

# *Restoring the Traditional Ecological and Cultural Ways of Coast Salish Land*

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*This project is dedicated to all those working to restoring the traditional ecological and cultural ways of the Coast Salish land. We hope our report may help in providing a framework for future projects. All the best!*

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### 1.1. Introduction

Ecological restoration is both a process and a product; it is the process of connecting people with each other and their land and it is a product of hope. The efforts put into re-establishing the integrity of a space is done so in hopes of creating a better future and enhancing the lives of both the human and ecological community. At the close of the twentieth century, human alterations of the global environment had induced adverse wide-scale changes to biodiversity, atmospheric composition and temperature, and freshwater sources. The cumulative effects of these changes work to further escalate the severity of the ecological state. A fundamental assumption underlying the concept of ecological restoration is that humans, because they are responsible for the degradation of the environment, have the responsibility to repair it. Thus, humans are an integral part to the process of restoration (Egan, 2011). The hope of restoration is that humans may better their relationship with the natural world by means of reconceptualizing and reconnecting with it. In providing a forum in which communities, participants and stakeholders can engage positively with the world they have lost, they may also find a sense of peace, belonging and love. Love, is the final underlying principle of restoration, as the efforts put forth to are to protect and enhance the lives of the human and other-non-human beings alike. Unique to this project is the fundamental importance of restoring this land for both ecological, cultural, moral and spiritual purposes. Not only has it become our right to return the environment back to its traditional state for ecological reasons, but it is our moral obligation to also return this land to traditional ways of the Coast Salish who it was so forcefully taken from. It is our love for the University of Victoria and its beautiful First Nations people that we are dedicated to making this project a reality.

We are calling this project the Kwetlal Restoration, meaning camas in Lekwungen, the language of Vancouver Islands Coast Salish people. Having lived on the coast for thousands of years, the Salish peoples have adapted a set of traditional practices and principles that are uniquely specific to this environment. Furthermore, their relationship with this place has become intrinsically linked to their spiritual and cultural ways and thus, the loss of this land has also meant the loss of identity for some. Initially, this loss came when European settlers in the 18<sup>th</sup> century first began populating this area, demonstrating colonial control over the Northwest Coast and what is now



British Columbia. At the heart of this movement was the ideological conceit that these Europeans, motivated by religion and economic gain, held racial dominance over other peoples. In the process of assimilating European culture throughout the province, there was a shift in language, monetary system, medicine, and food; that essentially resulted in products and traditional practices being devalued over time. Today, the combined impact of devaluing and, in many cases, "banning of First Nations traditional practices, takeover of traditional territories, overfishing of oceans, climate change and introduced foods" have led to reduced access to traditional food and traditional practices all together (Turner, 2008).

As an attempt to restore the ways of the Coast Salish and return the land back to the state when it was sustainably managed by these people, we have chosen to focus our project on reintroducing camas to the University campus. As was discovered through several interviews with UVics First Nations Elders, renewal of traditional food knowledge, use, and practices is a major area of interest. This vision is also shared by several First Nations groups on Vancouver Island who have already begun restoring their culture through traditional food systems. These groups have focused on reintroducing edible tall camas (*Camassia leichtlinii*) and common camas (*Camassia quamash*) within Gary oak ecosystems. Until the early 1900's, camas plants were cultivated and their bulbs harvested in large quantities by the Coast Salish (Beckwith 2004; Deur and Turner 2005; Turner and Hebda 2012). It was the main starch food and export item of the people who occupied the territory that is now Victoria, and municipalities within the Greater Victoria Area.

For UVics Cheryl Bryce, the plants importance is "vital to our history, traditions and future roles and responsibilities (Penn, 2006)." Traditional foods, like camas, are fundamental to preserving cultural identity and improving "health, food security, and food sovereignty of First Nations communities (Beckwith, 2002)." Accompanying these foods is a set of "language, belief systems, songs, stories, and social structure" integral to their culture (Turner, 2008). Also inextricably linked with traditional foods is information of the habitats which these plants grow and an understanding of the technology needed for harvesting, cultivating, and preparing the foods. Therefore, by restoring these foods, First Nations may begin remembering the traditional ways that were lost to European colonization and their cultural, and ecological significance.



### *1.2. Defining Cultural and Ecological Restoration*

Before we introduce the importance of this project, we thought it first necessary to define the difference between eco-cultural and ecological restoration. Eco-cultural restoration, is a form of restoration in which the primary goals and objectives are focused on restoring and promoting the cultural or traditional land. It is also our aim to restore the ecological integrity of the UVic grounds, including restoring biodiversity and natural process and functions. Specific to our project, we will be focused on meeting the vision of the UVic First Nations community, to whom this project is dedicated. It has long been their hope to one day be able to grow and harvest camas in their traditional way on their traditional land. When undergoing an eco-cultural project, it is necessary to understand the social, cultural and spiritual underpinnings that are relevant, which is the purpose of section 1.3 and 1.4. This becomes especially true in restorations involving First Nations, as ecological goals are inextricably linked with the harvesting and management practices of the land.

### *1.3 Importance of the Restoration*

This section describes the underpinning principles and necessary cultural information of the First Nations specific to this restoration project and its relative location. It also includes a brief introduction to the ecological benefits that will be seen from our restoration efforts.

#### *Restoring health and food security*

Historical studies reveal that it is colonial policies of assimilation enforced during the 18 and 19 centuries that is responsible for the loss of traditional knowledge. This loss spawned numerous trans-generational health issues that are still being felt today, including obesity and diabetes (Bordisky, 2008). Dietary related illnesses among First Nations and other Indigenous groups are reported across Canada (Bordisky, 2008). In addition to the poor nutritional conditions of today's food system, many researchers also argue that food insecurity and the worsening ecological crisis are responsible for jeopardizing the health of Canada's Aboriginal people (Power, 2008). With 1 in every 3 reserves reporting declining food availability, it is clear that this is an urgent issue needing to be addressed (Power, 2008). To better understand and provide solutions to increase security, it is important to consider the unique conditions of these peoples' harvesting,



sharing and consumption of traditional foods, that are much different from those of the western society. These considerations affect the four pillars of food security as defined by the Food and Agricultural Organization —which includes accessibility, availability, utilization, and stability of supply (Powers, 2008). Moreover, beyond threats to health and survival, food insecurity is viewed as a cultural issue as food is linked to their cultural identity. It is of utmost importance that projects such as the Kwetlal Restoration Project, are implemented as they are effective means of improving food security in a culturally respectful manner. A major challenge in addressing this issue has been the lack of comprehension of the historical and cultural significance of food for Aboriginal people, which was one of the main critiques of the Canadian governments Food Security Action Plan (Power, 2008). Our hope is that this information can be used by other restorationists, specifically those interested in making this project happen within the University grounds, to address these issues in the most sensitive and effective manner.

Many indigenous peoples, such as Cheryl Bryce, as well as other non-indigenous experts on nutrition, advocate the need to return to a more traditional diet to address the negative food issues First Nations face today (Damman and Kuhnlein, 2008). Studies show that many traditional foods, have a high nutritional content, "less saturated fat, sodium and carbohydrates (especially sucrose) when compared with market foods (Chan et al. 2011; Kuhnlein, 2004)." Furthermore, traditional foods also contain health benefits such as managing blood sugar-related illnesses (Kuhnlein and Turner, 1991). Camas in particular is a starch that unlike the potato, is easier to break down in the body. Once it is cooked, the inulin breaks down into sucrose or fructose — absorbed inulin places less pressure on the pancreas and therefore consumption of foods like camas may help prevent diabetes (Kuhnlein and Turner 1991; Penn, 2011). We believe that by restoring camas and other traditional, native species to Victoria, this project will help reduce the high incidence of diabetes, obesity, heart disease, and other diet-related diseases in Victoria. This project will also create the venue to creating food security and food sovereignty on campus. If this project shows great success, perhaps this will encourage similar projects to be used as a means of curbing negative health effects crippling indigenous groups across Canada.



Beyond losing access to and familiarity with traditional native food plants, colonization and more recently the modern industrial food system, have also had adverse impacts to socio-cultural health (Turner et al. 2008). Turner refers to these impacts as "invisible losses," which describe "loss of identity, loss of self-determination, loss of lifestyle, and emotional and psychological distress (2008)." As described in the management section of this report, we wish for the First Nations on campus to be quite heavily involved in the harvesting and ongoing maintenance of this site using traditional practices. By practicing the ways of the old within the restoration, it is our hope that we can also facilitate a means for these people to find a sense of cultural identity. Subsequently, by engaging in the restoration process, we hope to also bring a sense of awareness to those bigger picture questions pertinent to First Nations health; Where do certain foods come from? What foods can we plant in what seasons? What is the nutritional value of these foods?

#### *Restoring Mentality*

Underpinning the significant global transformations witnessed today—such as changes to biodiversity and atmospheric composition and temperature, are human activities driven largely by a lack of self-awareness and environmental awareness. The global ecological crises confronting humanity today demands critical self-reflection and social transcendence that will bring forth a new generation of sustainable choices. We have designed this project to be a community-based restoration to act as powerful tool in abandoning deep cultural and physiological roots that have long separated humans from nature. By choosing a site in the middle of campus, a popular gathering spot, we will be bringing awareness to the importance of projects that give back to nature. In allowing both indigenous and non-indigenous peoples on campus to partake in the process of restoration we hope to also encourage a change in behaviour through reconnecting students with the landscape. Through connecting with the land, individuals may also establish an emotional commitment to protect it— thus creating the foundation for environmental stewardship in the University of Victoria

#### *Restoring Ecological Integrity*

In the process of restoration, the overarching aim is to return the ecological integrity of this area back to a time when it was sustainably managed by the First Peoples. The current state of this area is one with poor biodiversity, one may even argue that our site in particular does not even



classify as an ecosystem. Today, the monoculture environment is one that does not support a suitable habitat for many species. During our time observing this site, we only noted several deer and bird species that spent a brief moment nibbling at the grass. Simple environments such as these are less resilient to disturbance. Through improving biodiversity within this site, as described in further detail in the report, we hope to increase resiliency so that this site will be better prepared to adapt to the stresses that climate change, global warming may bring. Ecological resilience refers to the capacity of an ecosystem to recover from a disturbance without collapsing. It does not entail a single ideal ecological state but an ever-changing system of disturbance and recovery. Ecosystem biodiversity is a key factor in improving resilience in our project, it is based off the idea that there is a greater likelihood that an organism can perform a different ecological role when the system is under pressure. We will focus on this concept of resiliency when restoring ecological integrity as it demands biodiversity, strong ecosystem structure and function and is a direct reflection of ecosystem health.

#### *1.4 Engaging with UVics First Nations*

In the possibility that this plan is implemented, we encourage respectful interactions with indigenous and non-indigenous partners and collaborators. According to the IUCN Principles and Guidelines, engagement with partners and stakeholders needs to be legitimate, authentic, on equal basis, and relevant to the space of the restoration (Keenleyside et al., 2012). Our hope is that the information within the document can be used to create effective engagement with all involved to reduce the conflict and challenges that may arise when working with individuals who have differing cultural values and ideologies. We are committed to creating a forum in which group members and participants are respectful to one another's significant processes and practices. For example, when engaging with UVics First Nation Elders, group members showed gratitude and generosity to these people by bringing homemade jams and other foods to present to them, furthermore they demonstrated engaged listening skills.

Our project represents an indefinite long-term commitment to restoring and maintaining the traditional land of Vancouver Island's First Peoples. In order to ensure that this project and its success is sustained over long time horizons and across the university's policy changes, we have aimed to make decisions that are thoughtful of the various indigenous and non-indigenous

groups involved so that the plan is more likely to be honored. Group members collaborated with partners early in the design of the project to create a plan that better reflects the vision of the UVic First Peoples House. In following with the third principle of “engagement” from the IUCN, group members met with First Nations and UVic facilitators on several additional occasions to maintain and build support for the project and to open the door for effective communication and outreach. From these meetings, we gained an understanding of their current interests, opportunities, challenges and potential approaches for incorporating traditional based harvesting in our restoration project. Some challenges that are anticipated and exist include ecological uncertainties of harvesting disturbance, ensuring safety, finding funding and gaining trust (Proctor, 2009).

