A Living Artifact: The Garry Oak Ecosystem

"The Garry Oak Ecosystem is a living artifact of my ancestors. The Lekwungen people will continue to harvest and pitcook Kwetlal for many years to come. Its importance is vital to our history, traditions and future roles and responsibilities. There is still so much work to do in regards to reinstating Kwetlal food system and cultural roles."

Cheryl Bryce, 2011.

"Restoring Garry oak ecosystems is partly an act of imagination, piecing together the places that once were and those that might be. Beyond our conventional relationships with the land, especially in urban areas, is the dream of integrated landscape nourished by care, respect, and diligence. Ultimately, restoring Garry oak habitat is more than protecting an ecological community; it is at least as much about renewing social community and in this way bringing the ecological and the social together."

- Eric Higgs from the school of Environmental Studies at UVic in 2002 at a Garry Oak Ecosystem Restoration Conference.



1858 land survey map excerpt from map of Victoria District, c. 1850s as surveyed by Pemberton. Courtesy of the BC Surveyor General's Office. Call number 28 tr 2. The brown is Garry oak areas, the pink is wetland/riparian (which might have had oaks) and the dark green is mostly coniferous forests.

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A Living Artifact: The Garry Oak Ecosystem

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What are Garry oak ecosystems?

The Kwetlal food system or Garry oak (*Quercus garryana*) ecosystem is a living artifact of the Indigenous peoples who took care of this land for generations. It is dominated by twisted, gnarled Garry oak trees, and includes a mosaic of individual trees, fragmented stands, woodlands, parklands, meadows, grasslands, scattered Douglas-fir stands, and open rocky areas. Garry oak trees can be up to 30 meters tall and are usually in small groups or scattered. The forest understory is composed of shrubs, wildflowers, and other plants. Garry oak ecosystems are among the most endangered ecosystems in Canada with only three percent remaining in a natural state¹. In Canada, they occur only on southeastern tip of Vancouver Island and adjacent Gulf Islands, plus two isolated groves east of Vancouver.

In the Capital Regional District, remants of the Garry oak ecosystem make up a large part of the urban forest on the traditional territory of the ləkwəŋən speaking peoples known today as the Songhees and Xwsepsəm (Kosapsom) First Nations, and the WSÁNEĆ people encompassing the five local communities: BO,KE,ĆEN (Pauquachin), MÁLEXEŁ (Malahat), W JOŁEŁP (Tsartlip), W,SIKEM (Tseycum), and S,TAUTW (Tsawout), who have worked on this land since time immemorial and whose historical relationship to the land and territories continues to this day.

Garry oak ecosystems are a subcomponent of the Coastal Douglas-fir ecosystem. Garry oak trees are the only native oak in British Columbia and are found at low elevations in deep meadow soil,

¹ https://www.crd.ca/media/file/may19-2021-ecosysteminfosheets-

garryoak#:~:text=Garry%20oak%20ecosystems%20are%20among,few%20spots%20on%20the%20mainland.

and on dry, rocky slopes with shallow soil. Within the Capital Region, some places to find relatively intact Garry oak ecosystems include Regional Parks such as:

- East Sooke, Thetis Lake, Mill Hill, Francis King;
- Fort Rodd Hill and Fisgard Lighthouse National Historic Site;
- Victoria and Esquimalt Harbours;
- MEE-qan (Beacon Hill Park)
- PKOLS (Mt Tolmie);
- Uplands Park;
- Summit Park;
- Christmas Hill.

Why are they culturally important?

Garry oak ecosystems play an important role in lok^wəŋən and WSÁNEĆ cultural heritage and their connections to living remnants of thethe lands as they were managed pre-settlement.

