) and the brittle prickly pear (*Opuntia fragilis*). These open bluffs provide an important foraging habitat for pollinators in the spring and summer months, with resources gradually dwindling as soil moisture levels drop and the diversity and abundance of flowering plants declines over the course of summer. The Park's changing foraging landscape is documented in Table 7, which tabulates the seasonality of various flowering plant species with reference to the average soil moisture conditions supporting each plant during its reproductive cycle, in rank order of abundance for each month of the study period.

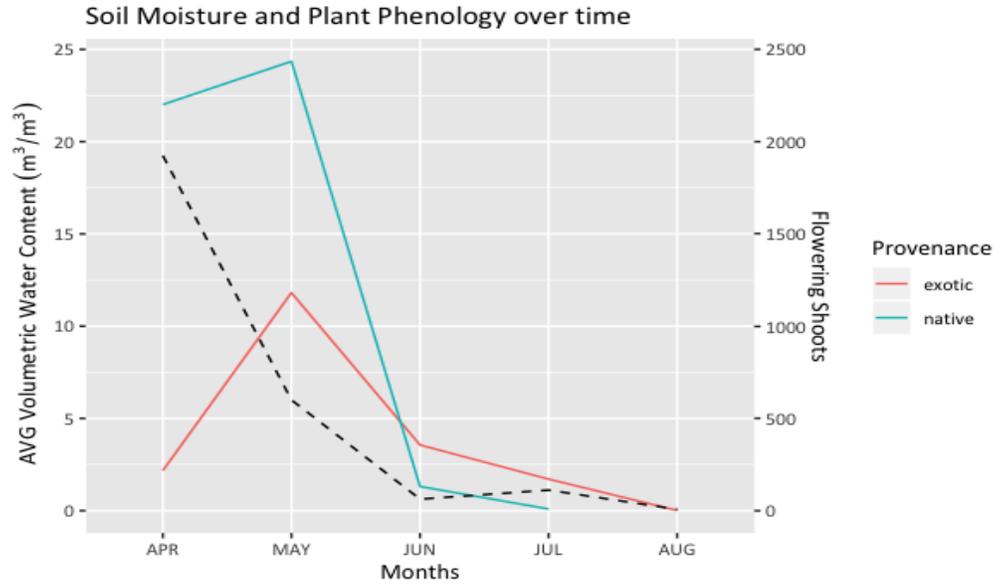


Fig. 2. Flowering plant phenology in Bluffs Park over the study period (April–August 2018). The dashed line shows average soil moisture availability dropping over time, with a small amount of precipitation occurring in July. The relative abundance of flowering native vs exotic species is shown by the green and red lines. Looking across the woodland landscape, exotic species tend to become more prominent as summer progresses, though by June the overall number of flowering native and exotic species has diminished significantly. Soil moisture data were averaged monthly over 8 transects, with four measurements of soil volumetric water content per transect. (Note: volumetric water content is expressed as the ratio of water to soil volume.)