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## 2.1 Location of Site

by: Kayla Ginter

At the southern tip of British Columbia's Vancouver Island one will find the University of Victoria, which is roughly a 20 minute drive from the provinces capital city. The campus is designed as a circle, whereby the all the facilities are within Ring Road. The Kwetlal Restoration site lies within the western portion of the Universities "quad," — the center of the campus now recognised as the school's historic site according to Matt Greeno. The northwest point of the site has the precise coordinates of 48° 27'28" N, 123°18'46.38" W, and has an elevation of 62m (Google Earth, 2014). The site can be described as semi-ellipse in shape measured by group members Blair and Kelly to be 43.7m x 39m, overall equaling a sum total of 2677m<sup>2</sup>. In terms of its geography or topography, this site is relatively flat throughout, with a slight slope in the southern region that creates an area subjected to over-saturation of water at the bottom of the slope during times of heavy rainfall. It is clear that the non-native grass species planted here — for aesthetic purposes only— has lead to the degradation of soil conditions evident by the sites inability to properly absorb rainwater. By removing the various natural growing, native species of this area to create a grassy monoculture environment, the soil stability has been comprised



Figure Showing the location of Victoria British Columbia based on a provincial and national scale. From [http://upload.wikimedia.org/wikipedia/commons/3/31/Vancouver\\_Island\\_South.png](http://upload.wikimedia.org/wikipedia/commons/3/31/Vancouver_Island_South.png)



## 2.2 Significance of the Site

Today, camas still can be found growing in patches within Garry oak ecosystems primarily in protected areas and on Indigenous reserve lands, such as Discovery and Chatham Islands (Tl'ches), BC (Gomes 2012; Higgs 2003). Observing large portion of this species is rare due to habitat loss and lack of previous restoration and conservation strategies to protect it (Apostol and Sinclair 2006). For First Peoples interested in renewing, continuing, and sharing camas and associated food traditions with the next generation, "gaining safe access to areas where they can interact with Garry oak ecosystems containing significant populations of camas bulbs is essential (Corntassel and Bryce 2012; Turner 2005a)." We believe the site we have chosen is a perfect fit to this description - this is also described in detail later in the report. The UVic grounds are a safe place for First Nations of all ages to conduct their cultural practices. This site also features 3 Gary oak species, tottuem poles and is in close proximity to the First Peoples House on campus.

## 2.3 Historical Relevance

According to Cheryl Bryce, the Lekwungen people have "harvested, and prepared camas for thousands of years (Penn, 2006)." The naturally flat landscape in various areas of Lekwungen territory in and around Victoria provided optimal conditions for camas meadow ecosystems that were once at large in this area. These meadows were "owned by certain families and women," who sculpted the landscape with traditional management. Typically, these traditional practices have included weeding, seeding, harvesting and burning.

Figure depicting Central Coast Salish Territory in early 19th-century spanning Washington State and British Columbia (From the Bill Reid Centre Website at Simon Fraser University).

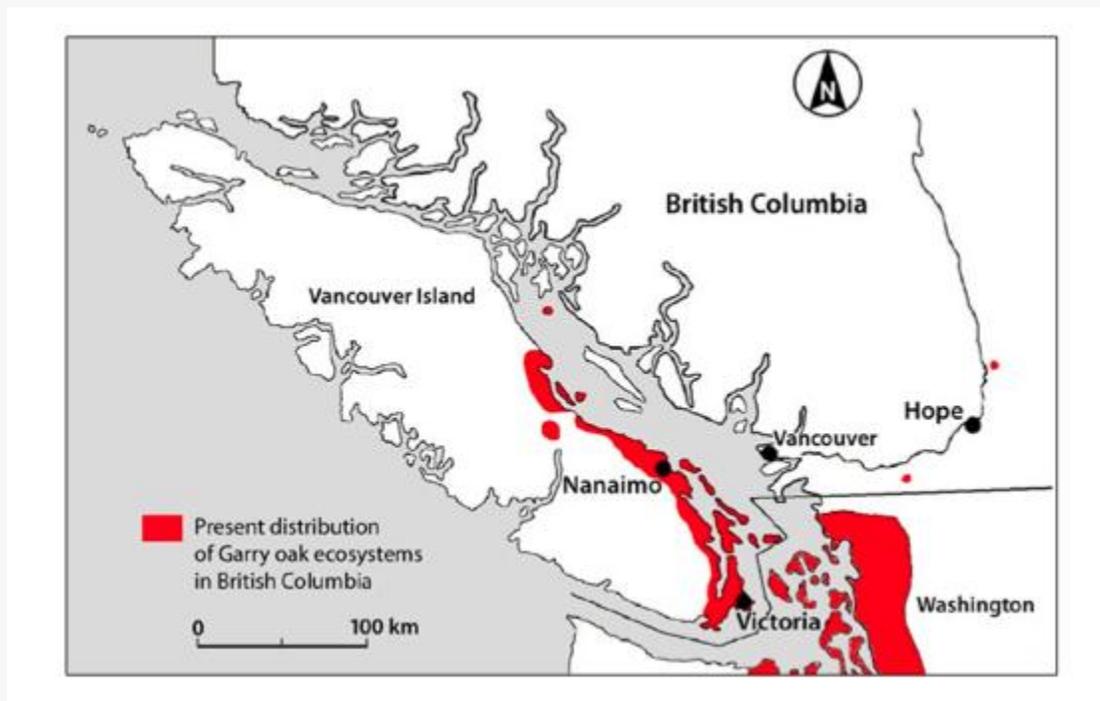




### 2.4.1 Introduction to Garry Oak Ecosystems

by: Brianne Knox

Situated in the Pacific maritime ecozone, found in the rainshadow of the Olympic and Vancouver Island Mountain ranges, Garry oak (*Quercus garryana*) ecosystems are restricted to the southeastern portion of Vancouver Island, the Gulf Islands, and two very limited locations on the mainland (see figure 2.1; GOERT, 2011; Meidinger & Pojar, 1991).



(Fig. 2.1; Erickson & Meidinger, 2007)

Garry oak ecosystems and associated plant communities can thrive in both the Coastal Douglas-fir biogeoclimatic zone (CDFmm) and the Coastal Western hemlock biogeoclimatic zone (CWHxm; Erickson & Meidinger, 2007; GEORT, 2011). The combination of environmental threats and limited geographic range makes Garry oak ecosystems some of the rarest in Canada (Erickson, 1996; Fuchs, 2001). Although the Garry oak tree can be found in many ecosystem configurations, including rocky steeply sloped moss dominated communities and forest ecosystems that contain both Douglas-fir (*Pseudotsuga menziesii*) and Arbutus (*Arbutus menziesii*), our focus is to restore a Garry oak savannah ecosystem type in order to create a



kwetlal meadow surrounding the proposed permanent pit-cook area. The Garry Oak Ecosystems Recovery Team (GOERT; 2011) recommends that restoration practitioners consider the successional stages of Garry oak ecosystems in planning, implementation, and management since these stages are often contrary to restoration goals. The model reference site for this ecosystem restoration project is a Garry oak savannah which features open habitat with minimal canopy cover and understory of abundant native flowers, particularly common camas (*Camassia quamash*) and great camas (*Camassia leichtlinii*).

#### 2.4.2 Garry Oak Plant Associations

Sites that support the Garry oak savannah type ecosystem feature gentle slopes, limited understory, plentiful moisture, a tree canopy of oaks, and a well-developed herb layer that is dominated by both common camas and great camas along with the presence of herbaceous forbs and grasses (Erickson & Meidinger, 2007). Erickson and Meidinger (2007) recognize seven comprehensive Garry oak plant associations, 17 community types, and six sub-communities; of these, the Garry oak – Common camas – Blue wildrye (Qgcc) and the Garry oak – Great camas – Blue wildrye (Qggc) plant associations constitute the savannah type communities. Qgcc is found on sub-mesic sites with mineral soils, gentle to moderate topography, and a low density of shrub understory (Erickson & Meidinger, 2007; GOERT, 2011). Qggc is found on mesic to sub-mesic sites that are often cooler and sheltered, with deep medium texture soils, low coarse fragmentation of soils, and a low density of shrub understory (Erickson & Meidinger, 2007). These two plant associations, Qgcc and Qggc, feature significant overlap and are classified separately by Erickson and Meidinger (2007) primarily due to most sites featuring a single dominant camas species, differences in geographic occurrence (Turner & Hebda, 2012), and seasonality (as common camas communities develop in the early spring while great camas lags behind by approximately three weeks). Both Qgcc and Qggc plant communities feature understory plants such as common snowberry (*Symphoricarpos albus*), common camas (*Camassia quamash*), great camas (*Camassia leichtlinii*), fawn lily (*Erythronium oregonum*), bracken fern (*Pteridium aquilinum*) and a variety of other grasses, sedges, and rushes dependant on the abiotic factors specific to the site (Erickson, 1996; Erickson & Meidinger, 2007; GOERT, 2011). These plant community associations are profoundly influenced by site specific factors such as hydrology, drainage, elevation, mineral availability, soil depth, texture, and type (GOERT, 2011; Erickson & Meidinger, 2007). The site on the west end of the quad features



limited slope, increased moisture availability, and moderately deep soils in order to support the desired plant communities.

#### 2.4.3 Threats to the Garry Oak Meadow

Historical evidence suggests that these systems existed in this archetypal patchwork configuration of grasses, camas, bracken fern, shrubs, Garry oak and Douglas-fir prior to and at European contact (Erickson & Meidinger, 2007; MacDougall, Beckwith, and Maslovat, 2004). The historic range of Garry oak savannah structure ecosystem in the Victoria area has been reduced by 90% due to fragmentation and destruction from agriculture, urbanization, invasive species, excessive herbivory, and forest encroachment (GOERT, 2011; McCune, Pellatt, & Vellend, 2013; Parks Canada Agency, 2009). Although the Garry oak meadow type ecosystem is associated with the provision of habitat for over 100 threatened species (Fuchs, 2001; GOERT, 2011), current research indicates that non-native plants comprise between 20 and 70 percent of Garry oak ecosystems on Vancouver Island (McCune, Pellatt, & Vellend, 2013). The native grasses and flowers of the Garry oak savannah ecosystem are easily outcompeted by invasive and exotic species (Erickson & Meidinger, 2007; GOERT, 2011; McCune, Pellatt, & Vellend, 2013). Ecosystem structure including canopy crowding, dense understory, and thick layers of grasses that limit bare soil restrict recruitment of native plant communities by limiting their competitive ability (MacDougall, Beckwith, & Maslovat, 2004). Human disturbance caused by trampling and propagation of non-native species serves to limit the establishment of native plants and encourage the growth of invasives (McCune, Pellatt and Vellend, 2013). Invasive species that are of particular concern in Garry oak ecosystems are Scotch Broom (*Cytisus scoparius*), Kentucky bluegrass (*Poa pratensis*), tiny vetch (*Vicia hirsuta*), common vetch (*Vicia sativa*), English ivy (*Hedera helix*), orchardgrass, and agronomic grasses (Erickson & Meidinger, 2007; GOERT, 2011). The proposed kwetlal site at the west end of the quad currently contains a small amount of English ivy, however with ongoing maintenance and monitoring invasive species can be eradicated from the restored Garry oak meadow ecosystem. Excessive herbivory, caused by primarily by an overabundance of Columbian black-tailed deer (*Odocoileus hemionus columbianus*), exerts significant pressure on the Garry oak savannah ecosystem (Bjorkman & Vellend, 2010; McCune, Pellatt, & Vellend, 2013). Research indicates that in Garry oak



meadows featuring both native and invasive species, herbivory increased the success of the exotic plants while diminishing the competitive capacity of the native plants (Gonzales & Arcese, 2008). In many locations where Garry oak ecosystems are being protected, fences have been erected to prevent the damage done by deer (Parks Canada, 2011) and we suggest a similar solution for the Kwetlal Restoration site in the Implementation section.

