

# The Trincomali Viewpoint Trail Project Proposal



“The walking of which I speak has nothing in it akin to taking exercise, as it is called, as the sick take medicine at stated hours ...but it is itself the enterprise and adventure of the day.”

— **Henry David Thoreau, Walking**

Created by Mya Hiebert,  
Kaylynne Sparks & Sophie Noel

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## 1.0 Site Analysis

### 1.1 Introduction to the Project

Galiano Island lies on the Eastern edge of the Southern Gulf Islands, located in British Columbia's Salish Sea. The island's habitation and land use has a colourful history, from initial cultivation by the Penelakut First Nation to logging under the ownership of Macmillan Bloedel. A report developed for the Galiano Conservancy found that "roughly half of Galiano's almost 6000 hectares is recovering from being clearcut within the last fifty years" (Scholz, Erickson, & Azevedo, 2004, p. 2). The Galiano Conservancy Association (the Conservancy), formed in 1989, is a community-based land trust and was one of the first of its kind. It states its priorities as "land and marine conservation, stewardship and restoration, environmental education and public awareness" (galianoconservancy.ca). Within the 188 hectares of district lot 57 (DL57), an acquisition made by the Conservancy in 2012, there are agricultural zones, old-growth forest, an educational facility, a campground, and a coastal ridge upon which an old-growth Coastal Douglas-fir ecosystem thrives, seen in Figure 1.

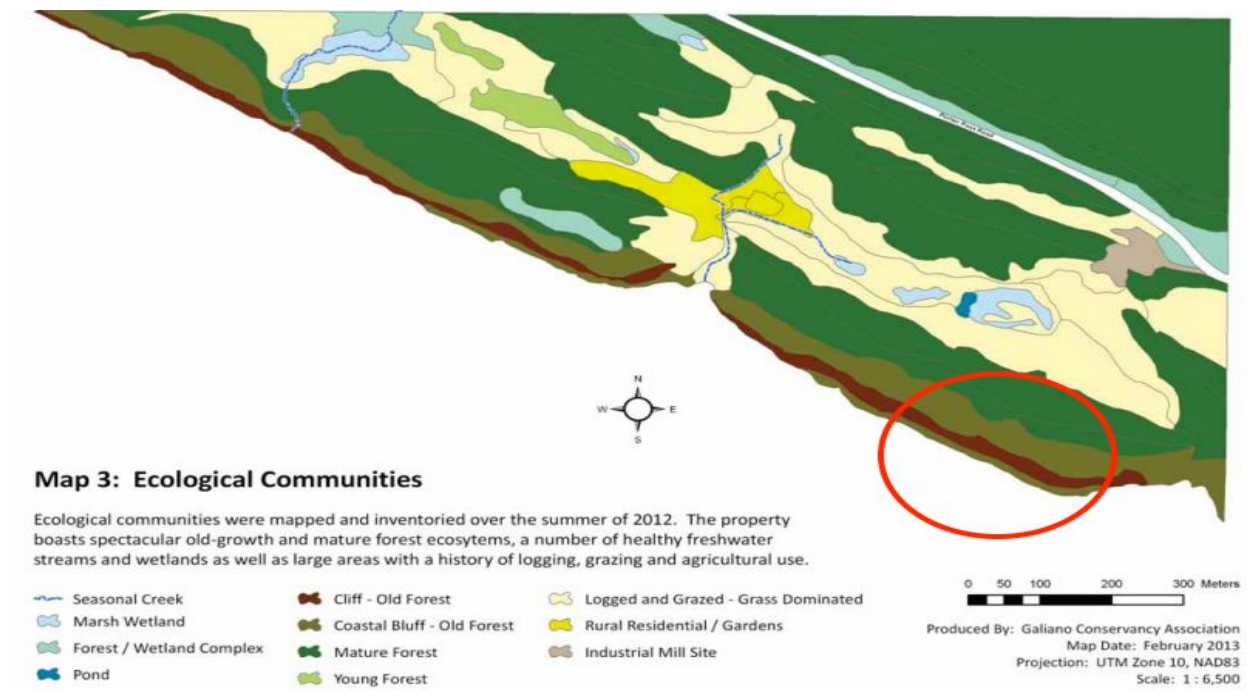


Figure 1. Map prepared for the Conservancy detailing the ecological communities on DL57. Red circle indicates management zone 1b, where the trail is proposed. This area is designated as cliff- and coastal bluff-old forest. (Galiano Conservancy Association, 2013)

Given that "ecosystems of the Coastal Douglas-fir (CDF) Biogeoclimatic Zone [are] some of the most endangered in British Columbia" (Scholz *et al.*, 2004, p. 1), protection of the coastal bluffs along the Western edge of DL57 is paramount according to the management priorities of the Conservancy's

covenant on the land. As such, the following design plan outlines a low-impact trail from the campsite along the coastal ridge in management area 1b, leading to a viewpoint over the Trincomali Channel. This trail will focus and organize use in the area, mitigating the risk of damage from uncontrolled overuse of the forest (Ballantyne & Pickering, 2015). It will also provide interpretive and educational elements, and an opportunity for community members and visitors to experience the beauty that the coastal bluffs have to offer.