Seasonality of woodland and rock outcrop flowering plant communities

Month	Species	Common Name	Count	% Total Monthly Count	AVG SM (%)	Provenance
April	<i>Collinsia parviflora</i>	Blue-eyed Mary	890	24.4	14	Native
	<i>Claytonia perfoliata</i>	Miner's lettuce	683	18.7	18	Native
	<i>Acer macrophyllum</i>	Bigleaf maple	550	15.1	16	Native
	<i>Cytisus scoparius</i>	Scotch broom	447	12.2	10	Exotic
	<i>Cardamine oligosperma</i>	Western bittercress	223	6.1	20	Native
	<i>Lomatium utriculatum</i>	Spring-gold	166	4.5	15	Native
	<i>Cardamine hirsute</i>	Hairy bittercress	108	3.0	23	Native
	<i>Stellaria media</i>	Chickweed	101	2.8	19	Exotic
	<i>Erythranthe alsinoides</i>	Wingstem monkeyflower	95	2.6	10	Native
	<i>Galium aparine</i>	Cleavers	73	2.0	12	Native
	<i>Veronica arvensis</i>	Corn speedwell	66	1.8	17	Exotic
	<i>Nemophila parviflora</i>	Small-flower nemophila	65	1.8	16	Native
	<i>Nemophila pedunculata</i>	Meadow nemophila	45	1.2	24	Native
	<i>Montia fontana</i>	Blinks	40	1.1	37	Exotic
	<i>Erodium cicutarium</i>	Redstem filaree	39	1.1	22	Exotic
	<i>Collinsia grandiflora</i>	Grand ol' Mary	17	0.5	10	Native
	<i>Erythranthe microphylla</i>	Small-leaf monkeyflower	16	0.4	17	Native
	<i>Trifolium variegatum</i>	Redstem filaree	10	0.3	10	Native
	<i>Berberis aquifolium</i>	White-tipped clover	9	0.2	15	Native
	May	<i>Micranthes integrifolia</i>	Grassland saxifrage	7	0.2	20
<i>Ranunculus occidentalis</i>		Western buttercup	2	0.1	16	Native
<i>Erythranthe nasuta</i>		Seep monkeyflower	1	0.03	17	Native
<i>Acmispon parviflorus</i>		Short-flower deervetch	1114	18.1	3	Native
<i>Geranium molle</i>		Western buttercup	576	9.3	6	Exotic
<i>Trifolium microcephalum</i>		Dove's-foot	264	4.3	4	Native
<i>Cerastium arvense</i>		Field chickweed	98	1.6	5	Native
<i>Myosotis discolor</i>		Changing forget-me-not	88	1.4	7	Exotic
<i>Lupinus bicolor</i>		Miniature lupine	63	1.0	3	Native
<i>Epilobium minutum</i>		Little willowherb	57	0.9	4	Native
<i>Cerastium glomeratum</i>		Sticky mouse-ear	56	0.9	11	Exotic
<i>Trifolium microdon</i>		Thimble clover	42	0.7	7	Native
<i>Sanicula crassicaulis</i>		Pacific sanicle	30	0.5	10	Native
<i>Trifolium dubium</i>		Lesser hop clover	30	0.5	3	Exotic
<i>Trifolium oliganthum</i>		Few-flowered clover	25	0.4	11	Native
<i>Sedum spathulifolium</i>		Stonecrop	24	0.4	7	Native
<i>Trifolium wildenovii</i>		Tomcat clover	19	0.3	3	Native
<i>Lupinus polycarpus</i>		Small-flowered lupine	15	0.2	3	Native
<i>Epilobium foliosum</i>		California willowherb	8	0.1	5	Native
June		<i>Delphinium menziesii</i>	Menzies' larkspur	3	0.0	13
	<i>Turritis glabra</i>	Tower mustard	2	0.0	5	Native
	<i>Toxicoscordion venenosum</i>	Death camas	1	0.0	10	Native
	<i>Hypochaeris radicata</i>	Hairy cat's ear	208	39.8	1	Exotic
	<i>Silene coronaria</i>	Rose campion	204	39.1	1	Exotic
	<i>Madia gracilis</i>	Grassy tarweed	59	11.3	0	Native
	<i>Allium acuminatum</i>	Hooker's onion	18	3.4	0	Native
July	<i>Clarkia amoena</i>	Farewell-to-Spring	18	3.4	0	Native
	<i>Eriophyllum lanatum</i>	Woolly sunflower	12	2.3	0	Native
	<i>Brodiaea coronaria</i>	Crown brodiaea	3	0.6	0	Native
	<i>Epilobium brachycarpum</i>	Tall willowherb	5	41.7	3	Native
	<i>Grindelia hirsutula</i>	Gumweed	3	25	0	Native
	<i>Hypochaeris glabra</i>	Smooth cat's ear	3	25	0	Exotic
	<i>Achillea millefolium</i>	Yarrow	1	8.3	2	Native

