University of Victoria School of Environmental Studies

The Alumni Chip Trail Interactive Native Medicinal Plant Walk: A Restoration Project

ES 341 Professor Eric Higgs

By Jake Burton, Gabrielle Barnes, Megha Bharadwa, Olivia Hall & Ginny White

Table of Contents

1. Introduction

Jake Burton

1.1 The Alumni Chip Trail Native Medicinal Plant Walk- Ethnoecological Restoration Project

Traditional Ecological Knowledge is defined by Fikret Berkes in his book *Sacred Ecology* as, "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission about the relationship between living beings (including humans) with one another and with their environment" (Berkes, 2012, p. 7). The traditional ecological knowledge of the Coast Salish peoples, is an important aspect of our project. Integrating this knowledge into a interactive walk on the UVic campus is a main part of the project.

Our restoration project for Eric Higgs' ER 311/ES 341 class is designed to asses the loss of knowledge surrounding the ethnobotany of native/medicinal plant species that are found on the UVic campus; we are specifically focusing on the 2.9 km Alumni Chip Trail that loops around the UVic campus. Firstly, we will do an analysis of Chip Trail in form of a map representing a survey of the different ecosystems present along the trail, as well as a identifying native-medicinal plant species that can be found in these ecosystems; our methods in this will be outlined in the later sections of this paper. The next part will be to identify the problem that is to be restored. After will be the statement of our three goals for restoration and the objectives attached to each goal. Following this, will come the plan to have a successful restoration, this will include a copy of a brochure made to ensure the restoration of native-medicinal plants. Then an outline of the budget needed and the timeline. Lastly, a guide for monitoring will be proposed. As defined in

the IUCN's *Ecological Restoration for Protected Areas :Principles, Guidelines and Best Practices* for successful restoration to occur it needs to adhere to a basic set of guideline; the restoration should be effective, efficient, and engaging (Keenleyside, et al., 2012).

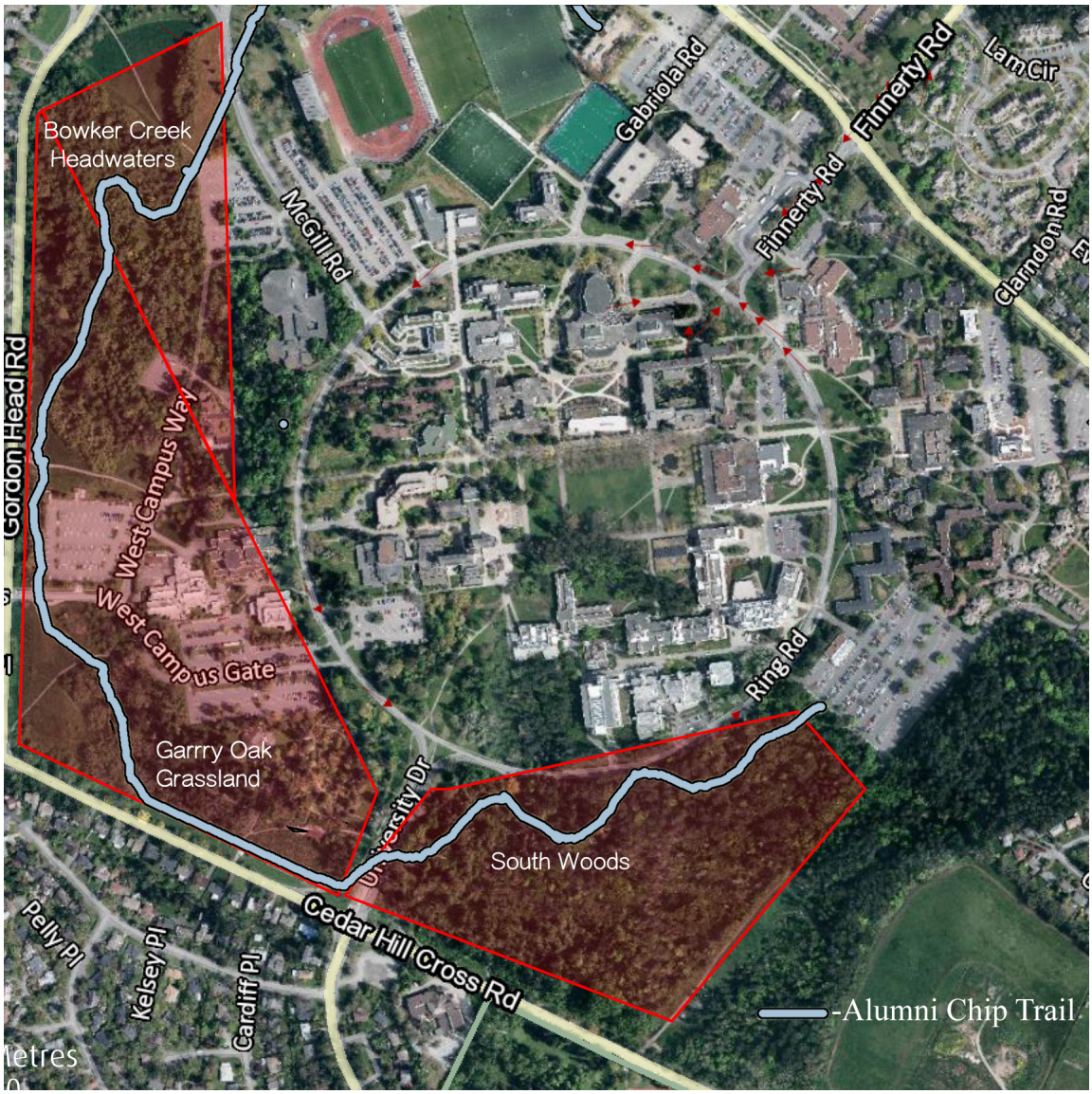
1.2 Effective, Efficient and Engaging Ethnoecological Restoration

As stated above it is essential for restoration to be effective, efficient and engaging, with this, success will ensue. In this section this restoration project will be assessed using those guidelines. For this project to be effective it needs to "re-establish and maintain the values of a protected area" (Keenlyeside, et al., 2012, p. 15). To do this a brochure will be made to distribute knowledge of the traditional and medicinal uses of plants species that they are likely to encounter on the UVic campus. For this project to be efficient, it needs ensure that the budget it is working with is reasonable and the timeline and monitoring aspects aren't asking for too much of the participants. Lastly for successful restoration this project needs to be engaging. This project is engaging because of the interactive brochure outlining the medicinal properties of several native plant species on the Alumni Chip Trail. It creates collaboration between the stakeholders involved (UVic, the restorationists, the Indigenous knowledge holders from which the medicinal properties originated, and others) and the participants (students doing the walk). As this project generally aligns with these three guidelines, success has potential to unfold.

2. Site Analysis

Jake Burton

Figure 1. Map of the Alumni Chip Trail



JPG created on November 13th, 2013, using 2009 aerial photography from the CRD's Regional Community Atlas, http://crdatlas.ca/

2.1 Chip Trail Today

The UVic Alumni Chip Trail is 2.9 km and known as a popular jogging trail for students living on residence and in surrounding areas (Jogging Route Map, n.d.). The portion of

Chip Trail we will be focusing on is in the Bowker Creek headwater area, the Garry Oak meadow area and the South Woods area; this can be seen in Figure 1. The reason we have chosen not to focus on the beginning of the trail, near the recreation facilities on campus, is because there are not any natural ecosystems beside the trail at this part; this was observed in a walking analysis of the site. Within the site there are several different sections that have distinct ecological systems. At the Bowker Creek Headwaters area we observed that it is very wet and boggy, and could be classified as a wetlands area (Harrop-Archibald, 2007). This area is heavily forested by black cottonwood (*Populus trichocarpa*) and bigleaf maple (*Acer macrophyllum*) trees as well as some western red cedar trees. In the understory there are also lots of other species present, including ones that are focused on in our brochure. These include, skunk cabbage (*Lysichiton americanus*), cascara (*Rhamnus purshiana*), bracken fern (*Pteridium aquilinum*), and snowberry (*Symphoricarpos albus*) (Lloyd, 2004). Following this area, in the south-west of the UVic Campus there is garry oak and camas meadow ecosystem (Harrop-Archibald, 2007). This section of the trail is characterized by a large open meadow, which is home to species of camas (*Camassia spp.*) as well as garry oak (*Quercus garryana*). The next section of the trail we have defined is the coniferous woodland ecosystem of South Woods. This area is home to many of the native-medicinal plant species we are focusing on, such as, bracken fern, snowberry, oregon grape, bald hip rose, cascara, and salal (Harrop-Archibald, 2007). This site has been subject to restoration in former ES 341 classes; projects like "The Alumni Garry Oak Meadow" project, the South Woods restoration project and the Bowker creek restoration project. All of these areas house a large amount of native-medicinal plants and are an important part of UVic today; these

areas are also and extremely important aspect of this areas history, which has been forgotten by many.