#### 2.4.4 Ecological Role of Fire in Garry Oak Meadow Ecosystems

Locations with limited slope and increased moisture inflow, such as the one for the proposed Kwetlal Restoration Site, are susceptible not only to the invasion of exotic species but also to encroachment by Douglas-fir (*Pseudotsuga menziesii*) and other conifer species (Fuchs, 2001; McCune, Pellatt, & Vellend, 2013). It is widely recognized that the Garry oak savannah is a climax community created and maintained by cultural activities (Carvers, 2009; Bjorkman & Vellend, 2010; Erickson & Meidinger, 2007; MacDougall, Beckwith, & Maslovat, 2004; McCune, Pellatt, & Vellend, 2013). Dendroecologists cite fire suppression, including the limitation of traditional indigenous burning practices, as the primary driver in the contemporary dominance of closed-canopy conifer forests on Vancouver Island (McCune, Pellatt, & Vellend, 2013). Considered a pyrogenic system (MacDougall, Beckwith, & Maslovat, 2004), the role of fire in the Garry oak savannah ecosystem can hardly be understated. Relatively frequent low intensity surface fire was used by indigenous groups to limit conifer encroachment, to encourage growth of important food plants (particularly root crops such as camas and bracken fern), reduce fuel loads in order to minimize the occurrence of catastrophic natural fire, to remineralize, and to expose soils (MacDougall, Beckwith, & Maslovat, 2004; McCune, Pellatt, & Vellend, 2013). Forest density on southern Vancouver Island has doubled due to modern fire suppression, altering ecosystem species composition and allowing further recruitment of large fire sensitive trees like Western red cedar (*Thuja plicata*; Bjorkman & Vellend, 2010; McCune, Pellatt, and Vellend, 2013). As described earlier, many of the native forbs and grasses found in the Garry oak savannah ecosystem are low-growing plants that thrive in sunny conditions such as those provided by limited shrub understory and open Garry oak canopy, these plants are poorly adapted to the dense swards caused by many invasive species (MacDougall, Beckwith, &



Maslovat, 2004). Although native ferns and grasses can also become abundant and out-compete smaller plants, occasional fire would have removed this threat while simultaneously opening new suitable sites for growth (MacDougall, Beckwith, & Maslovat, 2004).

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**Traditional Native Plant Species Table 1.0**

Name (Common & Latin)	Visual Representation	Traditional Use	Ecological Significance
<p><i>Camas (Camassia quamash)</i></p> <p>Reference:  <a href="http://plants.usda.gov/plantguide/pdf/cs_caqu2.pdf">http://plants.usda.gov/plantguide/pdf/cs_caqu2.pdf</a></p> <p><a href="http://www.firstnations.de/media/06-1-1-camas.pdf">http://www.firstnations.de/media/06-1-1-camas.pdf</a></p> <p><a href="http://www.goert.ca/propagation_guidelines/forbs/camassia_quamash">http://www.goert.ca/propagation_guidelines/forbs/camassia_quamash</a></p>	 <p style="font-size: small; text-align: center;">Brother Alfred Brousseau © Brother Eric Vogel, St. Mary's College © CalPhotos</p>	<ul style="list-style-type: none"> <li>-One of the most important root foods</li> <li>- Used in trading as an export item</li> <li>- The use of camas bulbs are significant for use in pit-cooks</li> <li>- Main starch food.</li> <li>Converts high level of insulin into digestible sugars</li> <li>-Gathering of camas illustrated local systems of land management</li> </ul>	<ul style="list-style-type: none"> <li>-Blue lily that blooms in April/May</li> <li>- Versatile plant that can grow in many different areas</li> <li>-smaller and robust grows between 30-60 cm</li> <li>-Camas meadows were owned by certain families and were managed by traditional management (weeding, seeding, burning, and harvesting)</li> </ul>
<p><i>Great Camas (Camassia leichtlinii)</i></p> <p>Reference:  <a href="http://plants.usda.gov/plantguide/pdf/cs_caquq.pdf">http://plants.usda.gov/plantguide/pdf/cs_caquq.pdf</a></p>	 <p style="font-size: small; text-align: center;">Brother Alfred Brousseau © Brother Eric Vogel, St. Mary's College © CalPhotos</p>	<ul style="list-style-type: none"> <li>-One of the most important root foods, particularly the bulb</li> <li>-Used as an export item for trading</li> <li>-Very common root vegetable for pit cooks as it is considered one of the main starch foods</li> </ul>	<ul style="list-style-type: none"> <li>- Much like camas, meadows were owned by certain families and were managed through traditional management such as weeding, seeding, harvesting, and controlled burning.</li> <li>-Part of the lily family</li> <li>- Grows 60-120 cm tall</li> <li>-Leaves are long and narrow (grass like)</li> <li>-Differs from camas as the plant is larger with longer flower</li> </ul>

<p>Bracken Fern (<i>Pteridium aquilinum</i>)</p> <p>Reference:  <a href="http://eol.org/pages/597748/overview">http://eol.org/pages/597748/overview</a>  <a href="http://www.wildflower.org/plants/result.php?id_plant=PTAQ">http://www.wildflower.org/plants/result.php?id_plant=PTAQ</a>  <a href="http://www.sierraclub.bc.ca/education/ecomap/georgia-depression/2swordfern">http://www.sierraclub.bc.ca/education/ecomap/georgia-depression/2swordfern</a></p>	 <p>Photo credit: Missouri Botanical Gardens</p>	<p>In early spring, fiddleheads are gathered as soon as they appear</p> <ul style="list-style-type: none"> <li>- Similar to the sword fern. Both provide rhizomes, which are collected and used for cooking and eating</li> <li>-Leaves provide a lining to the pitcook pit itself, as well as baskets, beds and floors</li> </ul>	<ul style="list-style-type: none"> <li>-Perennial that grows anywhere from 1 to 4 feet tall</li> <li>-Grows well in shady, dry to wet conditions</li> <li>-Requires lots of water to get established</li> <li>-Great foliage groundcover for dry woodlands</li> </ul>
			<p>stalks and bigger bulbs</p>
<p>Fawn Lily (<i>Erythronium oregonum</i>)</p> <p>Reference:  <a href="http://www.goert.ca/propagation_guidelines/forbs/erythronium_oregonum">http://www.goert.ca/propagation_guidelines/forbs/erythronium_oregonum</a></p>	 <p>Photo Credit: Rob Hagel</p>	<ul style="list-style-type: none"> <li>-Common in Garry Oak meadows</li> <li>-Used in Pit cooks</li> </ul>	<ul style="list-style-type: none"> <li>-Perennial herb , 3-5 cm long bulb and stands at about 15-35cm tall</li> <li>- Produces white flowers</li> <li>- Optimal growing conditions are meadow-like communities with open-canopy forests</li> </ul>
<p>Woolly Sunflower (<i>Eriophyllum lanatum</i>) Alternately called golden yarrow</p> <p>Reference  <a href="http://plants.usda.gov/plantguide/pdf/pg_erla6.pdf">http://plants.usda.gov/plantguide/pdf/pg_erla6.pdf</a></p>	 <p><small><i>Eriophyllum lanatum</i>. Ben Legler, University of Washington Burke Herbarium</small></p>	<p>Recommended by Brenda Beckwith</p> <p>Although we not have found information on the traditional usage of this plant, it provides aesthetically pleasing flower later in the season.</p>	<ul style="list-style-type: none"> <li>-Part of the sunflower family</li> <li>-Quick to establish and can be used for revegetation and diversification of rangeland</li> <li>-Grows to 10-60 cm tall</li> <li>- Produces 8-12 nodding golden yellow disk flowers</li> </ul>

			<ul style="list-style-type: none"> <li>- A prolific seed producer and rapidly spreads to any surrounding areas</li> </ul>
<p><b>Chocolate Lily</b> <i>(Fritillaria affinis)</i></p> <p>Reference: - Turner, Nancy J. Hebda, Richard J. 2012. Saanich Ethnobotany. Royal BC Museum Publishing. -<a href="https://plants.usda.gov/plantguide/pdf/cs_fraf2.pdf">https://plants.usda.gov/plantguide/pdf/cs_fraf2.pdf</a> - Photo credit: Jackie Chambers</p>		<ul style="list-style-type: none"> <li>- Bulblets resemble grains of rice and are commonly cooked and eaten.</li> <li>- Harvested in spring using a digging stick.</li> <li>- Cooked immediately or dried and stored.</li> <li>- Commonly used as a trade item and as a source of starch.</li> </ul>	<ul style="list-style-type: none"> <li>- 20-50cm stems.</li> <li>- Found in open dry woods and meadows.</li> <li>- Are becoming increasingly rare in the wild.</li> <li>- Whorls of 5-11 leaves</li> <li>- 6 nodding petals per flower.</li> </ul>
<p><b>Pearly Everlasting</b> <i>(Anaphalis margaritacea)</i></p> <p>Reference: - Turner, Nancy J. Hebda, Richard J. 2012. Saanich Ethnobotany. Royal BC Museum Publishing. -<a href="http://www.sevenoksnativenursery.com/2013/01/22/anaphalis-margaritacea-march-2013/">http://www.sevenoksnativenursery.com/2013/01/22/anaphalis-margaritacea-march-2013/</a> - Photo credit: Unknown, retrieved March 28th from <a href="http://www.rhnaturalists.ca/wp-content/uploads/2013/11/Anapahlis_margarit">http://www.rhnaturalists.ca/wp-content/uploads/2013/11/Anapahlis_margarit</a></p>		<ul style="list-style-type: none"> <li>- Leaves were chewed to treat colds.</li> <li>- Used to treat burns sores and swelling, and as a laxative.</li> </ul>	<ul style="list-style-type: none"> <li>- Member of the Aster family.</li> <li>- highly resilient and able to survive in difficult places.</li> <li>- Attracts butterflies as a food source and host for larvae.</li> <li>- rhizomatous</li> <li>- narrow leaves and small yellow flowers at center, surrounded by white whorls.</li> <li>- grows up to 3 feet tall.</li> <li>- resistant to deer.</li> </ul>

<p>Broad Leaved Shootingstar (<i>Dodecatheon Hendersonii</i>)</p> <p>Reference: -<a href="http://www.goert.ca/propagation_guidelines/forbs/dodecatheon_hendersonii">http://www.goert.ca/propagation_guidelines/forbs/dodecatheon_hendersonii</a> - Photo credit: GOERT, retrieved March 29th from <a href="http://www.goert.ca/propagation_guidelines/forbs/dodecatheon_hendersonii">http://www.goert.ca/propagation_guidelines/forbs/dodecatheon_hendersonii</a></p>		<ul style="list-style-type: none"> <li>- leaves and roots can be eaten when cooked but are poisonous raw.</li> </ul>	<ul style="list-style-type: none"> <li>- Perennial herb, slender roots and rice shaped bulblets at maturity.</li> <li>- 10-30 cm tall</li> <li>- rounded or triangular leaves.</li> <li>- floral parts in groupings of 4-5.</li> <li>- deeply lobed purple corollas.</li> <li>- dry woods, meadows, and coastal bluffs preferred habitat.</li> </ul>
<p>Tiger Lily (<i>Lilium Columbianum</i>)</p> <p>Reference: - Turner, Nancy J. Hebda, Richard J. 2012. Saanich Ethnobotany. Royal BC Museum Publishing.  -<a href="http://arcadianabe.blogspot.ca/2013/07/beautiful-bitter-is-h-columbia-lily.html">http://arcadianabe.blogspot.ca/2013/07/beautiful-bitter-is-h-columbia-lily.html</a>  - Photo credit: Dancing Oaks nursery</p>		<ul style="list-style-type: none"> <li>- Bulbs were cooked and eaten.</li> <li>-both roots and flowers are edible.</li> <li>- traditionally harvested from may- august.</li> <li>- can be eaten raw but taste bitter.</li> <li>- after steaming or cooking in a pit, they become sweeter in taste.</li> </ul>	<ul style="list-style-type: none"> <li>- Mature bulbs are 1-2 inches tall and 1.5 inches wide.</li> <li>- flowering stalks 2-5 feet tall.</li> <li>- several whorls of 2-9 leaves around the stem.</li> <li>- Petals are yellow-orange with dark spots.</li> </ul>
<p>Nodding Onion (<i>allium cernuum</i>)</p>		<ul style="list-style-type: none"> <li>- Bulbs were sometimes washed</li> </ul>	<ul style="list-style-type: none"> <li>- Perennial bulb of liliaceae family.</li> </ul>