## **1.2 Importance of the Trail**

In order to preserve the ecological integrity of this site without compromising human access to the beautiful scenic view on the property, it will be important to balance long-term sustainability with accessibility. Keeping the flow of traffic on the trail will prove to be the most important benefit of our route. It is obvious that throughout the years, the area has been trampled by students, staff and community members all aiming to get a view of the ocean. It is through this trail that we hope to reduce the risk of damaging the ecosystem by providing a clear, designated path to a viewpoint.

The benefits of a designated trail versus poorly-planned, informal trails has been explored by Ballantyne and Pickering's case study of the trails through the Black Butt Forest in Australia (2015). They found that, on one hand, informal trails form large networks that cause vegetation loss and erosion, and the informal trails are susceptible to trail widening which creates more vegetation loss. On the other hand, formal trails are susceptible to altering plant compositions because of the disturbance caused by the construction of the trail. Despite this, well-planned formal trails create less erosion and vegetation loss, and overall cause far less damage. In the case of the Trincomali viewpoint trail, it is important to be mindful of the disturbance that will be created by construction. To prevent excessive trampling, a well-flagged route and a focused effort to compact the ground only where the trail is being built will be beneficial.

## **1.3 Ecosystem Conditions Within Proposed Project Area**

The Trincomali viewpoint trail will be weaving through some of the last Coastal Douglas Fir old growth intact on Galiano island. The area borders a Garry Oak meadow, and itself contains many native plants such as arbutus (*Arbutus menziesii*) scotch broom (*Cytisus scoparius*), douglas-fir (*Pseudotsuga menziesii*), sword fern (*Polystichum munitum*), and salal (*Gaultheria shallon*). The view overlooks some of the Gulf islands and features a large cliff face, with opportunities to experience many species of birds, sea otters and other ocean life. The cliff face that can be seen is extremely interesting because of its geological aspects. Erosion of the sediments has caused the rocks to take strange and obscure forms that happen to be perfect habitat for a plethora of animals. The Land Conservancy and the Habitat Acquisition Trust hold a Conservation Covenant on the land to ensure the protection of this important nature sanctuary (Trincomali Nature Sanctuary, 2017).

In British Columbia, Garry oak ecosystems are restricted to the southeast coast of Vancouver Island and the southern Gulf Islands. These ecosystems occupy only a small portion of the Coastal Douglas-fir zone, which in total only 0.3 percent of the land area of the province (Province of British Columbia, 1993). It is because of their rarity and recent decline in abundance that this project should deem them as important to

protect. This will mean directing a trail route that will not interfere with this delicate ecosystem. Because of the ridges in the topography of Galiano island, a seepage zone has been created in the Southeast corner of DL57, creating the most ideal conditions for a Garry oak ecosystem to flourish. It is extremely sensitive, and is home to many native plants and animals that vary in threatened status. Great Camas (*Camassia quamash*) and Death Camas (*Zigadenus venenosus*), may be seen in this area and are extremely important to the indigenous cultural history of the gulf islands.

Roughly half of Galiano is recovering from being clearcut within the last fifty years, and old-growth forest patches (older than 250 years) larger than a hectare number less than half a dozen. Mature forest ecosystems (between 80 and 250 years old), the majority of which were high-graded in the early 20th century, compose about one-quarter of the landscape (Scholz *et al.*, 2004, p. 2). The stand present in this section falls into the old growth classification. Scholz and his colleagues state that “plantations, agricultural lands, roads and urban development have replaced and fragmented old forest, making ecosystems of the Coastal Douglas-fir Biogeoclimatic Zone some of the most endangered in British Columbia”( 2004, p. 1). This can clearly be seen in the areas surrounding this section of old growth, as well as in the overgrown road that the trail follows in the first few metres.

