



Garry Oak Ecosystems

*Restricted to
southwestern
British Columbia,
these ecosystems
are among the rarest
in the province.*





Why are Garry oak 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, urban development has had a major impact. The largest continuous occurrence of Garry oak woodlands was formerly in the urban development centre of Greater Victoria, a region that is now almost completely developed. Parkland and meadows, once common in this area, are in extreme peril. 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 fatality.

Fire suppression has allowed Douglas-fir to invade areas once dominated by Garry oak. Overgrazing by domestic and feral livestock, including pigs, sheep, goats, cattle and horses, as well as introduced eastern cottontail 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 phylloxera. 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 is their history?

While deciduous woodlands may not seem as familiar to many British Columbians as coniferous ones, they are among the most common vegetation types in the temperate climates of the world. Before the ice ages, British Columbia also had a diverse hardwood forest, including oaks. Garry oak woodlands are thus an important link to the past. There has been an ebb and flow in Garry oak distribution between the ice ages. During the post-glacial period, the maximum spread of Garry oak occurred in the warm dry era, 5000 to 8000 years ago.

The advent of the current wetter, cooler climate changed the distribution of many plant species, reducing 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 rapidly drained soils, on steep south and west-facing slopes, and on sites with exposed bedrock, subject to periodic fires, accounts for their present distribution in

today’s Mediterranean-type climate. The important exception is the deep-soil parkland of southeastern Vancouver Island.

Garry Oak ecosystems may have a special role to play in British Columbia’s adjustment to global warming.

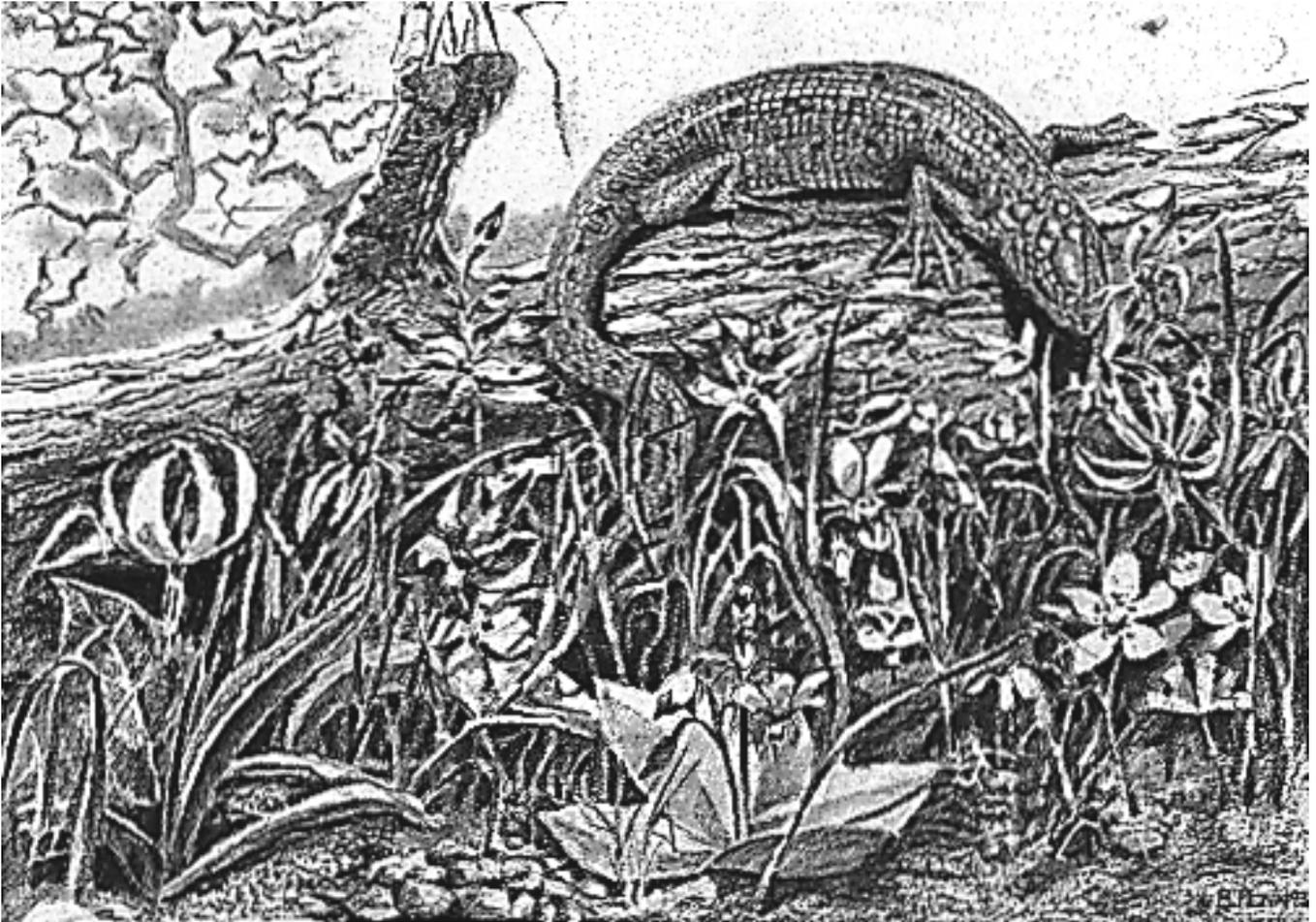
Garry Oak ecosystems may have a special role to play in British Columbia’s adjustment to global warming. It is predicted that our climate will become like that of California. With Douglas-fir ecosystems retreating from their current range, Garry oak