<p>Reference:</p> <ul style="list-style-type: none"> <li>- Turner, Nancy J. Hebda, Richard J. 2012. Saanich Ethnobotany. Royal BC Museum Publishing.</li> <li>- Photo credit: Mark McDonough</li> </ul>		<ul style="list-style-type: none"> <li>and eaten raw</li> <li>- More commonly cooked and served with other foods.</li> <li>- Cooked in pit cooks with other bulb bearing wild roots - - Often eaten with common traditional foods such as salmon.</li> </ul>	<ul style="list-style-type: none"> <li>- long narrow bulbs with root at base.</li> <li>- Flowering occurring between may-august.</li> <li>- Stalks bend over at the top, flowers face downwards.</li> <li>- clustered pink flowers.</li> <li>-Thrives in open dry sites.</li> <li>- When mature, releases small black seeds.</li> </ul>
<p>Springbank Clover (<i>trifolium wormskioldi</i>)</p> <ul style="list-style-type: none"> <li>- Turner, Nancy J. Hebda, Richard J. 2012. Saanich Ethnobotany. Royal BC Museum Publishing.</li> <li>-<a href="https://plants.usda.gov/plantguide/pdf/cs_trwo.pdf">https://plants.usda.gov/plantguide/pdf/cs_trwo.pdf</a></li> <li>- Photo credit: Eric from SF</li> </ul>		<ul style="list-style-type: none"> <li>- Rhizomes dug out with a sharp stick.</li> <li>- Rhizomes cooked in pits and eaten.</li> <li>- Consumed by many indigenous groups all over coastal BC.</li> </ul>	<ul style="list-style-type: none"> <li>- Of the legume family <i>Fabaceae</i>.</li> <li>- bright green trifoliate.</li> <li>- Distinct, sweet tasting rounded purple flower heads, composed of many small individual flower petals.</li> <li>- Stems up to 80cm</li> <li>- useful for erosion control.</li> </ul>

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- Wildflower Center (2013). Native Plant Database: *Pteridium aquilinum*. Retrieved from, [http://www.wildflower.org/plants/result.php?id\\_plant=PTAQ](http://www.wildflower.org/plants/result.php?id_plant=PTAQ)

### 3.0 Policy, Goals, and Objectives

by: *Dave Manning and Laura Tassie*

By Anne Franklin, Dave Manning, Blair Lekness, Kelly Toots, Laura Tassie, Brainne Knox, and Kayla Ginter





### *Kwetal Restoration Project of a component of the University of Victoria Quad*

#### *3.1 Introduction (Laura):*

Policy, goals, and objectives are set in place to help keep a restoration project on track as well as help guide implementation and project planning (Keenleyside et al., 2012; Hobbs, 2007). According to Keenleyside et al. (2012), goals are intended to be “presented as statements of intent, and can be developed further as clear and measurable outcomes, i.e., descriptions of the restored system, to inform the types and priorities of objectives” (pg. 62). Goals and objectives for the Kwetal Restoration Project will be based upon the three principles of ecological restoration for protected areas, those being; it should be effective, efficient, and engaging (Keenleyside et al, 2012).

Effective restoration is restoration that re-establishes the proposed site back to its historical trajectory or to an ecosystem that can function on it’s own with minimal inputs (Keenleyside et al., 2012). Effective restoration seeks to maintain the values established of the area, in the case of this project, cultural values.

Efficiency of a project is integral. Most restoration projects are associated with a large cost. In order to stay within budget it is essential that the project is done efficiently while ensuring not to cut corners on the overall projection. Additionally, if the project is relying on volunteers, it is crucial that they stay engaged long enough to fulfill the project. If it takes too long many participants are likely to lose interest.

Lastly, the principle of engagement, restoration should collaborate with different stakeholders, groups of people, and partners (Keenleyside et al., 2012). It should promote participatory



involvement, which anybody can be involved in. By engaging others, ecological restoration projects can provide a well-rounded educational and informative avenue.

For this project, a holistic approach was taken when thinking about the goals and objectives that were going to be proposed. It is important to note that cultural values, traditional practices, and ecological integrity were considered to be of utmost importance in designing the goals.

#### **3.2 Policy (Laura):**

*The purpose of the restoration project is to restore part of the University of Victoria's campus quad back to a Garry Oak meadow, whilst providing a place of semi-permanence for traditional pit cook ceremonies.*

#### **3.3 Goal: Restore a portion of the campus quad to a Garry Oak meadow- Laura**

Currently, the only Garry oak meadow is located in the southwest corner of the University of Victoria (UVic) campus (Bein, n.d). It is located in the traditional territories of the Songhees First Nation. This meadow houses the last surviving 1-5% of the Garry oak ecosystem (Bein, n.d). Restoration projects are vital for the rejuvenation and protection of endangered ecosystems, and while Garry oak ecosystems are some of the most biologically diverse and beautiful ecosystems around, it is essential that restoration takes place (CRD Community Green Map, n.d). On the proposed Kwetlal restoration site, the Garry Oak trees remain but the common understory plants that were once supported (ex. common snowberry, common camas have been replaced by lawn and cement pathways (Lea, 2013). By converting a component of the UVic quad back to it's historical trajectory we hope that we can continue to increase diversity and provide a flourish ecosystem for native species. It is our hope that our goal of *restoring a Garry oak meadow* on part of the campus quad will acknowledge the ecological and cultural significance that these systems have, and the impact that they carry. To help guide this goal, three objectives have been proposed.



#### **Objectives:**

1. To restore our proposed site back to its historical trajectory (an area that once sustained a Garry Oak meadow), through;
2. Replenishing the native plant species through restoration (cuttings, purchasing new plants, etc.)
3. Incorporate community engagement and a consultation processes to acknowledge the cultural significance of a Garry Oak meadow

#### **3.4 Goal: Growth of Camas as both cultural practice and food staple.- Dave**

Common Camas and Great Camas were historically the most important root vegetable for the indigenous people of southwestern Vancouver Island (Turner et al., 2012). These root vegetables were intensively cultivated and managed (Beckwith, 2004). Indigenous methods of cultivation were valuable both for the productivity of Camas and for maintaining the ecological integrity of Garry oak ecosystems (Deur et al, 2005; Beckwith, 2004). Camas plots would be claimed by individuals or families and clearly marked with stakes to ensure that others wouldn't dig there (Deur et al, 2005). Once cleared of debris, stones and brush; unwanted plants (such as death camas) would be uprooted and piled to one side. (Turner et al, 2012; Proctor, 2013). Further management practices such as seed dispersal, transplantation, and selective harvesting ensured maximum productivity of camas (Proctor, 2013). Prescribed burning was typically initiated after harvesting in late summer (Beckwith, 2004). Not only did burning benefit camas productivity, but it actively supported Garry oak ecosystems, through providing a medium level disturbance which promotes biodiversity. Our restoration project aims to restore an environment where traditional methods of camas cultivation and management can be practiced. We hope to promote an understanding and appreciation of traditional land management practices, and engage students and community member in hands on participation and learning. The principle objectives of restoring camas are presented below.

#### **Objectives:**

1. To raise awareness regarding value of traditional land management practices such as prescribed burns and selective harvesting of camas bulbs.
2. To facilitate public engagement in local traditional cultural practices.
3. If possible, to restore and manage our proposed site to its historical ecological and cultural value as a productive area for camas..



**3.5 Goal:** *Provide an interactive and educational environment for students and community.* **Laura**

Currently, the proposed Kwetlal restoration site is underutilized and of negligible use to students. Our proposition would see this site transformed into a more aesthetically pleasing, valuable, and interactive environment within the community. The land upon which the university of Victoria is situated is unceded Songhees territory (Harris, 2002). To retain a reputation as a leader in sustainability and social justice, it is crucial that the university acknowledges the traditional territories upon which it is based. Furthermore, as an academic center, it is important that the university show strong community leadership and initiative in supporting indigenous rights through promoting and engaging students in traditional cultural practices of local First Nations. We want the community (both academic and civic) to be part of the restoration process. Giving back to the land and the desire to make a difference is one of the many principal motives behind volunteering (Miles, Sullivan, & Kuo, 2000). Furthermore, the Kwetlal restoration site is to be used as an educational area, allowing professors and students to use it as much as possible when learning about First Nations practices. To carry out our goal of *providing an interactive and educational environment for students and community*, we have proposed three different objectives.

**Objectives:**

1. Establish pathways
2. Establish informative signage
3. Provide ecological restoration volunteer opportunities and an environment for interactive scholarly learning throughout the development of this project.

**3.6 Goal:** *To provide a permanent area for traditional Pit Cooks* -**Dave**



Ecological Restorationist Eric Higgs uses the example of attending a pit cook on Discovery Island to illustrate his concept of focal practice (Higgs, 2003). He defines this concept as the act of building value through participation (Higgs, 2003), and there is no better example of this than a First Nations' pit cook. Pit cooking is a process that requires teamwork and cooperation, it allows large amounts of food to be cooked at once, and provides a space for community to grow through interaction, engagement, and transmission of knowledge. Each nation has specific techniques or recipes for preparing a pit cook. This knowledge is passed down orally through generations of Indigenous peoples (John Bradley, personal communication, September 2013). Generally, a hole is dug into the earth, with dimensions dependent on what is being cooked. A fire is burned in the bottom of the pit and stones are heated, once these stones are hot, the ashes are removed, and the food is added. A blend of vegetation unique to each tradition is also added with the food. These depend on where and what is being cooked but can include plants such as kelp (*Nereocystis luetkeana*), sword fern (*Polystichum munitum*), salal (*Gaultheria shallon*), Nootka rose (*Rosa nutkana*), and grand fir (*Abies grandis*) among others (Deur et al, 2005). A long pole is held in the center of the pit as these ingredients are added. When the pit is filled, the pole is removed and water is poured into the hole left behind (Higgs, 2003). The hole is then quickly covered and sealed, so that the now steaming rocks might slowly but surely cook the food within, lacing it with the earthy flavors of the vegetative mix. We wish to provide a permanent pit cooking area for use by the First Peoples House to engage students and community in meaningful focal practice.

**Objectives:**

1. Cultural significance (Focal Practice).
2. Provide a permanent area for the First Peoples House to host cultural events.
3. Educate citizens on the importance of traditional Pit Cooks and provide them with the experience of attending one.



#### 3.7 Conclusion:

In summary, the goals of this project are to; restore a Garry oak meadow, reintroduce native camas (*Camassia quamash*, *C. leichtlinii*), provide an interactive learning environment, and provide a permanent area for traditional pit cooking to be practiced.

These goals are meant to engage students and members of the community in meaningful focal restoration. The project will restore a Garry oak meadow, a rare and valuable ecosystem. It will reintroduce and educate as well as engage volunteers and passersby in culturally valuable food practices. Our hope is that through the processes listed above, this project can contribute to building a stronger and more interactive learning environment at the University of Victoria. Furthermore, we wish for this engagement to extend beyond the campus, and promote the university as a community center for participatory learning.





### 4.1 Vision

The Kwetlal Restoration Project is envisioned to serve multiple purposes. It will be a place for cultural practices and ceremonies to be performed and continued. It will be a place for one of the rarest ecosystems in British Columbia to re-establish, especially in its meadow form, the Garry Oak ecosystem (B. Beckwith, personal communication, March 17, 2014; Erickson, 1996; Fuchs, 2001). It will be a place where the cultural knowledge and ecological knowledge of this ecosystem can be shared and taught to those eager to learn. Education will be in the form of ceremonies, work/maintenance parties, and informational signs allowing people to take self-guided tours.

The plan will include a late bloom and fire sensitive flower section, a camas beds and wild grasses section, a wild grasses section that is able to accommodate participants and an audience to the pit cook ceremony as well other ceremonies and events, and a pit cook site that is buffered by an area of stones. In the following section the details and technicalities of the plan are described.

#### References:

- Erickson, W. (1996). Classification and Interpretation of Garry Oak (*Quercus garryana*) Plant Communities and Ecosystems in Southwestern British Columbia. Thesis submitted at the University of Victoria as partial requirements for MSc in the Department of Geography.
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by: Kelly Toots and Blair Lekness



### 5.1 Responsibilities for Site Implementation and Maintenance

#### Initial activities (Preparing land, Fencing, and Planting)

Initial activities could be the responsibility of environmental studies students especially in the ecological restoration class (ES 341) or students as part of the Restoration of Natural Systems program along with interested members of the First Peoples House. Volunteers would be welcomed and organized by the ES students responsible. Members of the Ecological Restoration Volunteer Network would likely be a good source of volunteers. The Garry Oak Ecosystems Recovery Team (GOERT), Garry Oak Restoration Project (GORP), and the Garry Oak Growers Group (GOMPS) would also be good sources of knowledge and knowledgeable volunteers.