As previously mentioned, the cliffs provide important shelter and nesting sites for species such as Double-crested and Pelagic cormorants (*Phalacrocorax auritus* and *pelagicus*, respectively) Peregrine falcons (*Falco peregrinus*), Pigeon guillemot (Auk or *Cepphus columba*) and Glaucous-winged Gulls (*Larus glaucescens*). The Double-crested cormorants and Peregrine falcons are both red-listed species, illustrating the importance of the area. It is extremely diverse here because of its optimal location. The forested area at the top of the cliffs acts as an important buffer to many of the plants and wildlife that make use of the coastal bluff habitat (Trincomali Nature Sanctuary, 2017). The trail will provide an extremely interesting sight and allow humans to glimpse back into the natural world in a non-intrusive way.

#### **1.4 Historical Land Use**

Land use on Galiano began with Penelekut people, who had settlements on the North End of Galiano and cultivated both the terrestrial and marine ecosystems. In terms of pre-colonization land use specific to DL57; “First Nations use and history of the Land has not been documented or recounted,” however “the Land lies within the traditional territories of the Hul’qumi’num Treaty Group (Chemainus, Cowichan Tribes, Halalt, Lake Cowichan, Lyackson and Penelakut), the Hwlitsum Nation, and Tsawwassen First Nation” (Galiano Learning Centre [GLC] 2013, p. 9). Other uses of the land that followed settlement involved land-clearing in the European tradition of clearcut logging, followed by agriculture. The management plan states that “while DL57 includes tracts of healthy old growth and mature forest, wetlands and sensitive coastal bluff, it also has an extensive history of agricultural use, grazing and smallscale forestry.”(GLC, 2013, p. 7). Since the acquisition of the land by the Conservancy in 2012, the land use has been diverse but always with conservation in mind, given that “preservation of the few remaining parcels of land with intact natural ecosystems must be the first conservation priority in this zone” (Scholz *et al.*, 2010, p. 1).

## **2.0 Goals, Objectives and Site Specific Plan**

Upon developing goals and objectives for this project, we were careful to include space for as many voices to be heard as possible. Partnerships with both Keith Erickson and Loren Wilkinson were key to the smooth execution of this trail design project. Both played crucial roles in providing guidance and support to our team. Eric Higgs, along with a number of other GCA staff were also extremely helpful in the research and history portion of this project. The following are the condensed goals and objectives that we hope will lead this project in the right direction.

### **2.1 Goals**

1. Allow access to one of the most beautiful vistas on the property (DL57)
2. Provide educational opportunities for the Galiano Conservancy community
3. Protect vulnerable ecological communities in the area
4. Promote the presence of native species in the area

### **2.2 Objectives**

1. Design a trail ending in a viewpoint of the Trincomali Nature Reserve cliff face
2. Create interpretive signs for the Galiano Conservancy community that inform users about history (Indigenous land use & acquisition of the land by GCA), ecology of the natural systems in the area, restoration projects, and points of interest in the ocean view
3. Determine the path of least destruction to sensitive species in the proposed trail area
4. Remove invasive species such as Scotch broom in the area around the trail

### **2.3 Site Specific Plan**

Upon first glance at the proposed Trincomali Viewpoint Trail area in the Coastal ridge 1b management zone, it was apparent that due to the steep ridges in the land, erosion would need to be considered when planning the route. Precipitation events will cause sheet runoff from above (Favro, 2012), varying in intensity in correlation with the seasons that should be considered in the CDFmm Moist Maritime biogeoclimatic zone, which can be extremely wet during winter months (BC Parks, Galiano Island ER 128). Figure 2 illustrates a rough idea of where the trail could go while doing the least amount of damage to sensitive ecosystems.

