

Bigleaf maple (Mb) - *Acer macrophyllum*

Tree Species > Bigleaf maple



Page Index

Distribution
Range and Amplitudes
Tolerances and Damaging
Agents
Silvical Characteristics
Genetics and Notes

BC Distribution of Bigleaf maple (Mb)

Range of Bigleaf maple



Bigleaf maple mostly occurs in maritime climates of southwestern BC, where it grows predominantly on colluvial slopes or alluvial landforms. In most fall seasons the leaves of bigleaf maple turn brown, but during a sunny autumn, the leaves turn yellow - never red.

Geographic Range and Ecological Amplitudes

Description

Bigleaf maple is a medium-sized (<30 m tall), deciduous, broad-leaved tree, at maturity with a broad, rounded crown, often curved stem (in the open, the stem soon divides into a few large spreading and ascending branches), and grayish-brown bark which is shallowly furrowed into narrow scaly ridges. Like sugar maple, bigleaf maple has sweet sap that can be made into syrup. Its wood is used for furniture, flooring, interior paneling, and musical instruments.

Geographic Range

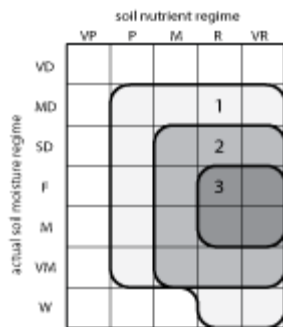
Geographic element:

Western North American/mainly Pacific and less Cordilleran

Distribution in Western North America:

central and south in the Pacific region; (central) in the Cordilleran region

Ecological Amplitudes



generalized edaphic amplitude of bigleaf maple according to actual soil moisture and nutrient regimes

Climatic amplitude:

(subcontinental cool temperate) - cool and warm mesothermal

Orographic amplitude:

submontane - (montane)

Occurrence in biogeoclimatic zones:

(subcontinental IDF), **CDF**, southern CWH

Edaphic Amplitude

Range of soil moisture regimes:

(moderately dry) - slightly dry - **fresh - moist** - very moist - (wet)

Range of soil nutrient regimes:

(poor) - medium - **rich - very rich**

Nutritional requirements of bigleaf maple appear to be high, especially for nitrogen (mainly nitrates), calcium, magnesium, potassium, and phosphorus. As a consequence, (i) its bark is rich in calcium that provides substrate for the establishment of many corticolous calciphytic bryophytes, and (ii) its litter

contributes to the nutrient status of forest floor by increasing its nitrogen, calcium, and magnesium concentrations. Thus, the presence of bigleaf maple in coniferous stands will tend to improve humus form quality from Mors to Moders, which have higher decomposition and mineralization rates, and higher levels of plant-available soil nutrients.

Tolerance and Damaging Agents

Root System Characteristics

Bigleaf maple has a shallow but wide-spreading root system. Roots are associated with vesicular-arbuscular mycorrhizae.

Tolerances

tolerance to	tolerance class	comments
low light	L	moderately shade-tolerant in the early development stage
frost	L	not a major concern in mesothermal climates
heat	M	frequent on insolated sites
water deficit	L	like red alder, responds to drought by shedding its leaves
water surplus	H	common on wet sites, floodplains, and sites with a strongly fluctuating water table
nutrient (mainly N) deficiency	M	absent in acid, very poor soils

Damaging Agents

damaging agent	resistance class	comments
snow	L	snowfall is low in submontane, maritime, cool mesothermal climates
wind	M	high winds will break the boles rather than uproot trees

risk class		
fire	L	Low risk in pure bigleaf maple stands
insect	L	Not a major risk
fungi	L	Not a major risk in undamaged trees
other agents	L	Browsing by deer and elk is not a major risk

Associated tree species and successional role

In British Columbia, bigleaf maple grows occasionally in even-aged, pure stands, but most commonly in early and intermediate stages of secondary succession mixed with conifers or hardwoods. It is a pioneer species (primary succession) on talus and floodplains, and is present in second-growth stands on upland sites. Bigleaf maple may invade gaps created by windthrow of climax tree species, such as western redcedar on floodplains and colluvial sites and retain its presence in old-growth stands. It frequently grows in clumps of 3-5, all originating from a single stump.

associated tree species	occurrence class	major area of occurrence
red alder	L	floodplains in southwestern B.C
black cottonwood	L	floodplains in southwestern B.C
common douglas	L	southwestern B.C

Silvical Characteristics

characteristic	interpretive class	comments
reproduction capacity	H	the minimum age for seed crops is about 10 years
seed dissemination capacity	L	dispersed by wind for <100 m
potential for natural regeneration in low light	L	higher, providing the presence of exposed mineral soil and if considering vegetative reproduction
potential for natural regeneration in the open	H	providing the presence of exposed mineral soil
potential initial growth rate (<5 years)	H	up to 5 m in one growing season from stump sprouts
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	M	dense stands are infrequent

crown spatial requirements	H	develops a very broad, irregular crown
light conditions beneath closed-canopy, mature stands	M	associates with well developed moss and herb layers
potential productivity	H	site index functions are not available; probably similar to red alder
longevity	M	few trees live >200 years

Genetics and Notes

Genetics

Two varieties are recognized: Kimball maple (*Acer macrophyllum* Pursh var. *kimballi* Harrar) and *Acer macrophyllum* Pursh var. *rubrum* Murray.

Notes

In some individuals of bigleaf maple, the grain patterns are unsurpassed, even by walnut, suggesting a potential for use in furniture. Considering its productivity, easy regeneration, and low risk of being affected by damaging agents, bigleaf maple is a suitable species for intensive management on some coastal sites (e.g., skeletal alluvial fans, fragmental colluvial slopes, stream-edge sites, and floodplains). Considering its wildlife and aesthetic values and soil improvement capacity, it is a useful short-term or even a long-term, minor admixture in coniferous stands, such as common douglas stands, in southwestern B.C.

There are two other shrub-sized maple species: vine maple (*Acer circinatum* Pursh) and Douglas maple (*Acer glabrum* Torr.), the latter of which may attain small tree size. While the range of vine maple is restricted to the southern coastal mainland, Douglas maple occurs throughout central and southern B.C., except the outer coastal region. Both species are shade-tolerant and their litterfall, like that of bigleaf maple, improves humus form quality. More detailed silvics information is given by:

Minore, D. and J.C. Zasada. 1990. *Acer macrophyllum*. Pp. 33-40 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.