#### Maintenance/Management:

Members of the First Peoples House have shown interest in taking on the responsibility of maintaining and managing the Kwetlal Restoration Site once the initial activities have been established (Young, 2014). In the event that this project is to be carried out, more discussion would need to occur between the members of the First Peoples House to make a definite commitment but, in this initial stage, they have shown that they believe it is a great opportunity and they would definitely be open to it (R. Young, personal communication, March 8th, 2014). The Faculty of Environmental Studies has shown interest in helping to carry out management activities as well (N. Ban, personal communication, March 8, 2014). The Anthropology Department may also have interest in taking part in the cultural management practices that are involved in maintaining the Kwetlal Food System. Again members of the Ecological Restoration Volunteer Network, GOERT, GORP, and GOMPS might also be an interested source of volunteers.

#### Pit Cook Ceremony and Educational Opportunities:

This would be under the sole discretion and responsibility of the First Peoples House. It is likely that the department of Anthropology and Environmental Studies (especially the ES 321 Ethnoecology course) would be interested in helping as well. Educational opportunities could include harvesting camas bulbs, fire management, weeding, pit cook ceremonies, guided tours,

and other management activities along with storytelling events or performances, if desired by the First Peoples House.

Putting up signs and installing benches:

Information provided on the interpretive signs will be to the discretion of the First People House. Bench and sign installation may be the responsibility of facilities management, volunteer based, a cooperation with the wood shop in the Fine Arts department, or sourced out to professionals.

5.2 Location

There are multiple potential locations all with advantages and disadvantages. All locations are proposed within the University of Victoria's campus property in order to encourage educational opportunities at the university and to meet the requirements of this assignment. Location options are listed in order of preference:

a) West Quad Area (the location pursued in this plan) Fig. 5.1, 5.2 and 5.3



Fig. 5.1 Birds eye view of the West Quad proposed site location outlined in blue.

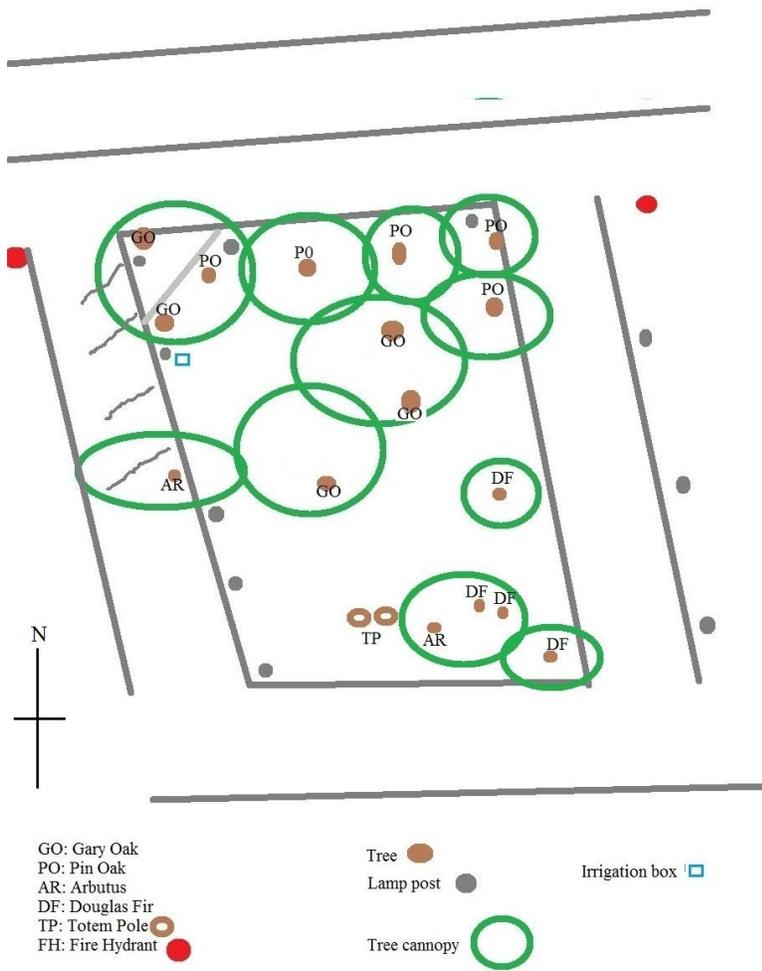


Fig. 5.2 A closer image including natural and man-made structures of the West Quad proposed site.

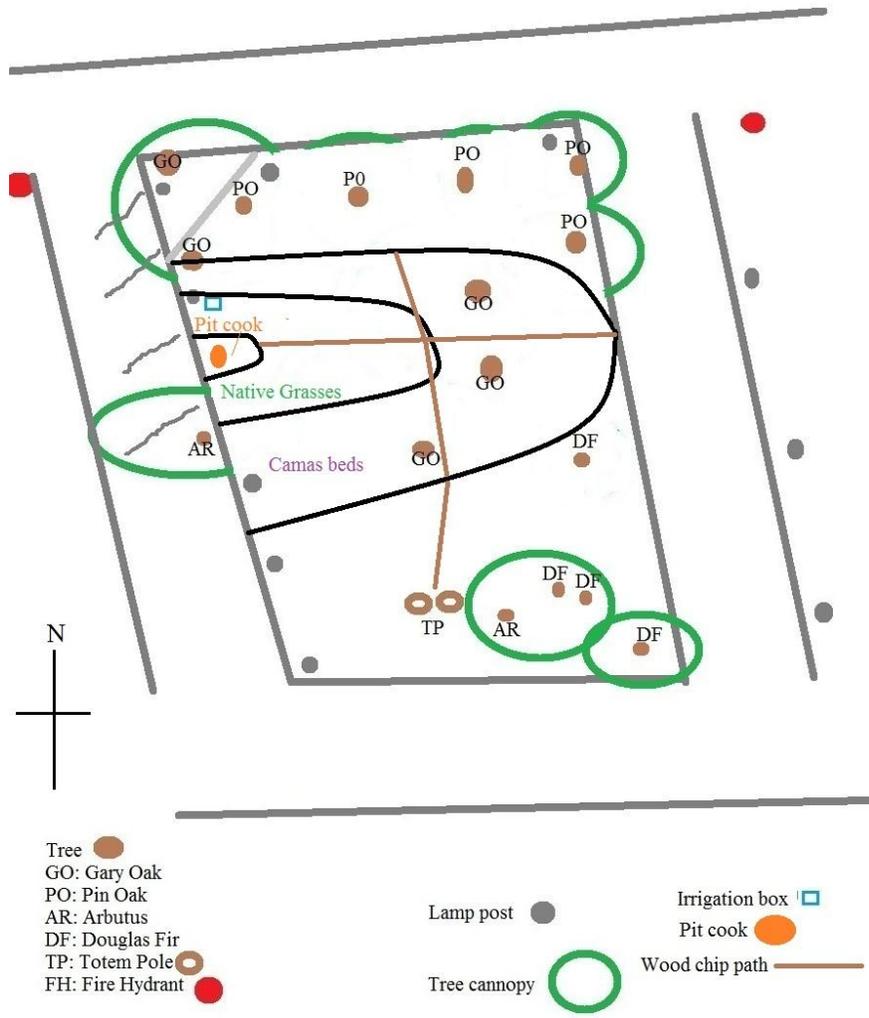


Fig. 5.3 More specifically, the boundaries of the Kwetlal Restoration Project given by the outermost black semi-circle and a path leading to the totem poles. Tree canopies have been removed for clarity.

#### Advantages:

This site is quite close to the First Peoples House so transporting food and running a cold water line to the site can be done with ease. It's proximity also allows incorporating it, educationally, with the First Peoples House gardens. Debora George, Elder Skip Sam, Brenda Beckwith and Cheryl Bryce all found this location to be suitable (D. George and S. Sam, personal communication, March 24th, 2014; B. Beckwith, personal communication, March 17, 2014; and C. Bryce, personal communication, January 17th, 2014). It is in a relatively central location so as to increase the potential for educational activities. It is also a large location that can

accommodate the over 300 people that the pit cook ceremony can attract (D. George, personal communication, March 24th, 2014; and B. Beckwith, personal communication, March 17, 2014). It is in a location where two totem poles have been erected which could be incorporated into the Kwetlal restoration site, with permission from the First Peoples House. It also is home to four Garry Oak trees which would give this project a tremendous head start at creating the Kwetlal Food System habitat (Fig. 5. 4). The site is also close to two fire hydrants that may help with safety precautions.



Fig. 5.4 Three of the four beautiful Garry Oak Trees within the West Quad proposed location.

Disadvantages. This location is considered to be part of the Quad and at present, according to the Director of the Office of Campus Planning and Sustainability, is to be preserved in its current state as the historical centre of campus (M. Greeno, personal communication, March 26, 2014). This means the Planning Office has significant reservations about any changes to the Quad and would not grant access to information from facilities management regarding infrastructure and

other planning information (M. Greeno, personal communication, March 26, 2014). We, the Kwetlal Restoration Planning team, are hopeful that with the support of the First Peoples House and other departments on campus an agreement might be reached to allow this site to be put forward.

b) Elliot Naturescape Garden (Fig. 5.5 a, b)



Fig 5.5a Side ground level view of Elliot Naturescape Garden

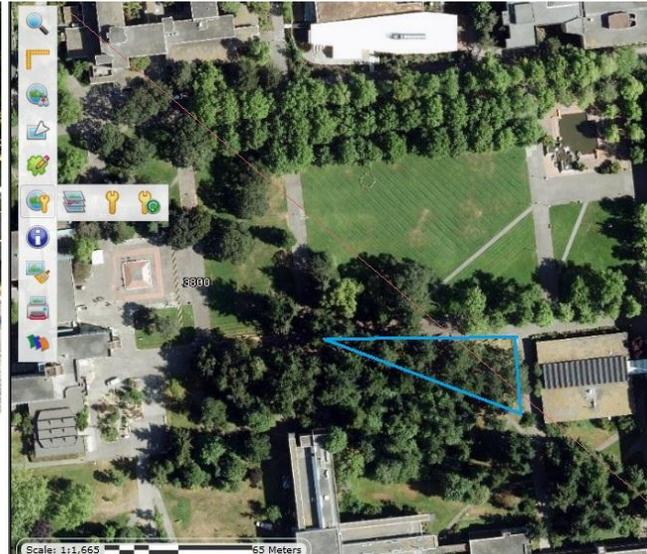


Fig. 5.5b Birds eye view of Elliot Naturescape Garden in blue triangle.

**Advantages:** This site is still near to the First Peoples House and in a relatively central location. Val Schaefer described this site as a previous urban ecological restoration project that hasn't been successfully maintained (personal communication, February 27th, 2014). If this site has already been an ecological restoration project this would mean it is an acceptable location for the Office of Planning and Sustainability. It also has three Garry Oak Trees living within it and a fence surrounding it that would be part of the implementation project proposed here.

**Disadvantages:** This location has multiple douglas fir trees and other species not native to the Kwetlal Food System that would require removal to allow space for the pit cook site. The location is much smaller than the West Quad site.

C) Grass field north of the First Peoples House (Fig. 5.6)

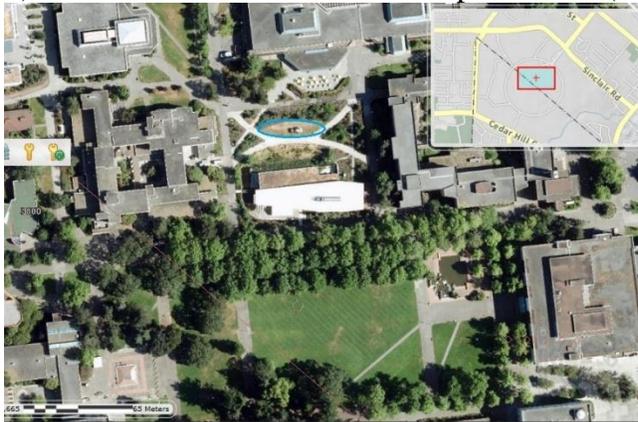


Fig. 5.6a Grass field north of the First Peoples House circled in blue

Fig. 5.6b Pit cook taken place at grass field north of First Peoples House.

Advantages: It is very close to the First Peoples House and more immersed within the the First Peoples' House garden.