In ləkwəŋən, the word for camas and Garry oak ecosystems is the Kwetlal food system. The SENĆOŦEN word for Garry oak used by the WSÁNEĆ people is ĆEŊ,IŁĆ (pronounced chung-ae-th-ch). Garry oak ecosystems arrived after the glacial retreat approximately 8,000 years ago, and at least 1,645 organisms (plants, insects, amphibians, reptiles, birds, and mammals) have co-evolved within this unique ecosystem. Colonial Scottish botanist David Douglas assigned the English name of Garry oak for his friend Nicholas Garry, who was the deputy governor of the Hudson's Bay Company from 1822-1835.

Prior to European settlement, the majority of the land that now encompasses southeastern Vancouver Island was dominated by Garry oak ecosystems largely from Indigenous agroecological land management over thousands of years which formed the oak savannah. In the absence of these activities, the landscape would be dominated by closed stands of Douglas-fir and Grand fir. The Garry oak ecosystem is valued for its cultural history and traditions and for the Kwetlal (camas) food production system that was an important source of nourishment. Many medicines were made from other trees and plants in the ecosystem. Work is underway by Cheryl Bryce², a member of the Songhees Nation, and Director of Local Services including Lands Management as a traditional knowledge holder, reinstating harvesting in the meadows for food and medicines, as well as removing invasive plants and educating First Nations and their allies³. ləkwəŋən women are the backbone of the Kwetlal food system (Garry oak ecosystems) by managing it for centuries and maintaining their connections to their homelands with traditional laws and practices. The Garry oak ecosystem provides urban Indigenous youth with a direct connection to their ancestors and is significant for the continuation and passing of knowledge as traditions change.

² Bryce, Cheryl. "Meegan. Online On Land." *Open Space*. 2019 https://vimeo.com/405250132. Accessed 6 July 2023.

³ Acker, Maleea. "Caring for Kwetlal in Meeqan." Focus Magazine. 2020. Accessed July 18 2023. https://www.focusonvictoria.ca/earthrise/caring-for-kwetlal-in-meegan-r20/



Garry oaks and wildflowers at Playfair Park (2018)

Why are they ecologically important?

Garry oak and associated ecosystems in this region have a unique local genetic adaptation to the environment and its associated species community would be difficult and costly to re-introduce if lost.

The open oak woodlands are home to a diverse bird community, both in summer and winter. Mammals from deer to mice are abundant, although the number of mammal species is lower than expected because many mainland species have not managed to colonize the islands. Sunny rock outcrops are a favoured basking place for garter snakes and alligator lizards, and a great variety of insects and spiders appreciate and depend on the Garry oak ecosystem's warm climate.

Irregularly wooded landscapes are called "parklands." The term "meadows" describes the open areas, particularly appropriate in spring and summer when they are lush with bright wildflowers: blue Kwetlal (camas), white Easter lily, and yellow western buttercup. Other fascinating species are satin flower, chocolate lily, and little monkeyflower. Parts of the landscape also feature shrub stands of snowberry and ocean spray. Rock outcrops support scattered shrubby oaks, along with licorice fern, rock mosses, and grasses such as Idaho fescue and California oatgrass. These grasses evoke an image of the southern origin of the Garry oak ecosystems.

Within Garry oak ecosystems, the combined effect of vegetation and dry climate produces special soils with organically enriched upper layers. These dark-coloured soils, in marked contrast to the poorer, reddish-brown soils of surrounding coniferous forests, favour the relatively shallow-rooting herbaceous understory vegetation.

The Greater Victoria area has a high concentration of rare species when compared to the rest of the province. Garry oak ecosystems have been identified as a "hot spot" of biological diversity. They are the most diverse terrestrial ecosystems in British Columbia, containing species ranked "at risk" by the Province of British Columbia to loss or serious depletion.

Garry oak ecosystems range from southwestern British Columbia to California. These ecosystems occur within a distinctive climatic zone: a near Mediterranean climate, shaped by rain shadow of the mountains to the southwest. This is a region of moderate climate, with dry summers.