vegetation could provide the important biological material to repopulate the void.

We can view the Garry oak vegetation complex as one that was conditioned by and adapted to a frequent fire cycle. Fire seems to be an important factor in permitting oaks to occupy deeper soils, where Garry oak vegetation might otherwise be outcompeted by conifers. Oaks are favoured over conifers, and herbaceous vegetation is favoured over shrubs by this fire regime. It is known that aboriginal people burned the vegetation throughout the range of Garry oak to help hunting and maintain open prairie. The resulting oak woodlands and open prairies were important to the aboriginal people for their bounty of usable plants.

Native deer were also important to Garry oak ecosystems. Black-tailed deer are still residents of the oak area, and Roosevelt elk formerly roamed southeastern Vancouver Island. It has been suggested that these animals helped maintain the open character of the Garry oak landscape by the suppression of some oak regeneration. Oak seedlings are repeatedly browsed and sometimes killed.

Garry oak ecosystems have declined dramatically over the past two decades.



GARRY OAK ECOSYSTEMS CONTAIN A DIVERSE ARRAY OF ANIMAL AND PLANT LIFE, INCLUDING NORTHERN ALLIGATOR LIZARDS, EASTER LILIES, CAMAS, AND SHOOTING STARS.

What is their present status?

They are going fast. Very little of the original Garry oak landscape remains in an unaltered state. They have 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 ecosystems. 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 endangered designation reflects a history of degradation and loss.

What are they?

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

In British Columbia, the Garry oak landscape includes a mosaic of woodlands, meadows, grasslands, scattered Douglas-fir stands, and open rocky areas. 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 camas, white Easter lily, and yellow western buttercup. Other fascinating species are satin

flower, chocolate lily, and little monkey-flower. 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 understorey vegetation.

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 the warm climate of the oak meadows.

Why are they important?

Aboriginal people tended the Garry oak ecosystems, using fire and cultivation as management tools. The edible bulbs of camas and other species were the focus of the plant harvest. So important were these plants that the Victoria area was originally known as Camosun, or “place to gather camas.”

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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.” 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 meadows, and described our Easter lilies as “the most delicately lovely of all flowers,” with a “perfume like heaven and earth mixed.” Some feel that Garry oak 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 presentations over a three or four month flowering period.