Disadvantages: This location is quite small and, although it has been used as a pit cook site in the past, it is not optimal (B. Beckwith, personal communication, March 17, 2014). It also has no Garry Oak trees.

D) Corner of Campus near intersection of Cedar Hill Cross Road and Gordon Head Road

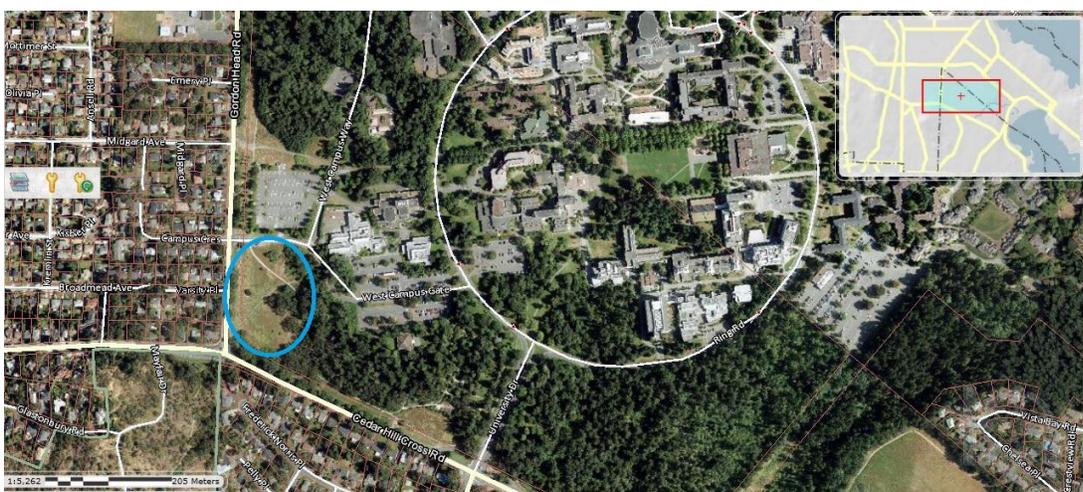


Fig. 5.7 Location at intersection of Cedar Hill Cross Road and Gordon Head Road circled in blue

Advantages: This is a large location and it has been used for a Pit Cook before by Cheryl Bryce (personal communication, January 17th, 2014).

Disadvantages: It is not in a central location and was found to be hard for people to get to (C. Bryce, personal communication, January 17th, 2014). It would likely be difficult to get water lines to this location and acquiring a food serving license may be difficult.

### 5.3 *Work to be carried out and timing*

#### Fence installation for deer protection

*September or October Year 1*

Though Columbian Black-tailed Deer (*Odocoileus hemionus columbianus*) are a common native mammal found in Garry Oak ecosystems, they can damage plantings (GOERT, 2011). A case study on Salt Spring Island found that installing fences was necessary to prevent damage to their Garry Oak restoration project (GOERT, 2011). Due to the large deer population in the area of the UVic campus, installing a deer fence is deemed necessary. Though we want to take into consideration Brenda Beckwith's advice to make the Kwetlal Food system site as accessible and welcoming as possible, we want to ensure the successful establishment of the native plants (personal communication, March 17, 2014). The fence would be installed along the outermost perimeter of the wild flowers section as seen in Fig. 5.8. This fence could be made up of a wooden frame such as the Split rail type fence seen in other areas on campus (Fig. 5.9).

Val Schaefer (2014), noted that this style of fence did not protect the Elliot Naturescape Garden against rabbits or deer. In order to keep the deer from entering the Kwetlal Restoration site we suggest installing a 4ft deer fencing on top of the split rail fence. This will lend to an attractive fence that, potentially once the native plants have become established, could be taken down with only the split rail fence remaining. Another option would be to install an 8ft deer fence without a split rail fence. Three gate entries are proposed, as indicated on Fig. 5.8, for

accessibility to the site but we suggest these gates remain locked until paths are created in the spring. Signs will be posted on the gates to remind visitors to shut them in order to keep the site free from deer browsing. The section of fence between the North-west corner and the South-west gate will also be designed to be easily removed in order to open up the site during pit cook ceremonies and utilize the concrete walking path as a work space and to accommodate participants, if needed. Though plants won't be introduced until the following spring, installing the fence at this time will contain the following sheet composting approach for preparing the soil.

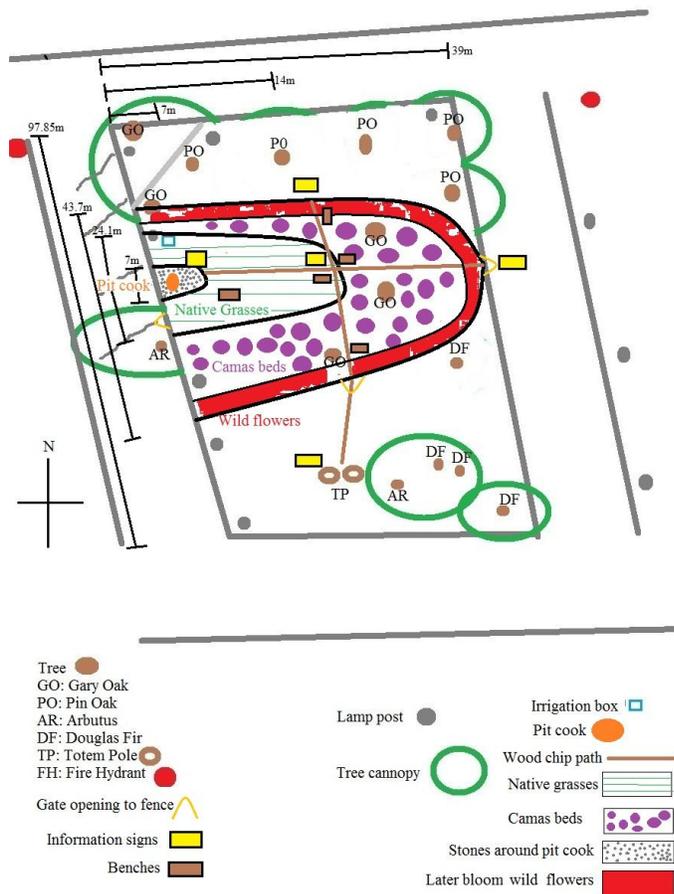


Fig. 5.8 Map of Kwetlal Restoration Project. Canopies have been excluded for clarity.



Fig. 5.9 Split rail fence around the Elliot Naturescape Garden on UVic Campus.

Sheet Composting Land preparation and Lawn Removal  
*September or October Year 1 (following fence installation)*

According to Brenda Beckwith, rich soil via mulching is best to establish native Garry Oak species (personal communication, March 17, 2014). Using a permaculture technique known as sheet composting will compost the existing grass on site, increasing the nutrients of the soil below (Oregon State University, 2009). First, the grass is mowed to the shortest length possible then the soil and grass is loosened with a spade or pitch fork to allow for good drainage. Then cardboard, sourced from UVic's recycling system and/or from appliance stores in Victoria, is put down over top of the existing grass. On top of the cardboard a one inch layer of nitrogen rich material (ie. kitchen scraps, green produce scraps, manures or fresh green weeds) followed by a one inch layer of carbon rich material (ie. straw, shredded paper, brown leaves) is added and repeated until about 18 inches is piled (Oregon State University, 2009). However, since Garry oak ecosystems are naturally nitrogen deficient, nitrogen layers may be reduced. Brenda Beckwith suggests that oak leaves would be the best source for the carbon layer (personal

communication, March 17, 2014). Leaves can be sourced from trees at UVic but one must take caution not to introducing weed seeds, especially those of horse chestnut (*Aesculus hippocastanum*). The nitrogen layer may be sourced from the University cafeterias. The cardboard, carbon, and nitrogen layers would be left overtop of the grass until the following spring in order to kill the grass, via depleting it of sunlight. We suggest assigning someone to be held responsible to check the site on a weekly or biweekly basis and arrange for further maintenance if necessary.

### Paths:

*Between April and September Year 2 (before planting native species)*

Paths, as outlined in (Fig. 5.8) could be bordered with stones, driftwood or other wood materials. The centre of the paths, roughly 1m wide, would be lined with bark mulch or wood chips.

### Purchasing and Planting of Native species:

The ideal time for planting and sowing depends on the species, but early spring and late fall is when the majority of the work would be done (GOERT, 2011). The plants require time to be established in the new environment before the hot summer months to prevent them drying out (Pennel, 2014). This is especially the case in terms of the native grass seed mixture, as the young seedling though tenacious and fast growing, require generous amounts of water to grow with maximum efficiency. These seeds could also be sown in the first September after the sheet mulching has been completed. September is the time when their seed is naturally dispersed throughout a native Garry oak habitat (Pennel, 2014). This would give the native grasses a chance to establish themselves prior to the introduction of the other species. With the assistance of the volunteers, the following list of plants will be placed in their noted locations (Fig. 5.8).

Outermost ring: As an eye catching and welcoming advertisement for the Kwetlal Restoration Project a natural, delineating, boundary between the traditional adaptive management practices of the site and the contemporary management practices of the rest of the UVic grounds, there will be an outer encompassing ring of planted perennial wild flowers; wooly sunflower

(*Eriophyllum lanatum*), pearly everlasting (*Anaphalis margaritacea*), western buttercup (*Ranunculus occidentalis*), bulbs; nodding onion (*Allium cernuum*) and chocolate lily (*Fritillaria affinis*) and strawberries; both coastal (*Fragaria chiloensis*) and wild (*Fragaria virginiana*). As the site matures and the natural formative processes begin to work alongside the management practices, the intermingling of species will be encouraged. The opportunity to make use of design principles in this area may also be investigated as a part of the long term plan, to eventually encourage species that attract pollinators, or dissuade and distract pests (GOERT, 2007). This is also an area of refuge for any species that do not respond well to the prescribed burning or mowing practices, as it a natural buffer zone.

Camas beds: As this is the food staple of the managed meadow system 100 x 10 cm pots of common camas (*Camassia quamiss*) and 42 x 1 gallon pots of great camas (*Camassia leichtinii*) are being used for this project. Potted plants of was chosen instead of sourcing directly from seed so that these important bulbs can establish themselves, both ecologically and aesthetically, before other faster growing species dominate the area. The grouping of camas beds amongst the native grasses recreate the communal relationships of this ecosystem (GOERT, 2014). It also provides ease of access during harvest and protection through sequestration via bark mulch pathways, raised beds, and clear effective signage.

Native grasses; Sandburg bluegrass (*Poa secund*), blue wild rye (*Elymus glaucus*), idaho fescue (*Festuca idahoensis*), Alaskan broome (*Bromus sitchensis*), western fescue (*Fescue occidentalis*), tufted hairgrass (*Deschampsia cespitosa*) and California oatgrass (*Danthonia californica*): All of these plants are being sown from seed with the exception of the California oatgrass. The native plant mixture is recommended and provided by Dwight Pennell of Integrity Sales and Distributors, and can be sown heavy, on the ground covering 580 square feet or 54 square metres per pound (Pennell, 2014). Two times of year are ideal for direct sowing of this native grass mixture. Either in April, so the new seedlings have an opportunity to establish themselves before the hot, dry summer months, or in September, when the seeds are naturally ready to be distributed (Pennell, 2014).

Of the seed sowing options available two stand out as being suitable for this site:

The first is direct seed sowing, which has been used before to carry out a reclamation project in Bamberton with this same native grass mixture and some additional wildflower seed thrown in (Pennell, 2014). Although initially this appears to be the easiest option, the method does have drawbacks. The site has to be prepared ahead of sowing to ensure that as many seeds as possible land in ideal growing conditions, and monitoring is necessary to ensure the removal of invasive weeds (GOERT, 2011). Both pest related losses and the inconsistency of seed placement have an influence on the ratio of successful seed propagation (GOERT, 2011). This is still the method chosen for the budget below as it cuts down on the propagation preparation time required in more intensive growing methods. Direct casting or seed sowing can also be used in conjunction with the other planting methods used for the camas beds (Pennell, 2014) to recreate the eco-cultural Garry oak meadow landscape.

