Garry oak (Qg) - *Quercus garryana*

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BC Distribution of Garry oak (Qg)

Range of Garry oak

A savanna-like or grass-dominated Garry 0ak community on an upper, warm slope in the southern limit of the CDF zone in the Gulf Islands

Geographic Range and Ecological Amplitudes

Description

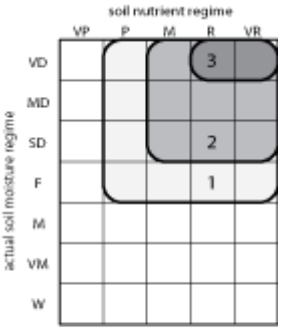
In B.C., Garry oak is a tall shrub to small-sized, less often, medium-sized (<30 m) deciduous broad-leaved tree, at maturity with a broad rounded crown, short, stout, and often forked stem, numerous twisted, gnarled, branches, and dark, grayish-brown, scaly bark, with narrow shallow furrows. In British Columbia, Garry oak is not grown for timber production; in fact, it is considered an endangered species as it grows mainly on private lands which are being developed for urban dwellings.

Geographic Range

Geographic element:
Western North American/mainly Pacific and less Cordilleran

Distribution in Western North America:
central and **south** in the Pacific region; (central) and south in the Cordilleran region

Ecological Amplitudes



generalized edaphic amplitude of Garry oak according to actual soil moisture and nutrient regimes

Climatic amplitude:
(warm temperate) - cool and warm mesothermal

Orographic amplitude:
submontane - montane

Occurrence in biogeoclimatic zones:
CDF

Edaphic Amplitude

Range of soil moisture regimes:
very dry - moderately dry - slightly dry – (fresh)

Range of soil nutrient regimes:
(poor) - medium - **rich - very rich**

Based on field studies, Krajina (1969) concluded that soil melanization is more intensive in Garry oak ecosystems than in coniferous ecosystems. The

uppermost, dark gray melanized soil horizon in the Garry oak ecosystems is only slightly acidic, and resembles prairie soils in colour, but with no calcification in the B horizon. Under these conditions there is active nitrification, as indicated by the frequent occurrence of Galium aparine L., Geranium molle L., and Dactylis glomerata L., understory species that require nitrate-N for their growth.

Garry oak appears to require large quantities of calcium, similar to bigleaf maple or black cottonwood, and deposits this element in its bark. This is why some calciphytic bryophytes may inhabit the bark of Garry oak trees.

Tolerance and Damaging Agents

Root System Characteristics

Garry oak has a deep taproot and well-developed lateral roots, thus is very windfirm. Roots are associated with ecto- and endo-mycorrhizae.

Tolerances

tolerance to	tolerance class	comments
low light	M	moderately shade-tolerant in warm mesothermal climates
frost	L	not a concern in cool mesothermal climates
heat	H	frequent on warm and dry sites
water deficit	H	frequent on dry and warm sites
water surplus	H	tolerates flooding and a strongly fluctuating water table
nutrient (mainly N) deficiency	M	absent in acid, very poor soils; infrequent in poor soils

Damaging Agents

damaging agent	resistance class	comments
snow	L	snowfall is very low in the CDF zone
wind	M	high winds will break boles and branches rather than uproot trees
	risk class	
fire	L	fire-resistant, except in the early developmental stage
insect	L	not a serious concern
fungi	L	not a serious concern (root and butt rots)

Associated tree species and successional role

In British Columbia, Garry oak grows in small, open-canopy stands or mixed-species stands, typically with common douglas, less often with Pacific madrone

on warm-aspect, water-deficient sites on southeastern Vancouver Island and the Gulf Islands. It is present in early, mid-, and late stages of secondary succession and can be present as a minor or major component in old-growth stands on a few sites in the CDF zone.

Silvical Characteristics

characteristic	interpretive class	comments
reproduction capacity	M	reproduces also vegetatively from dormant buds on cut stumps and root collars
seed dissemination capacity	L	very low
potential for natural regeneration in low light	L	low light conditions do not exist in Garry oak stands
potential for natural regeneration in the open	H	providing the presence of exposed mineral soil
potential initial growth rate (<5 years)	L	varies with soil moisture availability
response of advance regeneration to release	na	advance regeneration does not develop in the absence of adequate light and seedbeds
self-pruning capacity in dense stands	L	dense stands are very infrequent
crown spatial requirements	H	very wide crowns
light conditions beneath closed-canopy, mature stands	H	associated with well-developed understory vegetation
potential productivity	na	non-crop species
longevity	M	occasionally >200 years

Genetics and Notes

Genetics

Though Garry oak populations in Oregon and Washington are disjunct and scattered, the chemical composition and morphological characteristics of their foliage are similar. Genetic differences appear to be minor. Garry oak hybridizes with *Quercus dumosa* Nutt., *Q. douglasii* Hook. & Arn., and *Q. lobata* Née.

Notes

The largest cascara sagrada are found on very moist or wet and nitrogen-rich, coastal sites. The tea or syrup obtained from boiling the bark of cascara sagrada has been proved to be an effective laxative. The plant was also used by First Nations people as a medicine for washing sores and swellings and treating heart strain, internal strain, and biliousness.

Although not grown for timber production, scattered trees and open-canopy Garry oak stands are highly valued scenic assets in wildlands, parks, and urban areas. Feasibility of managing Garry oak stands for truffle production is being investigated. More detailed silvics information is given by:

Stein, W.I. 1990. *Quercus garryana*. Pp. 650-660 in R.M. Burns and B.H. Honkala (technical coordinators) Silvics of North America, Vol. 2. Agri. Handbook 654, USDA For. Serv., Washington, D.C.

ite pine populations. Work on blister rust indicated considerable heritability of resistance. Notes Western white pine is a very productive and desirable species considering its rapid growth, clean bole with minimum taper, narrow crown, and non-resinous wood. The major hazard limiting its wider application is blister rust. More detailed silvics information is given by:

Graham, R.T. 1990. *Pinus monticola*. Pp. 385-394 in R.M. Burns and B.H. Honkala (technical coordinators) Silvics of North America, Vol. 1. Agri. Handbook 654, USDA For. Serv., Washington, D.C.