Where do they exist? Map © Province of British Columbia (Linnet.geog.ubc.ca)

In addition to the rarities they contain, the designation reflects their limited extent, the significance of their biodiversity from a provincial perspective, and the trend of accelerating habitat loss. Our position at the northern margin of the Californian flora results in a range of species that is one of the most interesting in Canada. Attractive, but now rare, plant species such as Howell's triteleia, golden paintbrush, deltoid balsamroot, and dozens of others highlight the importance of this biotic zone.

Climate change and Garry oak ecosystems

The University of Victoria's "Plan2Adapt"⁴ climate modeling for the South Island forecasts an average temperature rise exceeding 3 degrees Celsius by 2050, compared to the 1960-1990 baseline. This increase will likely lead to more frequent heat domes and severe droughts. Garry oak ecosystems, inherently adapted to such conditions, serve as essential nature-based solutions to mitigate the urban heat island effect, particularly in vulnerable populations.

⁴ University of Victoria Pacific Climate Impacts Consortium, Plan2Adapt < https://services.pacificclimate.org/plan2adapt/app/ >.

Impacts of climate change on human health in BC have been graphically and tragically revealed — for example, during the "heat dome" of 2021 when more than 600 people died⁵. Since then, oppressive conditions have become the norm in many urban areas during the summer months, particularly for seniors, people with disabilities, low-income people, and people with various health conditions.

The natural regeneration of Garry oaks is facing significant challenges, largely due to human activities. Key factors include the restriction of Indigenous fire management, urban expansion, increased recreational pressures, the prevalence of forest pathogens, invasive species that threaten biodiversity, and the rising incidence of hot, dry summers. Areas further south on Vancouver Island and the Southern Gulf Islands have experienced declines in conifer stands adjacent to urban developments, consistent with climate modeling predictions.

The decline of species such as western red cedar, grand fir, western hemlock, western yew, and Douglas fir is occurring at a troubling rate, impacting both forest management and the communities dependent on these ecosystems.

Conversely, established Garry oak stands exhibit remarkable resilience to drought and high temperatures, thriving even on rocky outcrops with shallow soils. Garry oaks possess deep taproots and well-developed lateral roots, making them resilient to wind and environmental stress. As a long-lived keystone species, Garry oak has played a vital role in supporting biodiversity over the past 8,000 years. Protecting existing GOE patches, implementing suitable management practices, and expanding these areas are crucial for sustaining numerous organisms.

How did Garry oak ecosystems evolve?

Garry oak (Quercus garryana) woodlands are an important link to the past. Garry oak distribution has ebbed and flowed between the ice ages. During the current post-glacial period, Garry oak forests reached their largest extent during the warm dry era, 5000 to 8000 years ago.

⁵ https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/death-review-panel/extreme_heat_death_review_panel_report.pdf

Before the ice ages, British Columbia also had a varied hardwood forest with many kinds of deciduous trees, including oaks. While deciduous woodlands may not be as familiar to many British Columbians as coniferous ones, they are one of the most common vegetation types in the temperate climates of the world.

The advent of the current wetter, cooler climate changed the distribution of many plant species and reduced the range of some. This change in climate probably accounts for the patchy occurrence of Garry oak ecosystems and their associated species. Their ability to survive on well drained soils, on steep south and west facing slopes, and on sites with exposed bedrock accounts for their present distribution in today's Mediterranean-type climate. The important exception is the deep-soil parkland of southeastern Vancouver Island.



Fawn lily, a native wildflower, at Playfair Park (2018)

Garry oak and the urban forest

In British Columbia, the Garry oak is categorized as a small to medium-sized deciduous broadleaf tree, characterized by a broad rounded crown, stout and often forked stem, twisted branches, and dark grayish-brown scaly bark with shallow furrows. Notably, Garry oak is not cultivated for timber and is classified as endangered, primarily due to its prevalence on private lands targeted for urban development.

