

# Alpine larch (La) - *Larix lyallii*

Tree Species > Alpine larch



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# BC Distribution of Alpine larch (La)

Range of Subalpine larch



An open stand of alpine larch in Manning Provincial Park

# Geographic Range and Ecological Amplitudes

## Description

Subalpine larch, also called alpine larch, is a small- to medium-sized (rarely >30 m tall), deciduous conifer, with a short, sturdy, and tapering stem; ragged, broad irregular crown; and yellowish-gray bark, with irregularly shaped, scaly plates. It is an ecologically interesting and aesthetically attractive species but its wood has little commercial value.

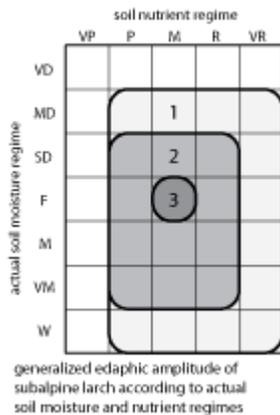
## Geographic Range

Geographic element:  
Western North American/Cordilleran

Distribution in Western North America:  
central in the Cordilleran region

## Ecological Amplitudes

**Climatic amplitude:**  
(alpine tundra) - **subalpine boreal**



**Orographic amplitude:**  
**subalpine** - (alpine)

Occurrence in biogeoclimatic zones:  
(lower AT), **upper** - (lower) **southern ESSF**

Subalpine larch is well adapted to a continental subalpine boreal climate. It grows in the transition between the upper southern portion of the ESSF zone and the adjacent AT zone between 1800 and 2300 m. It forms a timberline there together with subalpine fir, (Engelmann spruce), and whitebark pine. It tolerates very severe winters (the absolute minimum of -56°C has been recorded). Occasional chinook winds of very dry air during the winter rarely affect subalpine larch to a lethal degree because of its deciduous habit, while evergreen conifers may be severely affected because moisture lost rapidly from foliage cannot be replaced.

## 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); calciphytic

The nutrient amplitude of subalpine larch is not well known. Field studies indicate that it is absent on very poor sites and grows somewhat better on calcium-rich substrates, such those derived from calcareous quartzites, sandstones, or argillites. However, very rapidly drained limestones are less favorable substrates in drier climates than other sedimentary and igneous rocks.

## Tolerance and Damaging Agents

### Root System Characteristics

Subalpine larch roots extends deep into fissures in skeletal or rocky substrates. Trees are very windfirm as they are well anchored by a large taproot and several large lateral roots. The crown and trunk of old trees may break off in storm winds, but the tree themselves are seldom uprooted. Roots of subalpine larch are associated with both ecto- and endo-mycorrhizae.

### Tolerances

tolerance to	tolerance class	comments
Low light	L	A very shade-intolerant, exposure-requiring species.
Frost	H	Low growing-season temperatures are common in subalpine forests.
Heat	L	summers are cool in subalpine forests
Water deficit	M	Droughts are uncommon in the upper subalpine forest.
Water surplus	H	Infrequent on waterlogged sites.
Nutrient (mainly N) deficiency	M	Tolerates poorly strongly acid soils.

### Damaging Agents

damaging agent	resistance class	comments
Snow	H	Common in snowslide and avalanche areas.
Wind	H	Common on exposed ridge tops.
risk class		
Fire	L	Not a major concern in the upper ESSF forest.
Insect	L	Not a major concern in the upper ESSF forest.
Fungi	L	Not a serious concern in the upper ESSF forest (brown trunk rot; larch needle blight).

**Associated tree species and successional role**

In British Columbia, subalpine larch grows more in pure stands of irregular size and in scattered clumps than in mixed-species stands. It typically forms open, park-like groves, <0.02 ha in size, interspersed with openings of various sizes. Subalpine larch is a pioneer species (primary succession) on snowslides, colluvium, and rock outcrops, and may be present as a minor component in the upper ESSF forest.

<b>associated tree species</b>	<b>occurrence class</b>	<b>major area of occurrence</b>
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Subalpine fir	L	Upper southern ESSF
Engelmann spruce	L	Upper southern ESSF

<b>characteristic</b>	<b>interpretive comments class</b>	<b>interpretive comments</b>
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**Silvical Characteristics**

Reproduction capacity	L	Infrequent cone crops, low percentage of sound seed.
Seed dissemination capacity	?	Not reported.
Potential for natural regeneration in low light	L	practically nil; a very shade-intolerant, exposure requiring species
Potential for natural regeneration in the open	H	providing the presence of exposed mineral soil
potential initial growth rate (<5 years)	L	Very slow in the first 25 years (<2 cm/yr).
Response of advance regeneration to release	na	advance regeneration does not develop in light of adequate light and seedbeds
Self-pruning capacity in dense stands	na	Dense stands are very infrequent.
Crown spatial requirements	H	Wide, long crowns except in dense stands where crowns are short.
Light conditions beneath closed-canopy, mature stands	na	closed-canopy stands are very infrequent

Potential productivity	na	Non-crop species; site index functions are not available; the maximum reported size: height 29 m, dbh 201 cm.
Longevity	H	Typically up to 500 years; oldest trees estimated over 1,000 years.

## Genetics and Notes

### Genetics

Races, varieties, or subspecies of subalpine larch are not known.

### Notes

Considering the ecosystems in which it grows and its productivity, subalpine larch is not a timber crop species but a valuable timberline species for watershed protection, wildlife habitat, and outdoor recreation. More detailed silvics information is given by:

Arno, S.F. 1990. *Larix lyallii*. Pp. 152-159 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) 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.