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 has been referred to as “our foundation native species.” Garry oak will be included in the tree preservation bylaws being developed by several municipal councils. The plight of the ecosystem has been featured in a

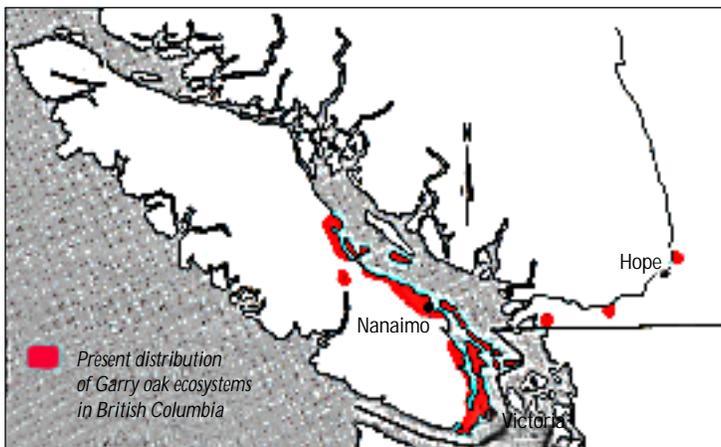
number of local and national level media stories. Several local development proposals have been opposed by those wishing to save Garry oak landscapes. For the first time, a colloquium focusing on Garry oak ecosystems was held in Victoria in 1993.

The 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.



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 species such as Howell’s triteleia, golden paintbrush, deltoid balsamroot, and dozens of others highlight the importance of this biotic zone.

Lewis’ Woodpecker, once a resident of the open, dry woodlands of southern Vancouver Island, disappeared earlier in the century. Concern is growing for the conservation of a number of other birds for which the ecosystems provide 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 inhabits these ecosystems.



Many invertebrates, including robber flies, butterflies, and seed bugs are restricted to these sunny, coastal meadows. A subspecies of large marble butterfly has already gone 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 for larval growth and is considered a vulnerable species.

What can we do?

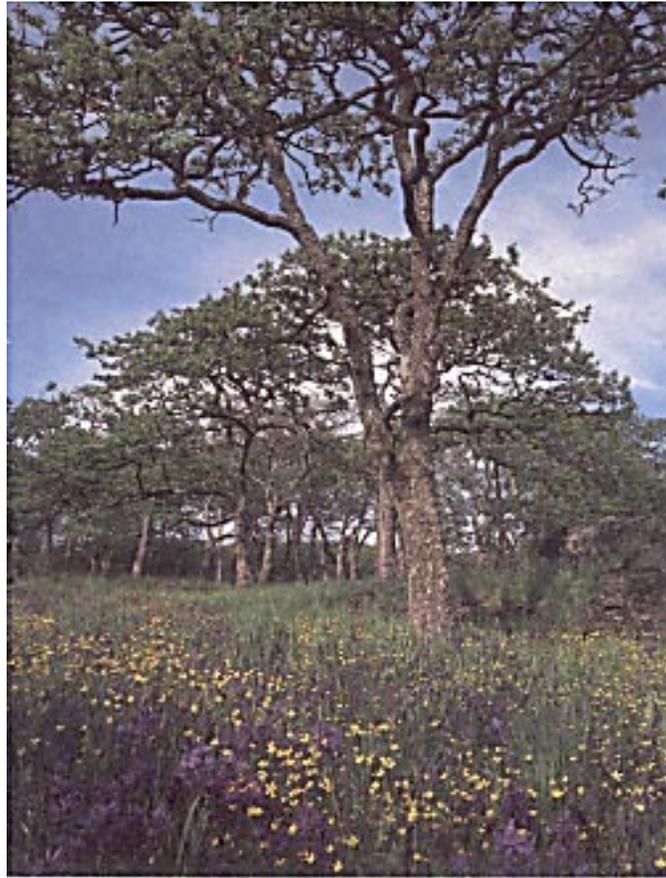
Further research and inventory are planned to improve our present knowledge of Garry oak ecosystems. In addition, further studies on management techniques to rehabilitate degraded sites is a major need. To understand today's ecosystems we need

to know about the past role of fire. To maintain the ecosystems, we need to develop strategies that use prescribed fire or simulate its effects. Continued research on insect pests of Garry oak is required; there are hopeful signs that native parasitoid wasps may check the jumping gall wasp populations.