Over 75% of the urban forest is on private property. It is highly adaptable to a range of growing conditions including some of the harshest locations on elevated rocky outcrops and along exposed sections of coastline. The climate may be cooling off now in the Victoria region, but in the heat waves recently behind us it is important to remember that Garry Oaks are big contributors to mitigating urban heat island effect in areas largely characterized by pavement and concrete. That is especially the case where large oak trees currently exist and air conditioners in residences do not. This is accomplished by larger trees with wide crowns and abundant leaf area, and because of their incredible ability to endure harsh urban conditions in drought and high temperatures.

The cooling oaks provide is from shading heat absorbing surfaces and also from transpiration: cooling the air with the release of water by evaporation through the leaves' stomata. Strength is not only in the size of tree canopies, but in the distribution of tree canopy proximate to where people live, work, play, and go to school.



Garry oaks at PKOLS (Mount Doug Park) in Saanich (2018)

What is the relationship between First Peoples and Garry oak ecosystems?

Local family groups of Indigenous peoples tended the Garry oak ecosystems, using fire and cultivation as management tools. Garry oaks and the plants that grow with them adapted to frequent fires. Fire is important because it allows oaks to occupy deeper soils, where conifers might out-compete them. Oaks are favoured over conifers and annuals; and perennial plants over shrubs in places that often burn.

Fire was used to burn the plants under the oaks throughout their range to maintain open prairie,

to make hunting easier, and to allow the land to produce more food. The edible bulbs of kwetlal (camas) and other species were the focus of the plant harvest. Kwetlal was so important in their diet that families had their own plots of woodland where they owned the harvest.

Deer in Garry oak ecosystems were also important to First Peoples. Blacktail deer are still residents of oak habitat, and Roosevelt elk formerly roamed southeastern Vancouver Island. These animals helped maintain the open character of the Garry oak landscape by suppressing some oak regeneration.

The continued stewardship of Garry oak ecosystems is an act of recognition, appreciation, and support for historic Indigenous land management, maintaining a connection for Indigenous youth to their ancestors, and preserving an opportunity for ongoing management. Unfortunately, GOE patches have become fragmented and degraded due to land development and the replacement of GOT with non-native species. Restoring stewardship practices rooted in lak^waŋan knowledge and best ecosystem management practices—such as replanting GOT seedlings, restoring GOE plant communities, and creating wildlife snags—can lead to improved cultural, social and environmental outcomes.



Kwetlal growing in front of Rogers Elementary School (2018)

What were early European impressions of these ecosystems?

The European explorers and settlers were attracted to the aesthetic qualities of the oak landscape. Superlatives from Captain George Vancouver include "as enchantingly beautiful as the most elegantly finished pleasure ground in Europe." However, during an interview with *Focus Magazine*, "Caring for Kwetlal in Meegan", Cheryl Bryce notes, "What the first settlers didn't realize (or more accurately, refused to recognize) however, was that the meadows were a managed landscape kept clear of brush and Douglas fir through use of fire, weeding and selective harvesting" by Bryce's ancestors (Acker). Camas bulbs were historically a primary source of carbohydrates; baked in pits, they taste somewhat like a pear.

The oak landscape has continued to be important for aesthetics and as a contribution both to the sense of place and to the regional identity of Victorians. Emily Carr, esteemed west coast artist, grew up in the Garry oak meadow, and described our Easter lilies as "the most delicately lovely of all flowers," and "in all your thinkings you could picture nothing more beautiful than our lily field." Some feel that Garry oak (Quercus garryana) groves should be preserved to "serve the whole community's spiritual needs, as well as for themselves and the spirit they embody." There is fond local appreciation of the spectacular wildflower shows that the meadows exhibit. Successive waves, in a palette of blue, mauve, white, and gold, rush through their spring presentation over a three or four month flowering period.

Why are the ecosystems at risk?

Garry oak ecosystems are restricted primarily to the southeast coast of Vancouver Island and the southern Gulf Islands. These ecosystems occupy only a small portion of the Coastal Douglas-fir zone, which itself comprises only 0.3 percent of the land area of the Province.

