

Western larch (Lw) - *Larix occidentalis*

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BC Distribution of Western larch (Lw)

Range of Western larch



A two-storied western larch stand near Cranbrook. Two-storied, uneven-aged, western larch - western red cedar (this photo) and/or western hemlock mixtures are typical of the wetter portion of the IDF zone and the drier portion of the ICH zone. These climatic regions support the most productive growth in larch.

Geographic Range and Ecological Amplitudes

Description

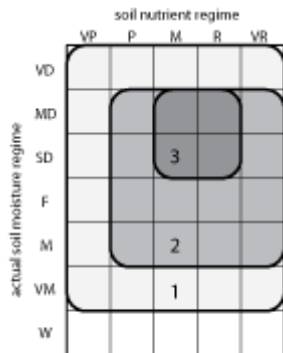
Western larch is a medium - to large-sized (occasionally >60 m tall), deciduous conifer, with a branch-free stem over much of its length; short, narrow, pyramidal crown and horizontal branches; reddish-brown, deeply furrowed bark with flaky ridges. Western larch is the world's largest and most important timber species of this genus. It is an aesthetically attractive species, which is used for lumber, fine veneer, poles, ties, mine timber, and pulp.

Geographic Range

Geographic element:
Western North American/Cordilleran

Distribution in Western North America:
central in the Cordilleran region

Ecological Amplitudes



generalized edaphic amplitude of western larch according to actual soil moisture and nutrient regimes

Climatic amplitude:

(cool semiarid) - **cool temperate** - (subalpine boreal)

Orographic amplitude:

montane – (subalpine)

Occurrence in biogeoclimatic zones:

(lower southern ESSF), **southern MS**, (PP), **southern IDF**, southern drier ICH

Edaphic Amplitude

Range of soil moisture regimes:

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

Range of soil nutrient regimes:

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

In comparison with interior common douglas, western larch is infrequent on moist and very moist sites on which common douglas attains the most productive growth. It appears that western larch is more abundant and vigorous on calcium- and magnesium-rich soils than on acidic soils.

Tolerance and Damaging Agents

Root System Characteristics

Western larch develops a deep and extensive root system. Fibrous roots under young larch stands extend up to 100 cm in depth. Wind-fallen mature larch trees have their roots usually infected by root rots. Roots of western larch are associated with both ecto- and endo-mycorrhizae.

Tolerances

tolerance to	tolerance class	comments
Low light	L	A shade-intolerant and exposure-requiring species, except in the PP zone where it appears to be moderately shade-tolerant.
Frost	M	
Heat	M	Infrequent in the lower PP
Water deficit	M	Infrequent on very dry sites.
Water surplus	L	Absent on waterlogged sites.
Nutrient (mainly N) deficiency	M	Tolerates acid substrates.

Damaging Agents

damaging agent	resistance class	comments
Snow	H	Due to open crown and deciduous nature
Wind	H	Deeply rooted with an open crown
risk class		
Fire	H	Risk is high but resistance to ground fires is also high; resistance increases with age.
Insect	M	Larch casebearer, western spruce budworm, larch needle blight.
Fungi	L	Not a major concern; brown trunk rot, red ring rot.
Other agents	M	Dwarf mistletoe (<i>Arceuthobium</i>)

laricis (Piper) St. John).

Associated tree species and successional role

In southeastern British Columbia, western larch may grow in pure stands but more frequently, it grows in mixed-species stands. Old-growth western larch stands are rare. It is present in early, mid-, and late stages of fire-driven, secondary succession.

associated tree species	occurrence class	major area of occurrence
Lodgepole pine	H	Throughout southern B.C.
Common douglas	M	Throughout southeastern B.C.
Western redcedar	M	Southern ICH
Subalpine fir	L	Southern B.C.
Engelmann spruce	L	Lower ESSF
Ponderosa pine	L	Upper PP and lower IDF
Western hemlock	L	Southern ICH

Silvical Characteristics

characteristic	interpretive class	comments
Reproduction capacity	H	Seed production begins at <25 years; the northern population is a poor seed producer.
Seed dissemination capacity	M	Dispersion up to 250 m from the parent tree.
Potential for natural regeneration in low light	L	practically nil; an shade-intolerant and exposure requiring species
Potential for natural regeneration in the open	H	providing the presence of exposed mineral soil or burnt forest floor; partial shade is beneficial for seedling establishment
potential initial growth rate (<5 years)	M	Low (<5 cm/yr) in the establishment period, high (>50 cm/yr) thereafter.

Response of advance regeneration to release	na	advance regeneration does not develop in the absences of adequate light and seed-beds
Self-pruning capacity in dense stands	H	but dense stands are infrequent
Crown spatial requirements	H	Wide, long crowns.
Light conditions beneath closed-canopy, mature stands	H	associates with well developed understory vegetation
Potential productivity	H	The most productive interior conifer; site index (50 yr @ bh) approaching 35 m on the most productive sites.
Longevity	H	Probably even longer than 900 years - the reported maximum.

Genetics and Notes

Genetics

Some population differences were detected but races, varieties, or subspecies of western larch are not known.

Notes

Western larch forests are valued for their multiple resource values. Thus, the presence of the species in pure as well as mixed-species stands should be maintained or even increased where multiple resource use is the major management objective. More detailed silvics information is given by:

Schmidt, W.C. and R.C. Shearer. 1990. *Larix occidentalis*. Pp. 160-172 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.

Schmidt, W.C. and K.J. McDonald. (compilers) 1992. *Ecology and management of Larix forests*. GTR-INT-319, USDA For. Serv., Intermountain Research Station, Ogden, Utah.

Schmidt, W.C. and K. J. McDonald (compilers) 1995. *Ecology and management of Larix forests: a look ahead*. Proceedings of an International Symposium, Whitefish, Montana, October, 5-9, 1992. GTR-INT-319, USDA For. Serv., Intermountain Research Station, Ogden, Utah.