We have an opportunity to "think globally," and "act locally."

Garry oak grows literally in our own backyards. The Garry Oak Meadow Preservation Society is sponsoring the

"Backyard Biodiversity" program. It promotes keeping your remaining oaks, letting your lawns grow wild-flowers,



EARLY SPRING FLUSH OF CAMAS AND BUTTERCUP IN A HEALTHY GARRY OAK ECOSYSTEM. *Graham Osborne photo*

and collecting and growing acorns. This program results in real conservation gains by reducing water use, pesticide use and storm sewer discharge. Concerned citizens can also join "work-bees" to remove the introduced Scotch broom, which threatens the Garry oak meadows in many locations.

Experiencing and appreciating the Garry oak landscape is the well from which motivation can spring. Get out and enjoy the Garry oak ecosystems. Their attractions are many, from the showy wildflower displays to the sound of crickets on a sultry

summer evening to the serene beauty of an oak in its austere form silhouetted against a rising winter moon.

Many landowners are proud of their oaks. It is important that they share that sense of pride with their neighbours. Talk to each other. Use public forums to raise conservation awareness. Help municipalities formulate and put in place tree preservation bylaws. Forestry Canada has co-sponsored a program for growing oak seedlings and will need volunteers at different phases of activity. "Good homes" will also be sought for the seedlings.

The B.C. Ministry of Environment, Lands and Parks has two Ecological Reserves that have a primary focus on Garry oak ecosystems. These are the Mt. Tzuhalem E.R. near Duncan and the Mt. Maxwell E.R. on Saltspring Island. Other possible reserves are being identified. The Garry oak ecosystems will be included in the provincial objective of protecting 12 percent of the area of

all the major ecosystems.

The Conservation Data Centre, a provincial government program compiling information on rare and endangered species and plant communities, is evaluating the status of the Garry oak communities. They still need information about your local oak stands or meadows and have launched a cooperative project to map Garry oak ecosystems on eastern Vancouver Island and the Gulf Islands.

These initiatives, in concert with strong public support, are needed to ensure the continued existence of Garry oak ecosystems in Canada. 

There are lots of opportunities to become involved in helping to save these ecosystems.



URBAN ENCROACHMENT IS A MAJOR THREAT TO GARRY OAK ECOSYSTEMS. *Joel Ussery photo*



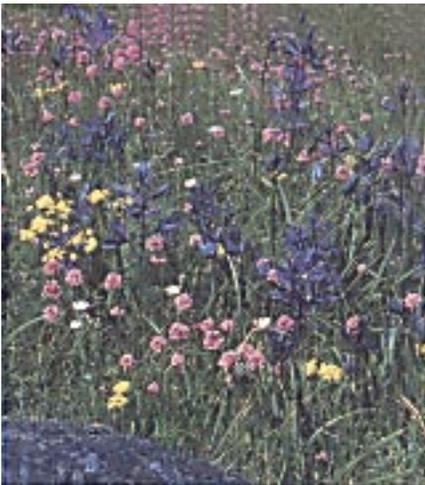
SCOTCH BROOM OUTCOMPETES MANY NATIVE SPECIES. *Joel Ussery photo*



HORNBY ISLAND'S GARRY OAK ECOSYSTEMS ARE HOME TO THE RARE TAYLOR'S CHECKERSPOT BUTTERFLY. *Trudy Chatwin photo*



WESTERN BLUEBIRDS HAVE VIRTUALLY DISAPPEARED FROM THE OPEN WOODLANDS OF SOUTHWESTERN B.C. *Steve Cannings photo*



WILDFLOWERS PROVIDE A PALETTE OF COLOURS IN SPRING AND EARLY SUMMER. *Hans Roemer photo*

FOR MORE INFORMATION ON GARRY OAK ECOSYSTEMS, CONTACT:

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