During the last 150 years, agricultural and urban development has consumed substantial areas of the natural landscape. Overall, environmental colonialism, and urban development has had a major impact. The largest continuous occurrence of Garry oak woodlands was formerly in the urban center of Greater Victoria, a region that is now almost completely developed. Parkland and meadows, once common in this area, are in extreme peril. Fire suppression has allowed Douglas-fir to invade areas once dominated by Garry oak.

According to the Garry Oak Ecosystems Recovery Team, as of 2006, coverage of the ecosystem had been reduced to 1,589 hectares from 15,249 hectares. Deep-soil meadows have suffered also; from 12,009 hectares pre-European settlement to 175 hectares in 2006.

The trend continues, with many developments imminent. Today, Duncan, Nanaimo, Hornby Island, Saltspring Island, and Comox all have Garry oak landscapes threatened by development. Although the death may be a slow one, construction near oaks can lead to tree mortality.

Very little of the original Garry oak landscape remains in an unaltered state. It has declined dramatically in extent over the past two decades, and much of what remains has been strongly modified. There is growing public and scientific concern about preservation of the Garry oak ecosystem. One of several recognized Garry oak vegetation types, the Garry oak - grass community, has been rated as one of the most endangered in British Columbia; other types are rated as threatened.



The Matson Lands, the last Garry oak ecosystem in Victoria's inner harbour (2018)

What is the impact of introduced and invasive species?

Overgrazing by domestic and feral livestock, including pigs, sheep, goats, cattle and horses, as well as introduced eastern cottontail, and recently feral pet rabbits, has caused non-native plant species to become dominant.

These introduced plants spread widely after European settlement. Exotics, such as orchardgrass and sweet vernalgrass may comprise over 30 percent of the total species in Garry oak ecosystems. Rapid spread of Scotch broom has also replaced native plants, changed soil nutrients, and dramatically altered the make-up of these ecosystems. The increased rarity of many native species is another result of these changes.

A new peril to Garry oak is posed by the spread and serious impact of two introduced insect pests: the jumping gall wasp and the oak-leaf phylloxeran. The "scorching" of oaks by these insects results in a potential threat to the ecosystem. Scorched oaks may be mistakenly cut down as "dead," when they are actually still alive.

What wildlife species are under threat?

Many invertebrates, including robber flies, butterflies, and seed bugs are restricted to these sunny, coastal meadows. A subspecies of large marbled butterfly is extinct; the perdiccas checkerspot butterfly is no longer found in British Columbia, and Taylor's checkerspot has been reduced to two populations, one of which is on Hornby Island. The propertius dusky wing butterfly is completely dependent on Garry oak (Quercus garryana) for larval growth and is considered a vulnerable species.

Birds are affected too. Lewis' Woodpecker, once a resident of the open, dry woodlands of southern Vancouver Island, disappeared early in the 20th century. Concern is growing for the conservation of a number of other birds for which the ecosystem provides habitat, such as Cooper's Hawk, Western Bluebird, and Band-tailed Pigeon. Nest holes, acorns, and open country habitat are among the attractions which the oak woodlands provide. The rare, little-known, sharp-tailed snake also inhabit this ecosystem.

Garry oak seedlings

The ideal time to plant Garry oaks is during the fall, as the seasonal rains promote root development, enabling seedlings to endure the subsequent summer droughts typical of Vancouver Island. Once established, most other Garry oak ecosystem species are adapted to summer drought and plants can be allowed to dry out between watering. This will help them grow deep roots and become more drought-tolerant. However, care should be taken to ensure moisture-loving plants receive adequate hydration during particularly dry spells. If a garden is in a schoolyard, someone should be in charge of regular watering during the summer months when the school is closed.