The second method of container sowing to nurture grass plugs (GOERT, 2011), requires more initial infrastructure and a more careful monitoring program but yields substantial benefits for the time and effort put into it. An increased yield in successful propagules is often the result of this option, due the increased ability to monitor and provide for the needs of the young seedlings (GOERT, 2011). The establishment of a healthy root system allows any plant to gain a competitive advantage over fast growing weeds (GOERT, 2011). For this project, the focus on monitoring and management of the site after implementation, means that this method is the less viable option. Native grasses are also so well suited to the environment that they can become “invasive” themselves (Russel, 2014) out competing slower growing species that take a longer time to mature.

### Replanting, Seed Harvesting and Continued Growth.

Dependent on the species, the timing, and the ideal methods of seed harvesting, replanting and continuous natural propagation varies a great deal. In terms of bulb plants, such as camas and chocolate lily, the natural asexual division of the species (GOERT, 2007) makes encouraging the

spread of the initial plantings easy. This is essential as it is a part of the renewed First Peoples management practice and food cultivation (Turner, 2014). Seed collection and reintegration is also a preferred method of assisting in the long term establishment of the meadow ecosystem. The timing of this collection varies in accordance to the life cycle of the different species present (GOERT, 2014).

The inclusion of the many restoration volunteer networks and the cross faculty UVic student community will provide the labour needed to ensure that the initial preparation, planting, and sowing takes place as quickly and efficiently as possible. The seed harvesting, asexual bulb re-propagation, and cutting division of herbaceous perennials could all be encompassed in the long term management of the area to encourage the return to a fully functioning ecological community. The inclusion of salvaged plants following the guidelines laid by GOERT Principles and Practices (2011) from construction sites and areas threatened by development is an excellent source of new and existing species. Through the municipality of Saanich's native plant salvaging program (Dist. Saanich, 2014), the effort of individual gardeners, and the contributions of native plant nurseries, many native meadow species not included in the initial planting list could be introduced at a later time.

#### Inner Circle stone garden:

*April - September Year 2 (Same time as planting)*

A semi-circle, or more accurately an ellipse, 7m by 7m (Fig.5.8) would be covered, after laying down a landscaping cloth if deemed necessary, with gravel or stones. The cooking pit would be located roughly in the centre of the ellipse. This would be also acting as a fire buffer to enhance the precaution to fire hazards.

#### Pit cook:

*April - September Year 2 (same time as inner circle )*

There are two options:

- 1) The cooking pit could be dug for every pit cook ceremony and then the soil replaced following the ceremony. At present, any time soil is dug on UVic property Facilities

Management is required to carry out the dig (D. George, personal communication, March 24th, 2014). Perhaps an agreement can be made that will grant the First Peoples House permission to dig the pit themselves as it is an important activity for the First Nations anytime land is broken; however, digging the pit is not considered a sacred ritual in the pit cook ceremony (D. George, personal communication, March 24th, 2014).

2) The pit cook could be dug once and kept in its place with slight maintenance at the start of each ceremony. Brenda Beckwith suggests that a lid or covering be installed for safety purposes (personal communication, March 17, 2014) . We propose four stakes be submerged in a square formation encompassing the cooking pit, then a square plank be rested on the stakes as a covering for the pit.

Knowledge of irrigation and electrical infrastructure under the soil is vital for this step, however, given the stance of the Office of Campus Planning & Sustainability we could not obtain such information at this time.

### Putting up signs

*September/October Year 2 (after planting has been completed)*

Approximately 5 informational signs will be installed, with the approval of the First Peoples House, in each of the four cardinal directions and one in the centre of the Kwetlal site for educational purposes (Fig.5.8). Depending on what the First Peoples House decides, the signs could describe the importance of the pit cook ceremony, camas bed management, Kwetlal Food System habitat (Garry oak), or other aspects of the Kwetlal site.

The signs could be created by artists involved at the First Peoples House, by volunteers, or by professional artists ,preferably local.

### Installing Benches

Five benches are suggested to be installed at the locations indicated on Fig. 5.8 to encourage people to enjoy and learn in the Kwetlal site. Again benches may be crafted by the First Peoples House, made through cooperation with the woodshop UVic Fine Arts department, contracted by an independent professional, or through Facilities Management.

### 5.4 Budget and Materials

-Below is the plant list with associated costs. Sourced from three separate nurseries and distributors to reflect the range of pricing available and to ensure the correct variety of plants pertinent to the goals of the Kwetlal Restoration Project. The Saanich Native Plant Nursery and Dwight Pennel of Integrity Sales and Distribution both came recommended by Dr. Brenda Beckwith (2014). Russel Nursery is listed on the GOERT website as a native plant supplier (GOERT, 2014). They also offer 20% discount eligibility to landscapers, parks and conservation groups (Russel, 2014), for which the Kwetlal restoration project could qualify.

Plant Name	Latin name (GOERT, .14)	Price per Unit	Size	Quantity	Cost
Great Camas*	<i>Camassia leichtinii</i>	\$12.00	1 gal	42	\$504
Common Camas*	<i>Camassia quamish</i>	\$4.99	4 inch (10)	100	\$500
Chocolate Lily*	<i>Fritillaria affinis</i>	\$8.99	4 inch (10 cm)	25	\$225
Coastal Strawberry*	<i>Fragaria chiloensis</i>	\$3.69	4 inch (10 cm)	25	\$73.8
Wild Strawberry **	<i>Fragaria virginiana</i>	\$3.50	10cm	20	\$70
Western Buttercup**	<i>Ranunculus occidentalis</i>	\$7.00, \$4.00	1 gal, 10 cm	20, 30	\$260
Nodding Onion**	<i>Allium cernuum</i>	\$3.50	10cm	40	\$140
Woolly Sunflower**	<i>Eriophyllum lanatum</i>	\$6.00, \$3.50	1gal, 10 cm	20, 30	\$225
Pearly Everlasting **	<i>Anaphalis margaritacea</i>	\$3.50	10 cm	60	\$210
California Oatgrass**	<i>Danthonia californica</i>	\$7.00, \$4.00	1 gal, 10 cm	20, 30	\$260

Native Plant Seed Mix (Pennel, 2014):		13.99 per Pound	580 square feet or 54 square metres per Pound	50 pounds	\$700
Sandberg Bluegrass***	<i>Poa secunda</i>				
Blue Wild Rye***	<i>Elymus glaucus</i>				
Idaho Fescue***	<i>Festuca idahoensis</i>				
Tufted Hairgrass***	<i>Deschampsia cespitosa</i>				
Alaskan Broome***	<i>Bromus sitchensis</i>				
Western Fescue***	<i>Festuca occidentalis</i>				
Total	102 1 gal plantings	360 10 cm plantings	462 total plantings	50 pound of seed for 2677 square	\$3,167.80 plant list cost

Plant listing pricing courtesy of:

\*Russel Nursery, 1380 Wain R, North Saanich.

\*\* Saanich Native Plants, 741 Haliburton Road, Victoria.

\*\*\* Dwight Pennel, Integrity Sales and Distributors, 2180 Keating Cross Rd, Saanichton.

-Recommended deer fencing comes at varying costs, heights, weights and designs but the best for the purposes of this project is probably an 8 foot tall, heavy fishnet style. Through integrity sales and distributors 2 x 250 foot rolls of this material would cost just under 800 dollars (Pennel, 2014).

- Bark mulch will be used for they paths throughout the meadow and we would require approximately 100 cubic yards or 76 cubic metres. At 32.50 per cubic yard (BTY, 2014) this would cost an additional \$3,250. Ideally this would be locally sourced hardwood mulch which could decompose over time (B. Beckwith, personal communication, March 17, 2014).

- Benches if done through Facilities management estimated \$2000/bench (M. Greeno, personal communication, March 27, 2014 ). Additional \$10,000.
- Signs if done through Facilities management estimated \$500/sign (M. Greeno, personal communication, March 27, 2014 ). Additional \$2,500.

In total: \$19,717.80

Considering that \$12,500 of this total cost is for benches and informational signs it is clear that alternatives to these sources be further investigated. Perhaps the exclusion of these items be considered, at least initially, to prevent financial barriers of the application of this project.

### Monetary sources

It is possible that the Office of Campus Planning & Sustainability could provide \$100 to \$500 toward the Kwetlal Restoration Project. Also, the UVSP gives out small grants of up to \$500. The Alumni Association and the Corporate Allocations Committee, gives money given to UVic by corporate sponsors (M. Greeno, personal communication, March 13th, 2014). This would not be enough to cover the entire Kwetlal Restoration Project. Perhaps an agreement between the First Peoples House and the University of Victoria could be made to sponsor the project. Given the current stance of the Office of Campus Planning & Sustainability that information was not available at this time. The Faculty of Environmental Studies and Anthropology may also be involved in the agreement as well.

### *5.5 Supervision and safety issues*

#### Initial Activities: (Preparing land, Fencing, and Planting)

We suggest that an overseeing person should be elected from the First Peoples House and also from the ES department to supervise and lead these activities.

### Fire Activities, Prevention, Safety and Bylaws:

In order to proceed with the pit cook operation, the Saanich fire department's Open Air Burning regulations and Fire Prevention bylaws must be followed, to ensure the safety of the general public and the safe maintenance of the pit cook site itself. The university grounds, and thus our chosen site, fall within the urban containment area. A special permit must therefore be issued by the Saanich Fire Department to proceed. To obtain this permit, an application in writing to the Saanich Fire Chief must be made asking for permission to conduct the open air burn under the distinction of a pit cook ceremony (R. Pala, 2014). A Fire Prevention Officer will then conduct a site inspection to ensure a suitable location has been proposed. (R. Pala, Personal Communication, March 27<sup>th</sup> 2014). Pit cooks fall under the distinction of a ceremonial practice and provisions have been made by the Saanich Fire Department for this to take place on University grounds for previous pit cook gatherings (R. Pala, Personal Communication, March 27<sup>th</sup> 2014). The requirements have been met before and the regulations are in place for this to proceed safely, as long as our site meets the following stipulations and passes the safety inspection.

The requirements for open air burning are as follows (from the District of Saanich, Fire Prevention Bylaw 8807, Part 5 Control of Open Air Burning, (27s(2a)) with added provisions for the pit cook ceremony(R, Pala. 2014):

- Located only on properties outside of the Urban Containment Boundary; (Special Permit can be issued by the Fire Chief to make allowances for this)
  - Located 7.6 m or 25 feet from any building, wooden fence or property line; (This was the recommended distance from any trees and drip-lines as well)
  - The fire is to be continuously attended by a responsible adult and completely extinguished at the completion of the ceremony
  - A fire extinguisher and a charged garden hose are to be present at the fire site
  - The permit is valid between the hours of 8 am and 4 pm
  - The fire location is subject to an on-site inspection prior to ignition
- Allowances and observance of the Smoke Opacity Standards (31s(1&2)) found within the same bylaw would also have to be adhered to. The prevention of billowing clouds of smoke are

obviously in the best interests of hosting a successful public event and maintain air clarity for the surrounding area.

District of Saanich Fire Prevention Bylaw 8807, Part 5 Control of Open Air Burning (31s(1,2a & 2b)):

*-No person shall cause or allow the emission of smoke from any solid fuel burning device for a period or periods aggregating more than 3 minutes in any one hour of such opacity as to obscure an observer's view of the background through the smoke to a degree of greater than 20%.*

*-Subsection (1) shall not apply to:*

*(a) Smoke emitted during the 20 minute period following the ignition of the fire; or*

*(b) Smoke emitted during a 6 minute period after a fire is re-stoked with fuel.*

Another key section of the bylaw pertinent to our project is included under the heading Person in Charge of Fire. During the excitement and crowd engagement of the pit cook, a supervisor with access to a means of extinguishing the fire, such as a garden hose, pressurized water sprayer, shovel or rake, will need to be chosen. They must meet the requirements outlined below.

District of Saanich Fire Prevention Bylaw 8807, Part 5 Control of Open Air Burning (33s)

*-Every person who ignites or maintains a fire in the open air or in a domestic incinerator or to whom a fire permit is issued, shall ensure that the fire is continually supervised by a competent person who is not less than 19 years of age until such fire is completely extinguished and shall ensure that sufficient appliances, equipment and labour to effectively maintain control over said fire and prevent the same from spreading, causing damage or becoming dangerous to life or to other property are present on the property.*

-Prescribed Burning: Although burns are an important part of traditional Garry oak meadow management, the above restrictions and lack of contemporary ceremonial distinction make it difficult to achieve in an urban environment. The Fire Dept. has yet to reply to email correspondence on the subject. The confines of the urban containment zone and university regulations would need to be negoti

Source: Assistant Chief Richard Tala, Saanich Fire Department. Phone Personal communication 3:45 pm, March 27, 2014.