2.2 Historical Chip Trail

The peoples whose lands are the area that now is home to the UVic campus and our restoration site are the Lekwungen peoples, specifically the Songhees Nation; these peoples have vast knowledge systems surrounding different aspects of the Victoria ecology (First Peoples' Language Map of B.C, 2008). The specific family group that inhabited what is now UVic and the surrounding areas, are called the Chekonein (History of Songhees Reserve Lands, n.d). Their village sites border the shoreline of Carboro bay, but they would've used and heavily managed their surrounding landscapes for resources, such as medicinal plants, as many Indigenous peoples did (History of Songhees Reserve Lands, n.d.; Berkes, 2012). The presence of the the Songhees people in what is this area, is a integral part of why an ethnoecological approach is taken when restoring medicinal plant knowledge.

2.3 Problem Identification

The general outline we will use to outline the problem identification will be based on the IUCN's "Restoration Processes for Protected Areas" chapter in their document Ecological Restoration for Protected Areas: Principles, Guidelines and Best Practices.

The Problem: The traditional ecological knowledge surrounding the native-medicinal plants in the Victoria area is in the process of being lost because of ignorance and lack of integration in the curriculum at UVic. A large portion of fellow students and

faculty members are clearly unaware of the vast knowledge surrounding the plants that grow in the areas that we live and study; evidence for this can be seen just by observation of our surroundings on campus and what is missing. This problem can be seen as a disconnect from the land that we are occupying on a daily basis; it is evident that people don't think twice about the knowledge attached to the numerous plant species found on and around the UVic campus. Stemming from this problem comes a lack of respect to the land. This is evident when looking at the state of the garry oak ecosystems abundance in their current range; there are less than 5% that "remain in near-natural condition" (GOERT, 2013). The fact that there is this much forgotten and unpreserved knowledge in the general minds of people inhabiting this land, require renewal and restoration;

The Cause:

The cause of this disconnect to the land and its uses can be traced back to the settlement of Europeans on the north-west coast of British Columbia (Deur & Turner, 2005). The original notion European settlers had was that the indigenous peoples of the region "'have no aboriginal plant which they cultivate'," consequently caused loss of land for indigenous peoples (Brown, 1873, p. 50: Deur & Turner, 2005, p. 336; Deur & Turner, 2005). This, thereby, established a loss of traditional ecological knowledge surrounding many plants and management practices that were used (Deur & Turner, 2005). This is evident in the general lack of knowledge indigenous and non-indigenous people have today at UVic. As Nancy Turner and Douglas Deur say at the beginning of the conclusion of *Keeping it Living*, a substantial portion of indigenous knowledge about plants in our times is lost and has to be interpreted by fragmented sources of information (2005).

Why Ethnoecological Restoration:

There are reasons why we are choosing to take an ethnoecological approach to restoration instead of an applied restoration approach. As will be outlined in our goals, we want to educate the public through identification of native plant species and we want to change people's views on native-medicinal plants; to be successful in this we aren't concerned with the abundance of the species or increasing the abundance, that would be a another project in itself. We hope to increase knowledge surrounding these important plant species, and hope that this restoration of knowledge will increases the likelihood of people to engage in applied restoration of natural systems in their lives.

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3. - Goals and Objectives

Megha Bharadwa

Policy/Vision:

This project aims to create socio-cultural connection to Alumni Chip Trail through identifying medicinal uses of plants, ensuring the trail's long-term protection.

The Alumni Chip trail is a recreational area surrounding the University of Victoria Ring Road. It is an important area to students, staff, and residents of the city. The plants on the trail have been generally uncared for, allowing for natural growth but also creating concern regarding invasive species such as English Ivy crowding out natives. Lack of knowledge of the situation perpetuates the problem, leading to this restoration project. This design aims to create awareness and social connection to the site, increasing inclination to ensure the ecological integrity of Chip Trail. However, knowledge of the existence of native species is likely not enough to create a sense of place. Creating an idea that there is usefulness among these plants gives purpose to their preservation, which is why medicinal properties of the plants were focused on. A brochure with medicinal properties and traditional uses of various native species on Alumni Chip Trail (showing where these species are and creating an interactive walk) was made to distribute around campus and hopefully create widespread knowledge, engaging people with the site and increasing disposition to preserve and protect the trail. Gauging people's interests is the main challenge that conservation of this area faces, and is what this project aims to remedy. This section will outline and explain specific goals and objectives for ensuring long-term protection of the Alumni Chip Trail, followed by possible limitations for this design.

3.1 - Goal 1: Increase engagement and awareness of the site's native species, educating the public through their identification and medicinal properties.

Goal statement: Natural and cultural heritage values influence the overall effective, efficient, and engaging aspects of restoration. Values associated with Aboriginal uses generate goals associated with educational or historical qualities of the site (Canadian Parks Council, 2008, p. 56). From observation of the area, it is clear that awareness of the Alumni Chip Trail's native species is low, let alone knowledge of medicinal properties. The public should be educated on the plants' indigenous, practical uses, creating social engagement with the site. Exposure and awareness are key to education and increased social engagement. We have identified objectives that we believe will increase people's consciousness of and interest in the Alumni Chip Trail's native species. Through this, the project will be engaging, a mark of good ecological restoration.

3.1.1 - Objective: Create opportunity for medicinal plant identification through an interactive brochure.

Simply by understanding the medicinal properties and practical uses of the native species on Alumni Chip Trail, students become engaged with the site. A serious limitation that this method poses, however, would be potential lack of interest among those the project attempts to reach out to. If students do not read the brochure, even if it is given to them, connection to place suffers a huge setback.

3.1.2 - Objective: Distribute the map in areas accessible to the public, particularly to students.

By increasing access to information without forcing people to go to the trail itself, social engagement can happen by bringing the site to the people rather than people to the

site. To do this, the brochure will be made available in the Student Union Building, the Environmental Studies Offices, in PDF form online, and potential other places such as in first year packages (depending on how well they are initially received). This is also a more efficient use of effort given that students are unlikely to go out to the trail and find information themselves if they do not know what to look for. Reliance on the university to do this may pose disadvantages, however, as regulations restricting areas of distribution may come into play.

3.2 - Goal 2: Create public connection to place, changing how people view native species on the trail and increasing inclination to preserve them.

Goal statement: Direct public engagement in restoration activities is key in facilitating development of deeper appreciation of natural systems and the threats they face, contributing to long-term societal commitment to restoration (Canadian Parks Council, 2008, p. 13). Observations of people among the school show a poor connection with Alumni Chip Trail's ecological importance. Restoring this is important to create a dynamic where people are inclined to conserve native species on their own, continuing the restoration project after it is implemented. After awareness is created, connecting to place through knowledge of practical uses of native plants is key to meaningful engagement with the site. We have created objectives that will help change views of native plants from unimportant to useful, thereby increasing partiality to preserve them.

3.2.1. - Objective: Create an interactive brochure that is comprehensive and eye-catching to catch the interest of a large number of people.

It is key that the general majority is involved in the project rather than just a small number of people, as this creates a louder public voice to be heard and acted on. The

brochure must be easy to understand and aesthetically pleasing to ensure that more people see it, are interested in it, and can appreciate its importance. However, creating more eye-catching handouts costs more than a simple, black and white paper. The issue of budget comes into play here but for a more engaging brochure a higher cost is necessary.

3.2.2 - Objective: Integrate traditional knowledge and medicinal uses of the plants into the brochure.

Showing practical uses and knowledge of plants gives reason to preserve them, instead of just for the sake of tradition. People are more likely to preserve the things they can use. The largest setback in this case is, again, public interest in the subject matter. The previous objective highlighted the importance of making the brochure as eye-catching and interesting as possible to attract a larger number of people. This objective rests on the idea that many students will be interested in medicinal practicalities of native plants on Alumni Chip Trail.

3.3 - Goal 3: Ensure the long-run protection/ecological integrity of Alumni Chip Trail.

Goal statement: Ecological restoration aims to restore non-material values and beliefs of protected areas (Canadian Parks Council, 2008, p. 13). It provides inspiration and connection with our natural world. Through sense of place, inclination to protect chip trail will increase. However, effective restoration also depends on recovering and maintaining ecological integrity (Canadian Parks Council, 2008, p. 16), which is the state of an ecosystem that displays biodiversity characteristic of the reference and is fully capable of sustaining normal ecosystem functioning (Society for Ecological Restoration, 2004). Chip trail is increasingly becoming home to more invasive species, and there is

potential for these invasives, such as the English Ivy, to crowd out many medicinal plants. Invasive species and lack of care compromise the ecological integrity of this area, and lack of awareness contributes to this problem. Strengthening connection with the natural world through education, as depicted by the first two goals, creates disposition to ensure the long-run protection of these native species on Chip Trail.