Garry oak trees tend to grow slowly in their initial years but can achieve annual growth rates of one to two feet once established. Their survival can be supported through protective measures such as stakes, caging against browsing, mulching, and supplemental watering during drought periods for the first three seasons after planting.

Goals and measures for urban management

Key goals for the preservation and enhancement of Garry oak ecosystems include:

- Protecting root systems
- Creating shaded areas under trees
- Encouraging community participation in management
- Engaging volunteers in hands-on restoration efforts
- Promoting Indigenous-led initiatives for Kwetlal food ecosystem regrowth and community gardening

As urban development continues, it is essential to consider the implications for tree canopy growth and the social benefits associated with maintaining green spaces. While Garry oaks are not as frequently planted in urban boulevards due to size and acorn-related concerns, their drought resilience and ability to thrive in challenging conditions make them valuable contributors to urban environments.

Strategies for effective urban forest management should include:

- Conducting canopy assessments
- Measuring ecosystem services within tree inventories at the neighborhood level
- Addressing climate adaptation and mitigation strategies
- Evaluating housing displacement and affordability issues
- Balancing green space loss with offset contributions

Through collaborative efforts and community engagement, it is possible to create sustainable urban environments that honor the legacy of Garry oaks and the ecosystems they support.

What is being done to preserve the ecosystem?

The value to society of the Garry oak landscape is now being recognized. Victoria City Council adopted a resolution recognizing the historic and ecological significance of the Garry oak ecosystem. Garry oak (Quercus garryana) has been referred to as "our foundation native species." Garry oak is included in the tree preservation bylaws every municipality in the Capital Regional District.

The plight of the ecosystem has been featured in a number of local and national level media stories. Several local development proposals have been opposed by those wishing to save Garry oak landscapes. A colloquium focusing on Garry oak ecosystems, the first of its kind, was held in Victoria in 1993. Three have been held since reflecting increasing concerns over the growing threats to the survival of Garry oak ecosystems.

In October 2024, the Garry Oak Ecosystem Recovery Team, a group of ecologists and biologists, held its annual Garry Oak Ecosystems Conference and brought together researchers, practitioners, governments, community members and students who are actively involved or interested in restoring Garry Oak ecosystems. The conference was designed to take the first steps in building relationships between our historical membership and the First Nations on whose territory we conduct our work. The agenda intermixed important speakers with time for questions, discussion and reflection. Dr. Jennifer Grenz delivered the keynote address. Other distinguished presenters included:

- Honoured WSÁNEĆ Elder SELILIYE and Dr. Nancy Turner
- Dominique James and Kristen Miskelly of Satinflower Nurseries
- Jim Boulter of the Comox Valley Naturalists Society
- University of Victoria Ecological Restoration Club

Garry Oak Meadow Preservation Society Nursery

The Garry Oak Meadow Preservation Society (GOMPS), a volunteer, non-profit society was formed in 1992 because local citizens were concerned that woodlands and meadows disappearing as a result of expanding human habitation in the Capital Regional District. Ecological restoration projects, typically dependent on volunteers, are also targeting Garry oak ecosystems. Through invasive species removal and the planting of native species, these damaged ecosystems are being nurtured back to health.

The GOMPS Nursery has been in operation since 2017 to meet the challenge of producing local Garry oaks (*Quercus garryana*). The Nursery project is run by a task force drawn from members of GOMPS. There are currently over 2000 Garry oak seedling at the Nursery, available for planting grown from locally sourced acorns. Nursery volunteers take part in all stages of Garry oak seedling development from potting up acorns to root and distribution to our community partners and all maintenance in between.

GOMPS also advocates for improving native tree canopy and strengthening urban forest bylaws at the municipal level, and has partnered with Terra Remote Sensing to perform LiDAR to map and analyze the overall Garry oak ecosystem and individual trees in the Capital Regional District in June 2025.