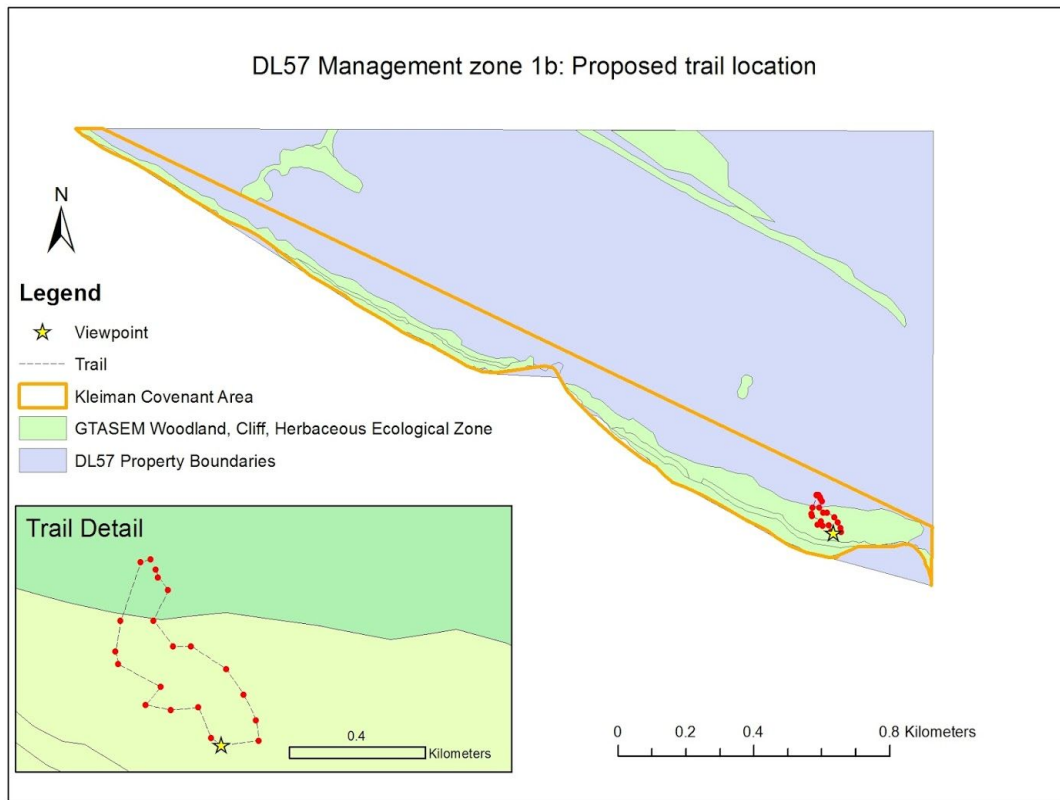


Figure 2. A map of proposed trail route. The most recent design is a trail that will follow the GPS points on the right side of the map to the viewpoint and end there rather than completing the loop. The trail (not the one shown here) will be less than 100 metres in length.

To prevent erosion over the years, the trail should be built with a “cross slope with an angle is greater than the trail profile gradient will be the most effective” (Favro, 2012). This way, water will run quickly over the side of the trail rather than going down the trail and causing erosion. This can be done easily by placing the trail on the sides of a slopes, rather than the depression between the slopes which catches water (Favro, 2012). These efforts will be the most cost effective because they prevent maintenance in the future.

We recommend using wood chips to cover the flat areas of the trail. Woodchips will make it clear where the trail is so visitors will be more likely to stay on the path, and the Conservancy already has wood chips available, so it'll be the most cost effective. Wood chips will provide a pleasant experience because they fit in well with natural surroundings, and they form a mat that is quiet and comfortable to walk on (Select

a Tread Surface, 2014). The chips become slippery when they are wet, so we recommend not using them on steeper slopes (Select a Tread Surface, 2014).

To make the viewpoint trail more accessible, stairs are recommended for portions of the trail that lead down significant slopes. There are many loose rocks along the coastal bluff which can be used to form a staircase. This will most likely be the most cost effective and least labourious option.

The Conservancy mentions that they would like to develop key partnership with local artisans in their management plan (2013, p. 43). Local artisans can help design interpretive signs along the trail. These signs can explore topics such as local ecology and Galiano Island’s history, and will provide an educational quality to the trail that aligns with the Conservancy’s goals. Local artisans can also help design a bench to place at the viewpoint. Ideally, the bench would be a large semicircle, but much of this will be up to the artisan’s interpretations.

There are a few limitations to the trail, such as safety and inevitable ecological damage. To make the viewpoint safe for school-aged children, we recommend a rope barrier around the viewpoint. The rope can be tied between the trees, it will be minimally invasive, and it will be very inconspicuous from the water below. To prevent as much damage to vulnerable ecosystems as possible, the trail has been carefully planned out. It also will be protecting many vulnerable ecosystems by keeping visitors on the trail, rather than ambling through the trees.