3.3.1 - Objective: Students in the Environmental Studies program must continually be made aware of this trail through walks in tutorials etc. These educational walks must be continued in the coming years.

Through observation and experience, it has been found that students in Environmental Studies have general knowledge of the importance of native species preservation, but not much knowledge of the plants themselves. Creating opportunities for students to look at the brochure, find these species on the trail, and understand their practicalities will help them become more involved in ensuring its ecological integrity. Setbacks of this implementation strategy may include unwillingness of Professors or Teaching Assistants to participate in or run the activity, given that it takes away from class time. However, reliance on these higher authorities is essential to getting students to engage in the place, as it forces students to consider the practicalities of the plants rather than hoping they do so on their own accord (as the brochures do).

3.3.2 - Objective: The interactive map must be printed over the long run and continually made available and distributed.

Especially if students are made aware of the importance of the native species in Chip Trail from their first year, inclination to preserve the area will increase and perpetuate over time. An issue in this case calls into question who is in charge of the

distribution, printing, and updating of the brochures should information change once the initial implementers of the plan graduate and/or leave the university. Possible organizers might be the Ecological Restoration Volunteer Network or the University of Victoria Students' Society. However, this would be the work of volunteers, so it may not be as reliable or consistently done.

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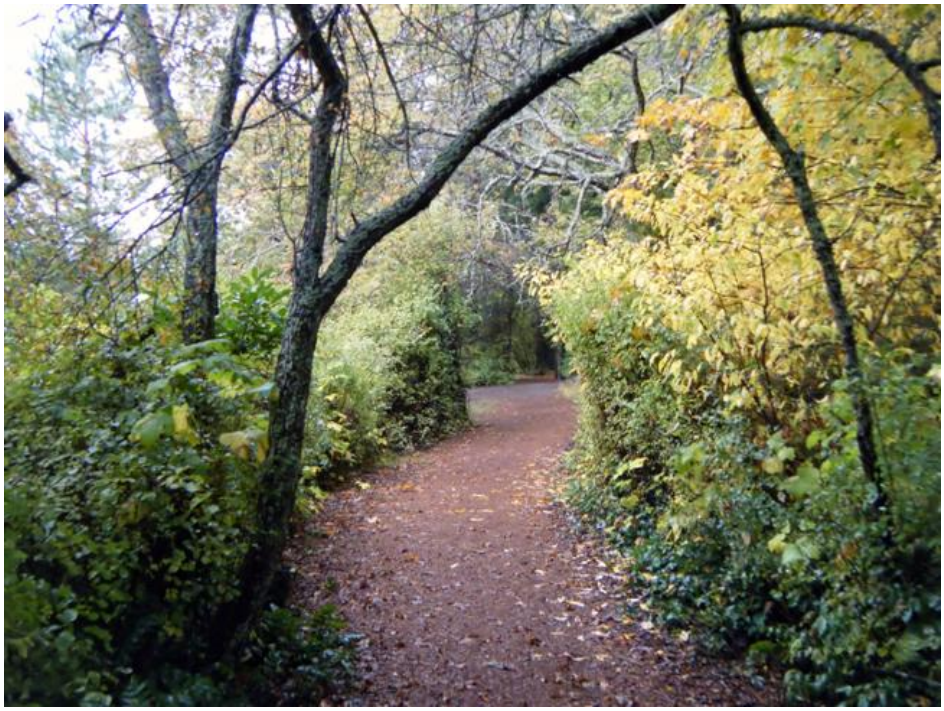

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4.0 Project Development & Implementation

Gabrielle Barnes

4.1 Project Design

- ✓ Create ‘interactive' map guiding people around chip trail
- ✓ Design educational pamphlet that includes map of chip trail and species identification
- ✓ Identify native plant species along chip trail
- ✓ Provide plant description to allow walker to identify plant species
- ✓ Describe site location and ecology

4.2 Structure

Our project is designed to promote native plants through a fun, interactive, educational tool. This project will encompass an interactive experience for the purpose of community awareness, cultural integrity, and connection to place. Building a strong foundation of knowledge and connection with the natural places that surround us establishes a sense a responsibility. Our brochure will include several prominent native plant species that can be identified along the Alumni Chip Trail, along with a corresponding map, site descriptions and additional resources. The design of our project encompasses three steps for the projects implementation, and three goals that will correspond to the design following implementation.

4.3 Scope

As defined in the IUNC document, the scope of the project is expressed in terms of both the geographic area involved and the timescale (IUNC, 2004). The creation of the brochure will be quickly attainable, where as the implementation of having the brochure be available throughout the university may take up to a couple years to become more widely used and supported. It can be assumed that departments such as the Environmental Studies would more quickly implement and support the use of the brochure, as their curriculum is already concerned with restoration and connection to place. Our project does not call for physical action of removal of invasive species or things of that nature. The intention of the Interactive Native Medicinal Plant Walk, as defined in our goals; is to educate, and in turn develop new perspectives and build stronger connections to the natural spaces around campus. Through education we hope to establish a strong foundation of knowledgeable students willing to protect natural spaces and native species in the future. The scope of our project is to tackle the initial steps to creating this foundation through providing the means to engage in natural spaces around campus and learn about native species.

4.4 Risk Management

The potential risks of this project include failure for the brochures acceptance in university departments, disinterest from students, losing support from partners, and habitat loss around chip trail. Major concerns identified in existing reports regarding the natural areas on campus include invasive species, the impact of construction and other

activities on soil conditions and drainage patterns, storm water management, and public access in riparian zones (Harrop-Archibald, 2007).

4.5 Implementation Plan

The three steps taken in formulating this project is outlined as: **engaging stakeholders, creating the pamphlet**, and **integrating the pamphlet.** This section discusses the steps involved in developing the project.

4.5.1 **Engage** stakeholders

- ✓ Students: our targeted group to educate about native plants and connect to natural spaces
- ✓ University Departments: needed to provide and support the brochure, and protect natural spaces around campus
- ✓ Coast Salish People: referenced for use of traditional ecological knowledge and medicinal plant uses
- ✓ Grounds Crew: upkeep of the Alumni Chip Trail, removal of invasive species, and support for native species

The stakeholders we've identified are integral to our restoration design as their knowledge and support is essential in the maintenance and very creation of this project. It is important to acknowledge that the University of Victoria is situated on the traditional territories of the Straits Coast Salish peoples, including several different communities, both Senchalhen, or Saanich, and Lekwungen, or Songish (Turner, 1995). In discretion to

the information we provide about traditional and medicinal uses it is important to acknowledge that this information is not reflecting Coast Salish traditions, rather information gained from external sources to reveal connections to place.

4.5.2 Create brochure

- ✓ Plant Identification
- ✓ Alumni Chip Trail Map
- ✓ Site Description around Alumni Chip Trail
- ✓ Additional resources to learn more

Identification Guide

The following species profiles are of the native plants we've included in our brochure, which can be viewed in appendix. The plants we chose are prevalent around the Alumni Chip trail and have important cultural significance to many coastal Northwest tribes, including the Straits Coast Salish peoples (Turner, 1995). Our inclusion of traditional and medicinal uses is to broaden the perspectives about the natural spaces around campus. The majority of the information used was gathered from the Coastal Plants of British Columbia guidebook (Pojar and Mackinnon, 2005).

Snow Berry *Symphoricarpus*

General: A deciduous shrub up to 3m tall and 2m wide

Leaves: 1.5-5cm long, rounded

Flowers: Flowers from July to September, flowers are small, greenish-white to pink, in small clusters of 5-15 (Blake, 2012)

Ecology: Found in coniferous forests

Traditional and Medicinal Uses: Berries not to be ingested**.** Traditionally, a decoction of the leaves can be used in

the treatment of colds, and a wash solution can be made out of the stems and leaves. (Duke, 2008) The berries can be rubbed on the skin to help the treatment for burns, rashes, itches, and sores (Millspaugh 1892).

Oregon Grape *Mahonia nervosa*

(Pojar and Mackinnon, 2005)

General: A flowering evergreen shrub up to 2.5m tall

Leaves: Wide, pinnately compound leaves, with 9-13 spiny leaflets.

Flowers: Clusters of yellow flowers, followed by purple fruits

Ecology: Found in partial shade to fairly moist, wooded forests

Traditional and Medicinal Uses: Roots and bark traditionally used to treat skin diseases such as fungal infections, eczema, and acne.