Garry Oak Community Mapping Project

In 2024, a community mapping project was made possible by a City of Victoria's "My Great Neighbourhood Grant", community volunteers, a GIC consultant, and support letters from the Sierra Club and the Rockland Neighbourhood Association who administered the grant. To complement the City's excellent inventory of all trees on public land, the Victoria Community Association Network (VCAN) involved each neighbourhood in an inventory of Garry oaks and other elements of biodiversity on private property. Each neighbourhood developed their own approach and reported back to residents on what they learned about the larger patterns within our urban forest. It was revealed how many old-growth trees (defined as those over 250 years old by the Province of BC), some exceeding 500 years, continue to thrive in parks and in neighbourhoods within the urban boundaries, vibrating with the rich cultural history of the territory.

The project occurred because of the scale of land use changes in British Columbia and at local municipalities have outdated Tree Protection Bylaws, and Urban Forest Master Plans that do not currently account for increased building footprints and heights. Further analysis and mapping can explore the correlation and proximity to parks and open spaces, water areas, vegetation, and elevations. Zoning, development areas that have four floors or higher could be examined to tell the story of the seed distribution (for example if an apartment building is blocking seed distribution), sun and wind exposure. Field work, pictures can identify suitable areas for growing. This new community-built data has an opportunity to be the most comprehensive data set to exist to date.

Final Report

https://www.garryoak.info/uploads/1/1/4/9/114971855/vcan_community_mapping_project_2025_finalreport.pdf

Remote Sensing: Garry Oak Species Detection Project

The Remote Sensing: Garry Oak Species Detection Project is scheduled for June 2025.

Garry Oak Meadow Preservation Society is a volunteer-run non-profit based in Saanich, BC providing advocacy functions around individual Garry oak and Garry oak ecosystem protection and stewardship. Mapping and analysis of the overall Garry oak ecosystem and individual trees in the Capital Regional District is out of date and utilizes methods that prevent cost-effective updates and efficient temporal analysis. Our interest is in developing a new approach to mapping Garry oak species presence using LiDAR and geoAI. By conducting species specific detection analysis to form a species composition baseline, we can enable future analysis opportunities that are Garry oak specific.

The Garry Oak Meadow Preservation Society (GOMPS) has partnered with Terra Remote Sensing, a geospatial data acquisition company, for an upcoming project. GOMPS is in interested in developing a new approach to map Garry oak species presence using LiDAR and machine learning. By conducting species specific detection analysis to form a species composition baseline, we can enable future analysis opportunities that are Garry oak and Garry oak ecosystem specific. This is an important contribution to a growing body of regional urban forest mapping that could influence changes in tree protection policies (e.g., enhanced existing tree protections and requirements for Garry oak replacement trees through private development), and management and planning for Garry oaks on public property.

GOMPS initial analysis goals are to perform Garry oak species detection within two municipalities (City of Victoria, and District of Saanich's Urban Containment Boundary), and eventually expand the method to survey all municipalities in the Capital Regional District. GOMPS hopes to have located and calculated the overall Garry oak canopy area. The goal is to offer the Garry oak mapping and high-resolution raw LiDAR/ortho data flown for this project publicly. This data sharing will support researchers, community members and other nonprofit organizations with our Garry oak species analysis, and also enable additional novel data analysis approaches supporting Garry oaks and Garry oak ecosystems. LiDAR Species Detection flight window is set for the week of June 23, 2025.

Presentation Slides:

https://www.garryoak.info/uploads/1/1/4/9/114971855/presentationlidar.pdf



A kwetlal meadow in bloom in a restored area of Playfair Park, Saanich (2018)

Historical Maps



1858 land survey map excerpt from map of Victoria District, c. 1850s as surveyed by Pemberton. Courtesy of the BC Surveyor General's Office. Call number 28 tr 2. The brown is Garry oak areas, the pink is wetland/riparian (which might have had oaks) and the dark green is mostly coniferous forests.



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The Canadian Forest Service map of 1976 shows Garry oak distribution potential.

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