### Food safe requirements:

If food is to be served, a licence from the Vancouver Island Health Authority is required. In the past, pit cook food has been served outside and a cold water line was set up so participants could wash their hands (D. George personal communication, March 24th, 2014). Another viable option would be to serve food inside the First Peoples House (R. Young, personal communication, March 12, 2014). At least one person with food safe must be onsite while food is served (D. George, personal communication, March 24th, 2014).

An extensive list on Food Premise Regulations can be found at:

[http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/11\\_210\\_99](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/11_210_99)

The application for a temporary food service, which is more accurately what the pit cook ceremony would be, can be found at the following website:

<http://www.viha.ca/mho/food/>

However, it should be noted that food is not sold during pit cook ceremonies so less or different requirements may be necessary.

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Garry oak meadow with camas lilies, Uplands park (photo by Chris Junck)(GOERT)





### 6.1 Traditional First Peoples Cultural Management

Given the eco-cultural nature of this project, we propose long term management of the site to be supervised and undertaken by the First Peoples House. The traditional camas harvesting methods, weeding practices of noxious plants, and a system of prescribed burns (Turner, 2014) would be an ideal accompaniment to the establishment of the Kwetlal Restoration site. The traditional food system of the First peoples of this area promotes regular disturbance in the turning and aeration of soil during the harvest of camas Q. and camas Le, as well as the burning of fields to regenerate soil fertility (Turner, 2014). These practices also benefit the native grasses and perennial wildflowers, creating a connection to the ecological community and the establishment of a cultural landscape. This promotes the relationship with the First Peoples House whose rich cultural heritage allows both the pit cook ceremony and the traditional management practices to be possible for this project. The native plant gardens surrounding the First Peoples House will also provide many of the ingredients of the pitcook not grown at the Kwetlal restoration project ( Beckwith, March 17, 2014).This partnership will further the hands on learning opportunities available through this project. It is obviously preferable for traditional First Nations' practices to be used throughout the long term adaptive management of this site to ensure cultural restoration takes place..

Since this may be a source of contention between departments within the university or the existing bylaws regarding Fire safety, it is noted that alternatives exist to help fill the role that prescribed burns play in the landscape. Both the use of holistic permacultural methods (Beckwith, March 17, 2014) such as the sheet mulching described in detail in section 5.3 (Oregon State University, 2009) and the regular mulch mowing of a meadow ecosystem are acceptable, though not ideal options. These techniques can mimic many of the advantages of prescribed burning such as the interruption of the natural successional stages of the garry oak habitat (GOERT, 2011), the maintenance of the soil fertility, and the control of invasive weeds (although some can take advantage of disturbance) (GOERT, 2007).



### Prescribed burns in camas beds

The First Peoples House would be in charge of this practice as it falls under cultural management practices. Included here is the importance of fire management and some practices that have been shown to be safely used in the past.

According to Brenda Beckwith (personal communication, March 17, 2014) and GOERT (2013) prescribed burning is an essential management practice in Garry Oak ecosystems that should be included in the management of the Kwetlal Restoration site. As mentioned earlier prescribed burns were used to limit conifer encroachment, to encourage growth of important food plants and to remineralize and expose soils (MacDougall, Beckwith, & Maslovat, 2004; McCune, Pellatt, & Vellend, 2013). According to Proctor (2013) burning occurred only once every few years, though it could be varied between sites and other sources suggest much more frequent burning. Some researchers such as MacDougall (2004) question the feasibility of landscape fire due to the high density of human settlements. Openness to and acknowledgement of the need for prescribed burning has been increasing since the 2003 wildfire in Kelowna, BC (GOERT, 2013). Approaches to conduct it in a safe and controlled manner have also been developing.

Prescribed fire management has taken place for the last 10 years at the Nature Conservancy of Canada's Cowichan Garry Oak Preserve near Duncan, BC (GOERT, 2013). They mow the outer perimeter of the area to be burned to the width of 1 meter and then water it down to create a fire guard just before ignition of the burn (GOERT, 2013). We propose this technique to occur at the outer perimeter of the camas bed section, keeping the flower plant section intact and fire free. Specific species have been selected for this location due of their fire sensitivity. This will also maintain a living aesthetic appearance on the site during prescribed burns. At the Cowichan Garry Oak Preserve, after creating a fire guard, the practitioners would then light the fire using propane drip torches, patrol with fire hoses during the burn, and subsequently wet down any fire "hot spots" after the surface burn had been conducted (GOERT, 2013).



The timing of the burn is also critical. Most native species have their growing season from March to July which does not coincide with the timing of peak fuel combustibility (August–October) and so it is important that fire management be taken out at this late-summer/early-fall time period, which is also a time when many non-native species are vulnerable to fire (GOERT, 2013). Carrying out the fire management practice in September or October would also be an excellent time for educational participation. It is important to mention that some invasive species such as Scotch broom and Canadian thistle have been noted to increase after burning (GOERT, 2013). Further research is available on fire management and alternative practices, see MacDougall and Turkington, 2007 and Stanley et al., 2011.

Selective harvesting of camas and Weeding

These practices are proposed to be carried out in the traditional cultural ways and would be organized and initiated by the First Peoples House. It is important to remove non-native Garry Oak species that may encroach given their establishment on UVic campus such as Scotch Broom, Canada Thistle, and douglas fir.

Replanting

Not all plantings and seeds will survive and so part of the monitoring scheme will include replanting in areas with low survivorship. GOERT (2011) suggests spreading native seeds after a burn to enhance native species.

Maintenance of paths, fences, and gates

All these aspects will require some regular maintenance carried out by volunteers, the First Peoples House, the ES department and or RNS department.

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by: Anne Franklin





### 7.1 Evaluation

The success of the pit cook project can and should be measured by a variety of factors. As this is not purely an ecological restoration project, we cannot simply measure success by ecological standards, despite ecology being a main factor here. As well as basic issues such as site stability and native plant health to consider, we have extensive cultural factors to see to, as well as logistical concerns such as interactions with UVic Facilities staff, health and safety monitoring, and supervision/stewardship of the site.

As far as evaluating the cultural successes may go, there are several indicators to examine:

1. Is the space suitable for pit cooks as per the elders' standards? Have there been any pit cooks held in the area?
2. If one or more pit cooks have been held, how many people attended? Has this number grown?
3. How satisfied are the elders of the First Peoples House with the state of the pit cook area (camas growth and other native species, respect given by passers-by)?
4. How satisfied are the elders with any perceived increase in cultural awareness from students?

Ecological:

1. How well has the camas taken hold in the area?
2. How does the site hold up when referenced against other healthy Garry oak / camas meadow ecosystems?
3. If any Garry oak seedlings have been planted, are they healthy and growing?
4. Have any threats to the ecosystem (i.e. deer) been eliminated?

Logistical:

1. Is the pit cook compliant with food safety regulations?
2. In case of fire spreading beyond the designated pit cook area, is there a procedure in place to follow? Are there attendees present who are trained to follow this procedure?
3. Is the site free of overhanging branches or other nearby vegetation in danger of catching fire?



## 7.2 Monitoring

Monitoring should be performed on a yearly basis, unless a different frequency is deemed practical by the First Peoples House. As with evaluation, monitoring may involve ecological, cultural, and logistical concerns. Monitoring may be performed by volunteers from the First Peoples House, or by student volunteers (i.e. ESSA, Restoration of Natural Systems students, or the Outdoors Club).

Ecological monitoring may be most easily performed by repeat photography of the area, or by volunteer counts of plants that may have taken root or are thriving in the area (i.e. camas, native grasses, and Garry oak).

Indicators for ecological monitoring are as follows:

1. How is the health of the transplanted species? Has it changed at all, and if so, how? (Fuchs, 2001)
2. How have the transplanted species been changing in growth or number? If there are Garry oaks, growth should be measured; if camas, flowering bulbs may be counted; if native grasses have been transplanted, their area may be measured. (GOERT, 2011.)
3. Are there any new or returning invasive species that pose a threat to the created ecosystem?
4. If deer have posed a threat to the transplanted species, have they been dealt with (i.e. fences or culling)?
5. If camas is being harvested from the area for the pit cooks, is it being replanted in a sustainable manner?

Cultural:

1. How close to a traditional pit cook have we come, as per standards set by the elders of the First People's House?
2. If there are pit cooks taking place, how has the attendance increased or decreased?
3. Are the elders satisfied with the maintenance of the site and activities?
4. How has student awareness increased in regards to Garry Oak ecosystems and traditional First Nations pit cooks?
5. Is the site well-respected by students? (Kept clean, free of vandalism/graffiti)

Logistical:

1. Who remains in charge of seeing to any problems (i.e. pulling invasive species)?



2. If permits are needed in regards to food safety legislation or fire safety, these being renewed as needed?
3. Does UVic Facilities staff have any concerns regarding the site?
4. Are communications regular and cordial with the Facilities staff and any other authorities in regards to the pit cook site?
5. If camas is being harvested, is the site being maintained sustainably (replanted)?
6. If damage occurs at the site, is it repaired promptly?

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by: Kayla Ginter





The harvesting of traditional foods is one of the primary aspects of the unique relationship aboriginal peoples have with their land, and a primary means of transmitting cultural values, skills and spirituality. In British Columbia, the provisioning of traditional foods has been threatened by a number of factors; including European assimilation, lack of access to traditional lands, threats to biodiversity from climate change, and decreased transfer of cultural knowledge from elders to young people. The Kwetlal Restoration hopes to minimize these threats facing First Nations culture today by reintroducing camas to the UVic. Linked to the traditional food systems is both environmental and human health, thereby restoring camas to the UVic grounds, we hope to encourage the resiliency of both these systems through this project. By giving the school's First Nations community the ability to harvest and manage the land traditionally, this projects creates the basis of social and physical activity, social cohesion and social integration much like how it was and had been for their ancestors thousands of years before. The ability to access sufficient and safe foods on campus may be integral to personal identity and even their cultural health and survival.

*"The Lekwungen people will continue to harvest and prepare the camas for many years to come. Its importance is vital to our history, traditions and future roles and responsibilities. There is still so much work that needs to be done with regards to camas and cultural restoration. There is a growing need to have access to traditional food in Lekwungen Territory. Even more so to environmentally safe food to consume. Cultural roles and practices need to be included in the restoration of these ecosystems." ~Cheryl Bryce*

We have promised the First Nations community on campus that we will be giving this document to them in hopes that they can make the Kwetlal Restoration become a reality. Group members have also suggested the idea of turning this project into a official UVic group for the fall of 2015 and winter 2015 semesters. We hope our report may help in providing a framework for the First Nations and we wish them all the best health and happiness in the future!

## **Break down of work:**

Anne was a wonderful member of the team, full of lots of great ideas and an excellent contributor to group discussions which she helped to lead. Anne worked on monitoring and evaluation.

The amazing Laura worked on intro of the goal, policy and objectives, the policy, goal 1 and 3 and then the first half of the traditional native plant chart. She also helped to edit the presentation slide show, and took great notes during discussion.

Brianne did a super job tackling Garry Oak Ecosystems Section 2.3 (plant associations, threats, ecological role of fire) and spent a number of hours editing the full assignment- looking at grammar and spelling throughout the report. She was also full of great ideas!

Blair worked on the following sections: budget, planting, safety and supervision (fire code stuff) and the introductory paragraph under management. Group members would also like to thank him for all the legwork he did to gather references critical to the project.

Dave worked on policy, goals and objectives : goal 2,4, conclusion, second half of traditional native plant chart and some editing. What a great team member he was! He gave lots of insight to the project, adding to the depth of our discussions.

Enthusiastic Kelly worked on sections 5 and 6 alongside Blair. He spend copious time doing the outreach for the project, such as getting in touch with First Nations and bringing them jams and other threats, emailing, and building a relationship with potential project participants. He was the one who inspired this project, and his team mates.

Kayla worked on the all of the introduction, section 2 site analysis with Brianne and the conclusion. She also did editing of the slide show alongside Laura. Kayla also extensively edited the final draft of the report which entailed- transferring documents and charts, formatting, chosen the design- colours, subtitles and pictures, and make the document into one cohesive project.

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