Western Red Cedar *Thuja plicata*

(Pojar and Mackinnon, 2005)

General: Large tree up to 60m tall. Branches tend to spread or droop slightly and then turn upward in a J-shape. Bark is grey to reddish brown, tearing off in long fibrous strips. The wood is aromatic.

Leaves: Scale like, opposite pairs, in four rows, closely pressed to the stem, in overlapping shingled arrangement that looks like a flattened braid. They are glossy yellowish green

Cones: 8-12 scales, egg shaped, about 1cm long, green when immature, becoming brown, woody and turned upward.3

Ecology: Grows best in moist wet soils with lots of nutrients. Usually in shaded forests, and is sometimes over 1,000 years old.

Traditional and Medicinal Uses: Red cedar has been called the "cornerstone of northwest coast Indian culture", and was used to make items such as dugout canoes and totem poles. The Red cedar was used for a variety of ailments, as an antifungal. Native healers used western red cedar for treating fevers, sore throats, coughs, colds, bronchitis, tuberculosis, diarrhea, menstrual disorders, and sore muscles (Deur, & Turner, 2005).

Baldhip Rose *Rosa gymnocarpa*

(Pojar and Mackinnon, 2005)

General: Spindly up to1.5 m tall, usually with numerous soft, straight prickles.

Leaves: Alternate, deciduous, compound with an odd number of toothed leaflets

Flowers: Pale-pink to rose, small, 5 petals

Fruits: Orange to scarlet, pear shaped 'hips'

Ecology: Occurs predominantly in the low shrub layer of moist, shaded forest

Traditional and Medicinal Uses: A tea can be made from the young leaves and twigs and drunk as a tonic. A decoction was also used as eyewash for sore eyes. High in vitamin C, but has to be eaten carefully avoiding inner seeds, which contain hairs that will irritate the digestive track.

Cascara *Rhamnus purshiana*

(Pojar and Mackinnon, 2005)

General: Shrub up to 10m tall

Leaves: Oval shaped and have a washboard surface

Flowers: Greenish-yellow

Fruits: Purple-black berries

Ecology: Found in swampy and wooded ecosystems, especially in the presence of red alder and vine maple.

Traditional and Medicinal Uses: Commonly used as a laxative and to treat sores in a wash (Deur, & Turner, 2005)

Trembling Aspen *Populus tremuloides*

General: Most distinct tree from the populus genus. Smaller tree, measuring 25m tall

Leaves: Fluttering, or trembling leaves, which activate under slight wind conditions. Leaves are flat leaf stalks, in triangular shape and are generally 7cm long. Leaves are usually dark green on the topside and light green on the bottom

Flowers: Flowers are 2-5 cm long.

Ecology:

Traditional and Medicinal Uses: Medicinally used to treat body odor. It was mixed with water to help clean and relieve odor.

Salal *Gaultheria shallon*

(Pojar and Mackinnon, 2005)

General: Shrub with hairy branched stems, grows up to 3m tall

Leaves: Evergreen, leathery, thick, shiny, egg-shaped with waxy tops

Flowers: Flowers in spring with white bells that are slightly sticky and hairy

Fruits: Berries are a dark blue-black colour and slightly hairy

Ecology: Grows in thickets in evergreen forests and in sunny moist areas. Salal is one of the most common forest under-stories

Traditional and Medicinal Uses: The Klallam, Bella Coola, and Quileute people would chew the leaves and spit them on burns (Deur, & Turner, 2005) .

Kinnikinnick *Arctostaphylosuva-ursi*
(Pojar and Mackinnon, 2005)

General: Trailing shrub, up to six inches tall.

Leaves: Evergreen, bright green, leathery, and spoon-shaped

Flowers: Pinkish-white, urn shaped flowers

Fruits: Red berries

Ecology: Grows in low to alpine elevations, in sandy, well-drained and exposed sites

Traditional and Medicinal Uses: The leaves contain arbutin, a powerful astringent, which has antiseptic effect of the urinary tract, used to treat kidney and bladder infections. Traditionally smoked by the Haida, Coast Salish and Nuu-Chah-Nulth for bladder and kidney infection .

Skunk Cabbage *Symplocarpus foetidus*
(Pojar and Mackinnon, 2005)

General: 1-5 feet, herb that gives out a skunk-like odor

Leaves: leaves are thin, net-veined, elliptic shape up to 1.5 meters long, waxy and dark green.

Flowers: Numerous small flowers on thick axis that is hooded by a large bright yellow sheath.

Ecology: Grows in wet soil along streams or springs, in wooded areas, and in bogs.

Traditional and Medicinal Uses: The roots were traditionally cooked, eaten and prepared in many ways. A tea made from the roots is known to treat breathing problems such as asthma, coughs, and bronchitis (Brill, 2008). Also known to aid nervous system disorders, and treat infections, and muscle pains.

Bracken Fern *Pteridium aquilinum*
(Parish, 1948)

General: 3-6 feet tall fern

Leaves: Blades triangular, 2-3 times pinnate, hairy, leaflets 10 or more pairs, upper one reduces, ultimate segments round toothed.

Flowers: Produces spores. Covered by rolled leaf margin

Ecology: Grows in large colonies in fields, and bushy and in wooded areas.

Traditional and Medicinal Uses: Smoked to treat headaches, and a tea made from the roots was used for stomach cramps and diarrhea. Used by many Northwest Coast tribes to line traditional pit fire. (Deur, & Turner, 2005)

Site Description of Alumni Chip Trail (Harrop-Archibald 2007)

See appendix

Garry Oak

- Open grasslands
- Tapestry of flowers
- Rocky outcrops
- Look for Gary Oak, and Baldhip rose and Kinnikinnick

Bowker Creek

- Wet, moist
- Forested, high coverage
- One of the largest watersheds in the region

- Look for Skunk Cabbage, Oregon Grape, Cascara, Bracken Fern, and Snowberry

Southwoods

- Second growth trees less then 100 years old
- Coniferous
- Large, moist area
- Look for Snowberry, Oregon Grape, Baldhip Rose, Cascara, Gary Oak, and Bracken Fern

4.5.3 Implement Brochure

- ✓ Take a stroll with interactive map for a short, guided walk to get introduced to 10 familiar native plants and learn about their cultural significance.
- ✓ Include in new student orientation programs
- ✓ Intergrade into classroom curriculums
- ✓ Have available online in the maps section of the University of Victoria

4.6 Goals and Design

The following section reiterates our restoration goals in conjunction with the reasoning of our design elements and course of action. Once the brochure is implemented into the university department's students can commence action through engaging in the interactive learning experience, proceeding with re-establishing meaningful connections to the natural spaces along Chip trail for the purpose of protecting the integrity of its biodiversity and ecosystem functions.

4.6.1 Expose: by increasing engagement and awareness of the site's native species, through educating the public about the plants medicinal and traditional properties.

The Alumni Chip Trail Native Medicinal Plant brochure exposes students to a greater understanding of native species around campus and their traditional medicinal uses. Exposing elements of the landscape that may not have been of interest before broadens ones knowledge and understanding of their surroundings. The best plant choices for

landscapes are the native plants that thrive naturally in our region. A native plant includes those species that were here prior to European settlement and are key to maintaining the ecosystem functions and biodiversity we need. Biodiversity provides protection from and resilience against environmental challenges. It is needed for ecosystem health, and is essential to maintain sustainable livelihoods (Pilgrim and Pretty, 2010, p. 2). Getting to know the natural spaces around University of Victoria helps create connections to place through identifying the native richness and beauty of our unique region. This guide will help students identify and familiarize themselves with native species along Chip Trail at the University of Victoria. Inside the brochure there are 10 native species to identify along Alumni Chip Trail and additional resources to learn more (*see appendix*).

4.6.2 Learn and Connect. Increase engagement and awareness of the site's native species, educating the public through their identification and medicinal properties.

Through engaging in an interactive learning experience we are able to establish stronger connections to place. The interactive learning model provided by the brochure allows for engagement with a natural space, creating deeper connections. Largely the disconnections to natural spaces are a reflection of our social systems. Our perspectives of nature encourage destructive practices and have led us to believe that nature and culture are two separate entities. Just as biological diversity increases the resilience of natural systems, cultural diversity has the capacity to increase resilience of natural systems (Pilgrim and Pretty, 2010, p. 2). The inclusion of traditional and medicinal uses in the pamphlet is to contribute to the integrity of maintaining biodiversity and connection place. Many causes

of biodiversity loss are also responsible for the loss of cultural diversity; therefore, implementing a dynamic learning experience that includes traditional practices of the native species helps maintain the interdependencies between nature and culture. Encouraging interactions with the natural spaces around the University of Victoria has the intent on expanding students perspectives and creating meaningful connections.