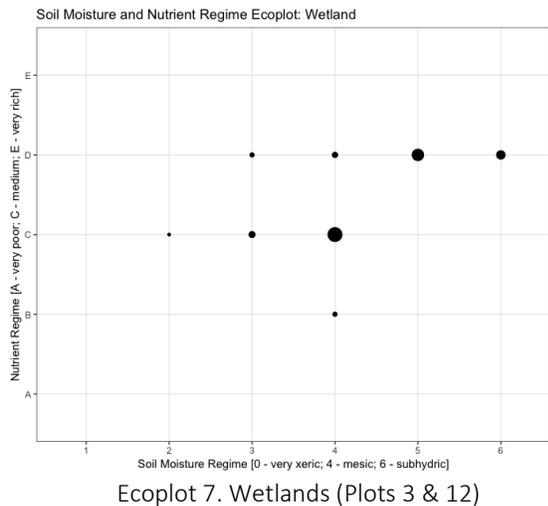
Table 7. Seasonality of 52 flowering plants across a soil moisture gradient. Plants are grouped by the month in which they occur most abundantly, though many species flower for longer periods of time. Table includes a summary of the total count of flowering shoots across all 8 transects and an estimate of their proportional abundance expressed as a percent of the total count of flowering shoots counted within each monthly sampling period. Also included is a summary of the mean soil moisture conditions associated with each plant species, averaged across all transects and sample periods.

Wetlands



Wetlands toward the northeastern (Plot 3, shown left) and southwestern Park boundary, and along the western part of the main access road to the Park (Plot 6, right), are dominated by red alder and western redcedar trees. The canopy is open and understory plants indicators of moist-to-wet / medium-to-rich conditions. Swordfern is abundant on all sites. Salmonberry and skunk cabbage are mostly present along the road.

Wetlands form a marginal part of the ecological mosaic of Bluffs Park, comprising approximately 1.2 ha or 1% of this protected area. These wetlands occur as cedar swamps, with an assemblage of skunk cabbage (*Lysichiton americanum*), salmonberry (*Rubus spectabilis*) and lady fern (*Athyrium filix-femina*), as well as seasonally inundated floodplains dominated by slough sedge (*Carex obnupta*). Both plots sampled during this vegetation inventory are characteristic of cedar swamplands. Floodplains represent a much more marginal community similar in composition to cedar swamplands but with less of a shrub and tree component.



Wetlands: community composition by plot

Plot No	3	6	Abundance	Frequency
<i>Alnus rubra</i>	25	10	abundant	dominant
<i>Athyrium filix-femina</i>		5	sparse	common
<i>Cardamine hirsuta</i>	+	+	scattered	common
<i>Cardamine oligosperma</i>		+	scattered	occasional
<i>Carex obnupta</i>		15	patchy	common
<i>Cirsium brevistylum</i>	+		scattered	occasional
<i>Galium aparine</i>	1		scattered	common
<i>Gaultheria shallon</i>	2		patchy	common
<i>Lysichiton americanus</i>		1	scattered	common
<i>Polystichum munitum</i>	90	10	abundant	dominant
<i>Pteridium aquilinum</i>	5		sparse	occasional
<i>Rubus spectabilis</i>		3	scattered	occasional
<i>Rubus ursinus</i>		1	scattered	occasional
<i>Stachys cooleyae</i>		1	scattered	occasional
<i>Thuja plicata</i>	20	38	abundant	dominant
<i>Urtica dioica</i>		+	patchy	occasional
<i>Vaccinium ovatum</i>	1	+	scattered	occasional
<i>Veronica americana</i>		+	scattered	occasional
<i>Veronica serpyllifolia</i>		+	scattered	occasional

Table 8. Percent cover of species reported for plots within the Wetland community.

Littoral



Aerial drone photograph showing woodlands and outcrops descending to the shoreline of Bluffs Park. A steep coastal bluff community dominated by Scotch broom is visible at the base of the slopes. Photograph by Kris Krüg.

Bluffs Park features nearly one kilometer of rocky shoreline along the northwestern shores of Active Pass. This ocean-side or “littoral” community covers about half a hectare and is host to its own distinct assemblage of coastal species, interfacing with the richest ecosystem of the Salish Sea: the marine environment. This area is difficult to access and was not inventoried as part of the Bluffs Park Management Plan.