Table 1. Interpretive elements of the trail

Interpretive Sign	1	2	3
Location	Trailhead	Halfway point	Viewpoint
Content	Information on the sensitive ecosystems that the trail cuts through; an appeal to stay on designated trails	Historical information about DL57, the Conservancy, logging on the island and the importance of the old growth	Explanation of the view: midden at Montague Harbour, Ballingal Islets Ecological Reserve, Saltspring Island, Trincomali Channel, Cormorant nesting cliff, and nature reserve on islands off of Galiano



### **3.0 The Plan in Action**

#### **3.1 Control Invasive Alien Vegetation**

*Cytisus scoparius*, commonly known as Scotch broom, is the predominant invasive species growing around the trail site. Scotch broom is a nitrogen-fixing shrub that can create “variable changes in soil C, N, and decreases in extractable nutrients and available P. These changes, and other documented effects of Scotch broom on soil, are likely to have lasting effects on Douglas-fir growth after Scotch broom removal that will vary depending soil nutrient status at a given site” (Slesak, Harrington, & D’Amato, 2016, p. 281). A mechanical control will be the most beneficial method of plant removal in this case. The scotch broom in the area has a low density, so it is recommended that small shrubs be pulled and larger shrubs (with stalks wider than a pencil) be cut near the base (Garry Oak Ecosystems Recovery Team [GOERT], 2002). If there are rare plants near the shrub it is also recommended that it be clipped rather than pulled, no matter the size of the stalk, so the soil is not disturbed (GOERT, 2002). Timing is also a consideration, and the GOERT team suggest pulling happens in late fall, and clipping happens after flowering but before the seed pods are ripe (GOERT, 2002).

### **4.0 Looking to the Future**

#### **4.1 Impact Assessment**

Key to the success of a trail design such as this is the monitoring plan, which will determine whether the infrastructure is appropriately designed for the amount of traffic it receives. The monitoring procedures have to be simple and neither labour- nor cost-intensive; we suggest that they employ citizen science that is carried out by students of the Galiano Learning Centre. We are fortunate in the placement of our trail being on a dry bluff, as “water is the key culprit to trail degradation and environmental impacts” (Houston, 2012, p. 30). As such, we will not need to be concerned about the trail turning into a creek or widening due to users avoiding muddy patches. The main concern is that of foot traffic through the area disturbing sensitive ecological communities. Figure 4 shows the Coastal Douglas-fir ecosystem through which the trail will cut, resplendent with mosses, lichens, and succulents (an example of which is shown in detail in figure 5). We propose a monitoring guide such as the one shown in Figure 3, taken from a trail assessment proposed for Oregon Parks, to be provided to volunteers or students interested doing an assessment. Seeing as the trail is less than 100 metres in length, this would not be a labour-intensive job.

Rapid Trail Condition Assessment	
<b>Section</b>	100 ft minimum; 1/4 mile maximum – pre-determined by agency staff
<b>Point</b>	Points within the Section where impacts, obstacles or structures are bad
<b>Tread Width</b>	Measured in Feet
<b>Tread Surface</b>	<b>N</b> - Natural Surface; <b>DG</b> - Dirty Gravel (gravel used to harden trail); <b>CG</b> - Compacted Gravel; <b>P</b> - Pavement (cement, pavers, etc.)
<b>Mud &amp; Muck</b>	<b>N</b> - None; <b>M</b> - Mud on trail; <b>VM</b> - Very muddy, users walking around mud; <b>XM</b> - Extremely Muddy, can't get around or more than 3x tread width
<b>Impacts</b>	<b>W</b> - Washout (length in feet); <b>R</b> - Ruts (Inches deep); <b>L</b> - Landslide (length in feet); <b>U</b> - User created short-cut or trails
<b>Obstacles</b>	<b>DT</b> - Down Tree; <b>BR</b> - Brush growing into trail width
<b>Structure Repairs</b>	<b>SF</b> - Structure Failure (Any man-made structure that has failed, such as bridge, boardwalk, culvert, gate, etc. - Use notes to identify what has failed); <b>TS</b> - Trail Signs (Any kiosk, trail signs, trail markers, etc. that are damaged or potentially missing); Other - Note any other repairs or failures not identified above.
<b>Notes</b>	Use this section to provide additional information related to the section or point and/or condition that will be useful to assess repair priority and/or locate the site.

Figure 3. A trail condition assessment template originally designed for Oregon Parks, proposed by Rocky Houston. A completed table will inform management of the state of the trail and help decide future management strategies (2012, p. 31).



Figure 4. The proposed location for a section of the trail, through management area 1b.



Figure 5. Succulents found on the proposed Trincomali viewpoint trail.

## **4.2 Taking this Project Further**

Given the short timeframe of our involvement in this project, it was not possible to involve all of the elements we see as important in our proposal. Before breaking ground on this project, we recommend the following:

1. A conversation with an indigenous elder who may provide more insight on the historical land use of this area, as well as what they see as most important to include in the interpretive signs
2. Organizing an event to draw local youth and artists to the conservancy so that they may contribute their art to the interpretive signs
3. Finding an artist who would be willing to use sustainable practices to produce a driftwood “conversation” bench

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