4.6.3 Protect. Ensuring the long-run protection and ecological integrity of Alumni Chip Trail.

There is a higher inclination to protect a place that has cultural significance and a meaningful connection to a community. The purpose of establishing a relationship between students and chip trail is to educate, and in turn connect the student body to a natural space formulating a group more willing to protect native species for the sake of biodiversity and cultural diversity. In the IUNC guide it is outlined that the first phase to restoration processes to be taken should be stakeholder engagement (IUNC, 2004, p. 56). Our project focuses strongly on this element for the purpose of establishing a strong foundation of stakeholders willing to protect the natural spaces around the Alumni Chip trail in future predicaments. Conceptualizations of the relationship between human societies and nature shape the way in which we see and treat the world (Pilgrim and Pretty, 2010, p. 2). Resilience can be at its strongest when connections are maintained or rebuilt, and when human and biological systems act together. Creating an 'ecoculture' comprises human cultures to retain, or regain, their connection with the local

environment and in doing so improve their own resilience to challenges we face such as climate change and loss of biodiversity (Pilgrim and Pretty, 2010, p. 11).

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5. Timeline and Budget

Olivia Hall

5.1 Time Line

As a group we visited the University of Victoria Alumni Chip Trail to gain a sense of knowledge of the existing native plant species in the area. We wrote a site description of the trail and mapped out areas where specific native species occupy to ultimately create a map that identifies native species on the Alumni Chip Trail that carry medicinal properties. After having gained a sense of knowledge of the existing native plant species on the Alumni Chip Trail, we met with Peter Roberts, the University of Victoria's facilities management gardener in our lab tutorial. Our group discussed with Peter where specific native plant species are found on the trail as he is very knowledgeable of the Alumni Chip Trail. After creating a complete map of the native species with medicinal properties located on the trail, our group thoroughly researched the medicinal properties of ten of these native species. Following our research, we created brochures that contained a map displaying the location of ten native plant species on the Alumni Chip Trail and outlined the plants medicinal properties.

Once the brochures have been completed, our group would distribute these brochures around the University of Victoria campus. Educating people of the medicinal properties of native plant species on campus would be done in a variety of different ways including:

<u>Placing Brochures in Easily Accessible Areas on Campus</u>

These brochures would be distributed in areas of the University of Victoria that are easily accessible to the public. Brochures would be placed in the Student Union Building where

a high percentage of students' hangout, the David Turpin Social Science building which is home to environmentally conscious students, and the Jack Petersen Health Centre where ill students can be informed of the medicinal properties of native plant species located on campus.

Implementing an Interactive Walk Along the Alumni Chip Trail

In order to successfully educate people of the medicinal properties of native plant species on campus at the University of Victoria, an interactive walk along the Alumni Chip Trail could be implemented into the lab tutorials of students in Environmental Studies. This would allow students to gain a deeper connection to their surrounding environment on campus and gain thorough knowledge of the native plant species in the area that carry medicinal properties. The interactive walk along the trail would be led by professors and teaching assistants in the environmental studies faculty.

Including Brochures in New Student Orientation Packages

To inform a broad range of students in different faculties at the University of Victoria of the medicinal properties of native plant species on campus, brochures would be included in the new student orientation packages to educate a broader range of students as opposed to solely environmental study students. On average, the University of Victoria welcomes approximately six thousand new students a year, therefore a large sum of brochures would need to be printed.

Posting a PDF Brochure on the University of Victoria School Trail Website

A PDF copy of the brochure would be posted on the University of Victoria school website under the "Campus Information" and "Maps, Buildings, and Directions" section. This would increase the accessibility of the map and reduce the amount of brochures needed to be printed.

As described by the International Union for the Conservation of Nature, ongoing "monitoring and adaptive management frameworks over the long-term" (IUCN, 2012, p.39) are needed to successfully implement a project. The department of environmental studies would ensure that educational interactive walks on the Alumni Chip trail are continued at the University of Victoria. Ongoing maintenance of the Alumni Chip Trail to ensure the trail is esthetically pleasing must also be attained in order for the identification of medicinal native plant species on the Alumni Chip Trail to be enjoyable for the public. The environmental restoration volunteer network group on campus would ensure the removal of invasive species in the area.

5.2 Budget

As stated by the International Union for the Conservation of Nature, an efficient ecological restoration project "maximizes beneficial outcomes while minimizing costs in time, resources and effort" (International Union for the Conservation of Nature, 2012, p.19). We aimed in designing a project that is easy to implement with minimal costs. The only costs associated with implementing this restoration project are the costs of printing the educational brochures. The brochures will be printed in colour to ensure they are visually interesting and eye-catching to the public. They will also be printed on 100%

recycled environmentally friendly paper with vegetable based inks to reduce environmental impacts.

Due to possible limitations to the funding of implementing the project, our group has outlined the costs of printing brochures that would only be distributed only around the campus of the University of Victoria and the costs associated with printing brochures that would be distributed in a combination of ways.

Cost of Printing 500 Brochures (8.5" X 11")

Number of Brochures	Cost ($)
500	$120.95

Five hundred brochures would be printed from the "Green Printer" sustainable printing services. These five hundred brochures would be displaced around the campus of the University of Victoria in easily accessible areas. This would give the public the opportunity of learning about their surrounding environment, resulting in a greater public connection to their surrounding environment, restoring connections to place.

Cost of Printing 10,000 Brochures (8.5" X 11")

Number of Brochures	Cost ($)
10,000	$752.72

Ten thousand brochures would be printed from the "Green Printer" sustainable printing services. Approximately six thousand of these ten thousand brochures would included in new student orientation packages and the rest would be continuously distributed around the campus of the University of Victoria.

The funding to print brochures for the project could come from the University of Victoria Environmental Studies department.

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6. Monitoring

Ginny White

6.1 Description of Monitoring

As a restoration project designed around education monitoring becomes the hardest part. How do you assess if you are educating enough people, or educating to a high enough standard, or even educating at all. For monitoring of an ecological restoration to be successful you need a specific set of techniques and mechanisms to help you assess whether or not your goals and objectives are being met. You cannot effectively assess a project without an adaptive management plan in place; an adaptive management program involves monitoring, evaluation of process, adjustment of goals and objectives, and communication (IUCN 2004). Communication with stakeholders throughout the entire restoration project ensures that all parties involved are up to date and aware of successes and failures in regards to the goals and objectives defined. Monitoring steps need to be directly related to the objectives of the project and involve determining the monitoring frequency, level of detail and duration of the monitoring program (Parks Canada 2008).

6.2 Monitoring Program Step 1- University of Victoria Class Engagement

6.2.1 Purpose

The main proponent of monitoring will be done through select class involvement of courses at the University of Victoria. By incorporating the Alumni Chip Trail Interactive Native Medicinal Plant Walk into lecture, lab, or tutorial time of courses that have an ecology or environmental focus we can ensure that the trail and the program are being used and judge how well the education proponent is working. This

involvement provides the stakeholders with a consistent group of users, and can utilize professors to inform them of problems or issues that may arise with the program, including damage to the trail, and presence of invasive species.

6.2.2 Courses to be Included

Courses to be included in the program directly will be based on course outline and correlation between subject matter and the purpose of the restoration project.

ES 200- Introduction to Environmental Studies- Introduction to the symptoms and sources of environmental problems and approaches to resolving them (University of Victoria 2013). As the base course for all environmental studies students' involvement in the Alumni Chip Trail Interactive Native Medicinal Plant Walk would be a good opportunity for students to gain a base knowledge of some of the medicinal plants that are found naturally on campus. This course involvement would mean that all environmental studies students would be required to participate in the walk and ensure future use and the continuing education of more students who have a base interest in the environment and the native plants we are surrounded by.

BIOL 215- Principles of Ecology- an introduction to factors controlling the distribution and abundance of plants and animals (University of Victoria 2013).

As a science course the involvement of this class in the restoration project would ensure use of the walk by not only environmental studies and social science students, and would show a broader base of students that this exists. Crossing over into other faculties will help spread the word about the project and hopefully increase awareness

of the presence of native medicinal plants on campus. This will also increases numbers of students required to do the walk to help with the monitoring program. Geog 101A- Environment, Society, and Sustainability- Introduction to the functioning of the biosphere, the ways in which humans alter natural processes, environmental consequences of these alterations and the implications for sustainability (University of Victoria 2013). As a base first year course in the Social Sciences involvement of this course in the program would spread awareness of the project throughout more faculties. The involvement of this course would help integrate how humans have altered the natural processes of the campus through the introduction of alien species as well as show students that there is still a large proportion of native species with useful and medicinal properties on campus.

The inclusion of this restoration project into three classes within two different faculties will help monitoring by ensuring there is consistent use of the trail to make the project successful. As without constant use it is impossible to judge whether or not people are aware of the project and whether or not we are accomplishing our education goals.