Basal area (m²/ha) of dominant tree species by plot

Plot No	Class	All values in m ² / hectare							TOTAL
		Douglas-fir	Cedar	Oak	Alder	Arbutus	Grand fir	Maple	
10	OGco	180	0	0	0	0	0	0	180
13	OGco	80	400	0	0	0	0	0	480
AVG	OGco	130	200	0	0	0	0	0	330
15	WD	180	40	0	0	0	0	0	220
16	WD	260	0	20	0	0	0	0	280
AVG	WD	220	20	10	0	0	0	0	250
1	MFco	60	280	0	0	20	0	0	360
4	MFco	240	200	0	0	0	0	0	440
5	MFco	120	80	0	0	0	20	0	220
9	MFco	0	500	0	0	0	0	0	500
12	MFco	40	40	0	0	0	0	0	80
14	MFco	100	60	0	0	0	0	0	160
AVG	MFco	93	193	0	0	3	3	0	293
2	YFco	200	20	0	0	0	0	0	220
8	YFco	300	80	0	0	0	0	0	380
11	YFco	340	0	0	0	0	0	0	340
7	YFmx	140	100	0	0	0	0	40	280
AVG	YF	245	50	0	0	0	0	10	305
3	WNsp	60	80	0	0	0	0	0	140
6	WNsp	0	180	0	20	0	0	0	200
AVG	WNsp	30	130	0	10	0	0	0	170

Table 9. Estimated basal area of dominant tree species in Bluffs Park's ecological communities, as measured using a cruiser gauge at each vegetation plot. Basal area is reported in square meters per hectare (m²/ha) with overall averages reported for each community: Oldgrowth conifer forest (OGco), Woodland (WD), Mature conifer forest (MFco), Young forest (YF), and Cedar swamp wetlands (WNsp).

See MAP 2 – Ecological Communities

See MAP 3 – Areas of Conservation Concern

Appendix 5.4. Land Use Bylaws

Official Community Plan Bylaw # 108, section 7

7. Nature Protection

The protection of special natural areas, removed from the threat of future development, is an ongoing process on Galiano Island. Over the past decades, several Nature Protection areas resulted from the combined efforts of residents, visitors, non-profit organizations and public agencies. These protected areas, along with public lands intended for conservation, are designated as Nature Protection in this plan.

Nature Protection Objective

The objective of this subsection is:

- 1) to preserve natural values*
- 2) to create connections establishing a network of protected areas,*
- 3) to protect and enhance the island's capacity for carbon storage.*

Nature Protection Policies

- a) A separate zone for conservation shall be applied to new and existing Nature Protection areas.*
- b) Lands covenanted against further development or subdivision shall be identified through appropriate zoning designation.*
- c) Zoning for Nature Protection areas may permit trails, ecological restoration, and low impact recreation.*
- d) Where Nature Protection areas meet the high tide line, the water and foreshore shall be zoned for protection.*

Nature Protection Advocacy Policies

- e) B.C. Parks shall be requested to continue a public consultative process of developing and periodically reviewing management plans for all ecological reserves in the Galiano Island Local Trust Area.*
- f) Landowners are encouraged to protect sensitive areas on their lands through granting conservation covenants under the Natural Area Protection Tax Exemption Program (NAPTEP).*

The Bluffs Park is zoned “Nature Protection” under Galiano Island Land Use Bylaw # 127.

11.1 Nature Protection Zone

Permitted Uses

11.1.1 In the Nature Protection zone the following uses are permitted, subject to regulations set out in this section and the general regulations set out in parts 2 and 3, and all other uses are prohibited.

- 11.1.1.1 ecological reserves and nature conservancies*
- 11.1.1.2 research and educational activities*

- 11.1.1.3 *groundwater retention and recharge*
- 11.1.1.4 *ecological restoration*
- 11.1.1.5 *passive recreation*

Buildings and Structures

- 11.1.2 *No buildings or structures of any kind, other than signs are permitted.*

Appendix 5.5. Park Guardian Program

Park/Forest Guardians

The Galiano Club Park/Forest Guardians are involved in the following tasks:

1. Checking for fallen trees
2. Picking up litter
3. Removing small obstacles from the trails
4. Light pruning of branches
5. Checking for other safety hazards
6. Making sure signs are visible
7. Providing recommendations for signage
8. Reporting incidents of vandalism
9. Reporting any other concerns to the Club designate
10. Participating in organized broom cutting events
11. Making recommendations for opening up side trails
12. Providing information to the public when meeting on the trails
13. Participating in education events about the Park ecosystem