6.2.3 Professor Involvement

Professor involvement will be key to the determination of whether the class involvement can be considered a success as we can rely on them to pass information on to stakeholders regarding student feedback, ideas for improvement, and the state of Chip Trail. Professors will also give a feedback/evaluation form to students to give

stakeholders a better idea of how effective the class involvement is. The evaluation form will consist of seven short questions,

1. Had you heard of the walk before your professor announced it?
2. If yes, had you been on the walk before?
3. Did you enjoy the chip trail walk with the brochure to help you recognize native and medicinal plants found around the trail?
4. Did you feel a closer sense of place after the walk?
5. Did you learn something new? If so, what did you learn?
6. Did this walk increase your desire to improve and restore natural spaces and preserve native species?
7. Would you recommend the walk to new students?

With this survey stakeholders will directly be able to infer whether or not the goals and objectives are being met.

With this class involvement, professor feedback, and the use of the evaluation form stakeholders can decide whether the current project is successful or whether changes to the goals and objectives, or design need to be made.

6.3- Monitoring Program Part 2 - Volunteer Involvement

6.3.1 Volunteers

The only way we can successfully monitor a project designed around education is with the help of volunteers. Without volunteers it is almost impossible for stakeholders and project designers to know what progress is being made with the project, and whether or

not it is gaining recognition with students on campus. Volunteers will determine whether or not the goals and objectives are being met, and suggest changes to the stakeholders if they are not. Volunteers will be recruited through the Environmental Studies student association, ESSA, the Ecological Restoration Volunteer Network, or the University of Victoria student society. These volunteers will be crucial to the monitoring program, and will be required to inform classes at the beginning of term of the project, hand out brochures to classes, check brochure stocks, print new brochures when necessary, and edit the website proportion; involving counting hits to the website and developing advertisement goals.

6.3.2- Volunteer Duties

Volunteers will be the eyes and ears on the University of Victoria campus for stakeholders regarding the project. They will be the ones to decide whether the project is a success or whether changes to the goals and objectives need to be made.

Duty 1- Speak in classes to inform students from all faculties of the project, as well as hand out brochures to students. This duty helps spread awareness of the project, and increase the number of students who are aware of it. If people are not aware of the project it is impossible to meet any of the required goals and objectives. The more students that know about it the higher the chance of success with the project and higher number of people educated on the native species present on campus.

Duty 2- Recruit new volunteers

This duty will involve holding meetings to discuss the project. An opportunity for all volunteers to get together and collaborate on feedback they have received, as well as

inform new volunteers of duties and expectations. By recruiting new volunteers we are ensuring constant monitoring of the program into the future.

Duty 3- Check brochure stocks

This involves getting more brochures printed if necessary. This is a direct reference to how well the project is being received on campus. If brochures need to be restocked regularly we can infer that students are taking interest in the project. This duty relates to goal two: create public connection to place, changing how people view native species on the trail and increase inclination to preserve them. The brochure use relates to how well people are receiving the project, and how many people are taking interest.

Duty 4- Online PDF

This duty will directly monitor the online proportion of the brochure and map. By counting hits and number of times the brochure/map is being searched for or opened we can decide whether or not it is a useful proportion of the project. If it is not gaining enough support, perhaps the design needs to be reconsidered, or the online PDF needs to be eliminated. This would be a volunteer decision to decide how many hits are considered a success. This relates to goal one: increase engagement and awareness of the site's native species, educating the public through identification and their prominent medicinal properties. If the online proponent isn't providing the opportunity for goal one to be a success, perhaps it is not a necessary part of the project.

Duty 5- Bi-Weekly Walks

By sending a volunteer onto the Chip Trail twice a month we can ensure the trail is staying in good conditions. This duty is a back up to professor engagement incase professors become too busy with their own courses to provide feedback about the walks

they have completed with their students. Volunteers will see for themselves how the trail is doing, if anything has changed since the last walk, if we need to send a volunteer group, or maintenance crew into the area to provide some support for the environment. This would monitor goal three: To ensure the long-run protection/ecological integrity of Alumni Chip Trail. Without constant surveillance of the trail it is impossible to tell if the goal three objectives are being met. As the project develops and grows over time perhaps the schedule of volunteer walks can be changed. If there is more support for the project we may have to increase our presence on the trail, or decrease as necessary.

6.4 Monitoring Program Part 3 – Length of Program

6.4.1 Monitoring Timeline

In order for this monitoring program to be successful, and in turn for the whole project to be successful you must continue to monitor the program over a long-term period. This monitoring program needs to be consistent over time for as long as the project is functioning. This is necessary because without constant monitoring you cannot know whether your project is functioning to its full capacity or not, or whether changes need to be made to the design. If the monitoring program were to be eliminated after a year of the project because it appears to be functioning on its own the whole project would collapse. You cannot have an effective restoration project that does not have monitoring every step of the way. Reporting on results is an integral component of the management cycle, and full functioning of the project is not possible without this (Parks Canada 2008). Therefore, the monitoring program is a never-ending proponent, as long as the project is

still functioning. The project will constantly need volunteers, class involvement, and professor respect to have a long-term functioning restoration project.

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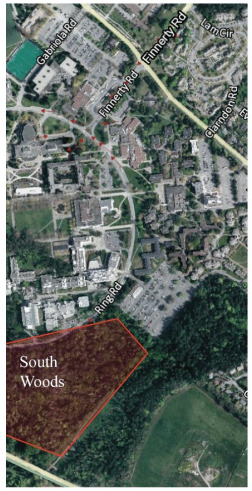
On the Chip Trail

and the plant species found within

Bowker Creek Headwaters

Wet, moist
-Forested, high coverage
-One of the largest watersheds in the region
-Look for Skunk Cabbage, Oregon Grape, Cascara, Bracken Fern, and Snowbery



JPG created on November 13th, 2013, using 2009 aerial photography from the CRD's Regional Community Atlas from, http://crdatlas.ca/

Invasive Species Problem

With the presences of invasice species such as scotch broom (Cytisus scoparius), and english ivy (Hedera helix), a lot of native-medicinal plant species have been overgrown and degraded (). If you are interested in helping solve this problem on campus and elsewhere, a good place to start is at UVic's Ecological Restoration Volunteer Network (http://web.uvic.ca/~-nature/)

References

All images are from, Washington Native Plant Society,
except inner background and front,
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Society (wnps.org)
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unless otherwise stated.

Native Medicinal Plants on The Alumni Chip Trail

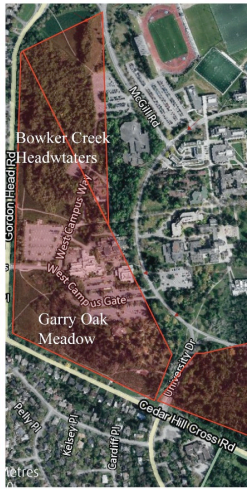
an interactive walk.

The lands which UVic is currently on are the lands of the Songhees Nation. They are important culturally for many reason, especially for the collection of native-medicinal plant species. These species of plants are still observable on Chip Trail today; identification guides and descriptions are inside this brochure.

Common Ecosystems

Garry Oak Meadow

-Open grasslands
-Tapestry of flowers
-Rocky outcrops
-Look for Gary Oak, and Baldhip rose and Kinnikinnick



South Woods

-Wet, moist
-Forested, high coverage
-One of the largest watersheds in the region
-Look for Skunk Cabbage, Oregon Grape, Cascara, Bracken Fern, and Snowberry

Native-Medicinal Plant Species on Chip Trail

Cascara *Rhamnus purshiana*
General: Shrub up to 10m tall **Leaves**: Oval shaped and have a washboard surface **Flowers**: Greenish-yellow **Fruits**: Purble-black berries **Ecology**: Found in swampy and wooded ecosystems, especially in the presence of red alder and vine maple.
Traditional and Medicinal Uses: Commonly boiled down into a syrup and used as a laxative aswell to treat sores in a wash.

Garry Oak *Quercus Garryana*
General: Crooked composure and , measuring up25m **Leaves**: Round lobed, 12cm in length, darker green on top and lighter on the bottom. In the fall they turn light brown **Acorns**: 2-3cm, rough cups. They are edible .
Traditional and Medicinal Uses: In the Coast Salish areas the acorn were boiled to reduc bitterness and then eaten. Boiled bark was part of a boiling medicine from the Saanich people to fight off tuberculosis among other things.

Salal *Gaultheria shallon*
General:Shrub with hairy branched stems, grows to 3m **Leaves**: Evergreen, leathery, thick, shiny, egg-shaped with waxy tops **Flowers**: Flowers in spring with white bells that are slightly sticky and hairy **Fruits**: Berries are a dark blue-black colour and slightly hairy **Ecology**: Grows in thickets in evergreen forests and in sunny moist areas. Salal is one of the most common forest understory
Traditional and Medicinal Uses: The Klallam, Bella Coola, and Quileute people would chew the leaves and spit them on burns.

Western Red Cedar *Thuja plicata*
General: Large tree up to 60m tall. Branches tend to spread or droop slightly and then turn upward in a J-shape. Bark is grey to reddish brown, tearing off in long fibrous strips. The wood is aromatic. **Leaves**: Scale like, opposite pairs, in four rows, closely pressed to the stem, in overlapping shingled arrangement that looks like a flattened braid. They are glossy yellowish green **Cones**: 8-12 scales, egg shaped, about 1cm long, green when immature, becoming brown, woody and turned upward.3 **Ecology**: Grows best in moist wet soils with lots of nutrients. Usually in shaded forests, and is sometimes over 1,000 years old.
Traditional and Medicinal Uses: Red cedar has been called the "cornerstone of northwest coast Indian culture", and was used to make items such as dugout canoes and totem poles. The Red cedar was used for a variety of ailments, as an antifungal. Native healers used western red cedar for treating fevers, sore throats, coughs, colds, bronchitis, tuberculosis, diarrhea, menstrual disorders, and sore muscles.

Baldhip Rose *Rosa gymnocarpa*
General: Spindly up to1.5 m tall, usually with numerous soft, straight prickles.
Leaves: Alternate, deciduous, compound with an odd number of toothed leaflets
Flowers: Pale-pink to rose, small, 5 petals
Fruits: Orange to scarlet, pear shaped 'hips'
Ecology: Occurs predominantly in the low shrub layer of moist, shaded forest
Traditional and Medicinal Uses: A tea can be made from the young leaves and twigs and drunk as a tonic. A decoction was also used as eyewash for sore eyes. High in vitamin C, but has to be eaten carefully avoiding inner seeds, which contain hairs that will irritate the digestive tract.

Braken Fern *Pteridium aquilinum*
General: 3-6 feet tall fern **Leaves**: Blades triangular, 2-3 times pinnate, hairy, leaflets 10 or more pairs, upper one reduces, ultimate segments round toothed. **Flowers**: Produces spores. Covered by rolled leaf margin **Ecology**: Grows in large colonies in fields, and bushy and in wooded areas[1]
Traditional and Medicinal Uses: Smoked to treat headaches, and a tea made from the roots was used for stomach cramps and diarrhea. Used by many Northwest Coast tribes to line traditional pit fires.

Skunk Cabbage *Lysichiton americanum*
General: 1-5 feet, herb that gives out a skunk-like odor **Leaves**: leaves are thin, net-veined, elliptic shape up to 1.5 meters long, waxy and dark green. **Flowers**: Numerous small flowers on thick axis that is hooded by a large bright yellow sheath. **Ecology**: Grows in wet soil along streams or springs, in wooded areas, and in bogs.
Traditional and Medicinal Uses: The roots were traditionally cooked, eaten and prepared in many ways[1]. A tea made from the roots is known to treat breathing problems such as asthma, coughs, and bronchitis. Also known to aid nervous system disorders, and treat infections, and muscle pains.

[1] Native American medicinal plants: an ethnobotanical dictionary
Moerman, Daniel E. ISBN 1604690356
[2] Springsteen, 2013
[3] Moran, 2013
background image edited from, John Williams (2013)

Kinnikinnick *Arctostaphylos uva-ursi*
General: Trailing shrub, up to 6 in tall. **Leaves**: Evergreen, bright green, leathery, and spoon-shaped **Flowers**: Pinkish-white, urn shaped flowers **Fruits**: Red berries **Ecology**: Grows in low to alpine elevations, in sandy, well-drained and exposed sites
Traditional and Medicinal Uses: The leaves contain arbutin, a powerful astringent, which has antiseptic effect of the urinary tract, used to treat kidney and bladder infections. Traditionally smoked by the Haida, Coast Salish and Nuu-Chah-Nulth for bladder and kidney infection.[1]

Snowberry *Symphoricarpos albus*
General: A deciduous shrub up to 3m tall and 2m wide **Leaves**: 1.5-5cm long, rounded **Flowers**: Flowers from July to September, flowers are small, greenish-white to pink, in small clusters of 5-15 **Ecology**: Found in coniferous forests
Traditional and Medicinal Uses: Berries not to be injested. Traditionally, a decoction of the leaves can be used in the treatment of colds, and a wash solution can be made out of the stems and leaves. The berries can be rubbed on the skin to help the treatment for burns, rashes, itches, and sores.

Oregon Grape *Mahonia nervosa*
General: A flowering evergreen shrub up to 2.5m tall **Leaves**: Wide, pinnately compound leaves, with 9-13 spiny leaflets. **Flowers**: Clusters of yellow flowers, followed by purple fruits **Ecology**: Found in partial shade to fairly moist, wooded forests **Traditional and Medicinal Uses**: Roots and bark traditionally used to treat skin diseases such as fungal infections, eczema, and acne.

Contributions

The group met up weekly outside of tutorial and class time to discuss and work on the project. They also went on a walk through Alumni Chip Trail to identify medicinal plants locations.

Olivia Hall wrote out the time line and calculated the budget for this restoration project. She also researched the medicinal and traditional properties of native plant species Skunk Cabbage and Bracken Fern that were used in the brochure and wrote out each group member's contributions.

Megha Bharadwa created and revised the goals and objectives section of this restoration project. She researched medicinal and traditional properties of the native plant species Snowberry and Dull Oregon Grape that were used in the brochure. Megha also wrote out each group member's contributions.

Ginny White wrote and revised the monitoring section of the restoration project. She researched and wrote on the medicinal and traditional properties of native plant species Kinnikinnick and Salal that were used in the brochure and compiled the document once all the sections were completed.

Jake Burton wrote and revised the introduction and site analysis section of the restoration project. He also researched and wrote about the medicinal and traditional properties of the native plant species Cascara and Garry Oak. Once all the native plant species information were completed, he formatted the brochure and created the map of the Alumni Chip trail.

Gaby Barnes wrote and revised the section on design for this restoration project. She also researched and wrote about the medicinal and traditional properties of native plant species Western Red Cedar and Bald Hip Rose.

On the Chip Trail

and the plant species found within

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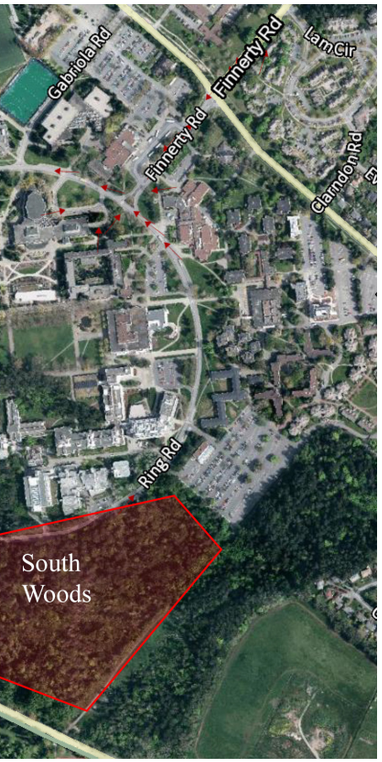

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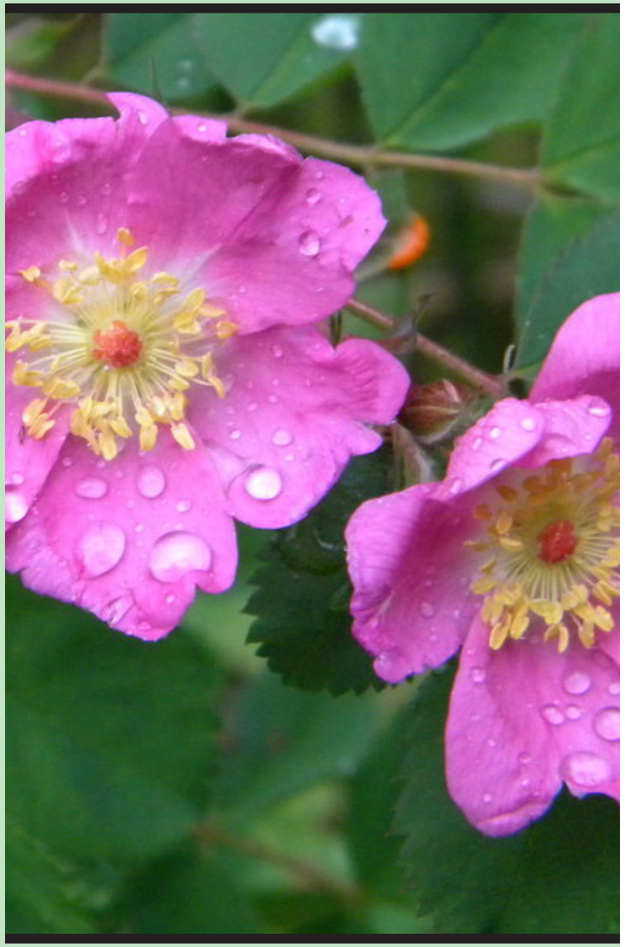
Society (wnps.org)
All info is from on plants,
Pojar, J., MacKinnon, A., & Alaback, P. B. (1994). Plants of coastal british columbia, including washington, oregon & alaska. Vancouver: Lone Pine Pub.
unless otherwise stated.

Native Medicinal Plants on The Alumni Chip Trail

an interactive walk.

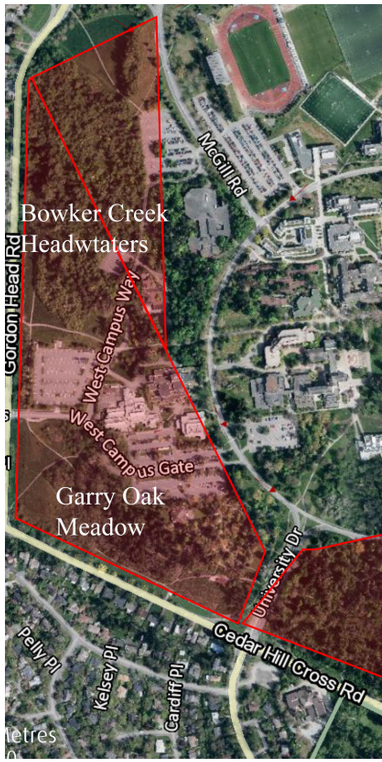


The lands which UVic is currently on are the lands of the Songhees Nation. They are important culturally for many reason, especially for the collection of native-medicinal plant species. These species of plants are still observable on Chip Trail today; identification guides and descriptions are inside this brochure.

Common Ecosystems

Garry Oak Meadow

-Open grasslands
-Tapestry of flowers
-Rocky outcrops
-Look for Gary Oak, and Baldhip rose and Kinnikinnick



South Woods

-Wet, moist
-Forested, high coverage
-One of the largest watersheds in the region
-Look for Skunk Cabbage, Oregon Grape, Cascara, Bracken Fern, and Snowberry

Native-Medicinal Plant Species on Chip Trail

Cascara *Rhamnus purshiana*

General: Shrub up to 10m tall **Leaves**: Oval shaped and have a washboard surface **Flowers**: Greenish-yellow **Fruits**: Purble-black berries **Ecology**: Found in swampy and wooded ecosystems, especially in the presence of red alder and vine maple.

Traditional and Medicinal Uses: Commonly boiled down into a syrup and used as a laxative aswell to treat sores in a wash.

Garry Oak *Quercus Garryana*

General: Crooked composure and , measuring up25m **Leaves**: Round lobed, 12cm in length, darker green on top and lighter on the bottom. In the fall they turn light brown **Acorns**: 2-3cm, rough cups. They are edible .

Traditional and Medicinal Uses: In the Coast Salish areas the acorn were boiled to reduc bitterness and then eaten. Boiled bark was part of a boiling medicine from the Saanich people to fight off tuberculosis among other things.

Salal *Gaultheria shallon*

General:Shrub with hairy branched stems, grows to 3m **Leaves**: Evergreen, leathery, thick, shiny, egg-shaped with waxy tops **Flowers**: Flowers in spring with white bells that are slightly sticky and hairy **Fruits**: Berries are a dark blue-black colour and slightly hairy **Ecology**: Grows in thickets in evergreen forests and in sunny moist areas. Salal is one of the most common forest understory

Traditional and Medicinal Uses: The Klallam, Bella Coola, and Quileute people would chew the leaves and spit them on burns.

Western Red Cedar *Thuja plicata*

General: Large tree up to 60m tall. Branches tend to spread or droop slightly and then turn upward in a J-shape. Bark is grey to reddish brown, tearing off in long fibrous strips. The wood is aromatic. **Leaves**: Scale like, opposite pairs, in four rows, closely pressed to the stem, in overlapping shingled arrangement that looks like a flattened braid. They are glossy yellowish green **Cones**: 8-12 scales, egg shaped, about 1cm long, green when immature, becoming brown, woody and turned upward.3 **Ecology**: Grows best in moist wet soils with lots of nutrients. Usually in shaded forests, and is sometimes over 1,000 years old.

Traditional and Medicinal Uses: Red cedar has been called the "cornerstone of northwest coast Indian culture", and was used to make items such as dugout canoes and totem poles. The Red cedar was used for a variety of ailments, as an antifungal. Native healers used western red cedar for treating fevers, sore throats, coughs, colds, bronchitis, tuberculosis, diarrhea, menstrual disorders, and sore muscles.

Baldhip Rose *Rosa gymnocarpa*

General: Spindly up to1.5 m tall, usually with numerous soft, straight prickles.

Leaves: Alternate, deciduous, compound with an odd number of toothed leaflets

Flowers: Pale-pink to rose, small, 5 petals

Fruits: Orange to scarlet, pear shaped 'hips'

Ecology: Occurs predominantly in the low shrub layer of moist, shaded forest

Traditional and Medicinal Uses: A tea can be made from the young leaves and twigs and drunk as a tonic. A decoction was also used as eyewash for sore eyes. High in vitamin C, but has to be eaten carefully avoiding inner seeds, which contain hairs that will irritate the digestive tract.

Braken Fern *Pteridium aquilinum*

General: 3-6 feet tall fern **Leaves**: Blades triangular, 2-3 times pinnate, hairy, leaflets 10 or more pairs, upper one reduces, ultimate segments round toothed. **Flowers**: Produces spores. Covered by rolled leaf margin **Ecology**: Grows in large colonies in fields, and bushy and in wooded areas[3].

Traditional and Medicinal Uses: Smoked to treat headaches, and a tea made from the roots was used for stomach cramps and diarrhea. Used by many Northwest Coast tribes to line traditional pit fires.

Skunk Cabbage *Lysichiton americanum*

General: 1-5 feet, herb that gives out a skunk-like odor **Leaves**: leaves are thin, net-veined, elliptic shape up to 1.5 meters long, waxy and dark green.

Flowers: Numerous small flowers on thick axis that is hooded by a large bright yellow sheath. **Ecology**: Grows in wet soil along streams or springs, in wooded areas, and in bogs.

Traditional and Medicinal Uses: The roots were traditionally cooked, eaten and prepared in many ways[2]. A tea made from the roots is known to treat breathing problems such as asthma, coughs, and bronchitis. Also known to aid nervous system disorders, and treat infections, and muscle pains.

[1] Native American medicinal plants: an ethnobotanical dictionary
Moerman, Daniel E. ISBN 1604690356
[2] Springsteen, 2013
[3]Moran, 2013
background image edited from, John Williams (2013)

Kinnikinnick *Arctostaphylos uva-ursi*

General: Trailing shrub, up to 6 in tall. **Leaves**: Evergreen, bright green, leathery, and spoon-shaped **Flowers**: Pinkish-white, urn shaped flowers **Fruits**: Red berries **Ecology**: Grows in low to alpine elevations, in sandy, well-drained and exposed sites

Traditional and Medicinal Uses: The leaves contain arbutin, a powerful astringent, which has antiseptic effect of the urinary tract, used to treat kidney and bladder infections. Traditionally smoked by the Haida, Coast Salish and Nuu-Chah-Nulth for bladder and kidney infection. [1]

Snowberry *Symphoricarpos albus*

General: A deciduous shrub up to 3m tall and 2m wide

Leaves: 1.5-5cm long, rounded

Flowers: Flowers from July to September, flowers are small, greenish-white to pink, in small clusters of 5-15

Ecology: Found in coniferous forests

Traditional and Medicinal Uses: Berries not to be injested. Traditionally, a decoction of the leaves can be used in the treatment of colds, and a wash solution can be made out of the stems and leaves. The berries can be rubbed on the skin to help the treatment for burns, rashes, itches, and sores.

Oregon Grape *Mahonia nervosa*

General: A flowering evergreen shrub up to 2.5m tall

Leaves: Wide, pinnately compound leaves, with 9-13 spiny leaflets. **Flowers**: Clusters of yellow flowers, followed by purple fruits

Ecology: Found in partial shade to fairly moist, wooded forests

Traditional and Medicinal Uses: Roots and bark traditionally used to treat skin diseases such as fungal infections, eczema, and acne.