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**Eye on the Environment**

### **Field Notes: A Tough Timberline Tree -- The Alpine Larch**

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Over thirty years ago, while leading a winter trip in the backcountry, I became acquainted with a new species for me, the alpine larch.

On that particular day, our small party was attempting to climb to the top of a peak in a nearby mountain range. I remember the pre-dawn morning as being cold and still, with a multitude of stars sparkling as only they can in a clear winter sky. But as we skied to the bottom of a long forested ridge that wound upward toward the alpine terrain of the rocky summit, a slight breeze began to pick up. As we ascended the ridgeline, the winds grew in strength.

By the time we exited the relative comfort and protection of the forest and entered the subalpine zone just below timberline, the winds had become ferocious. Snow plumed off the summit in a large arc. Where we stood, the snow was flying by sideways and felt like burning sand stinging any exposed skin. We fought our way to an isolated patch of trees and within its scant protection hunkered in to reassess our situation.

These trees were striking in that their branches were only growing on the leeward side of the tree trunk. The windward sides of these trees were worn

with a smooth-like appearance from the many winters worth of hurricane force winds and driving snow that 'sand blasted' and polished the bark. Not being familiar with its kin, the alpine larch, I wondered what a western larch was doing growing up in this challenging terrain with its thin, rocky soils, short growing seasons, and frequently inhospitable weather conditions.



*Photo by Steve Gnam*

Later, I found out that those hardy trees were not western larch but a close relative, the alpine larch. They were much hardier than we were as we abandoned the climb and skied back to camp.

The alpine larch (*Larix lyallii*) is found in some of the coldest and rockiest sites in the high elevations of the Northern Rockies and Cascades mountain ranges. Within its limited range, the alpine larch will often ascend higher up the mountain than the evergreen conifers such as subalpine fir, Engelmann spruce, and whitebark pine. In the Mission and Swan Ranges this specie is most often found on north and east slopes above 6000'.

The alpine larch is a long lived, slow growing tree species. Mature trees are commonly found in the 400 to 500 years old range with some trees reaching past 1000 years old. In the United States, the oldest alpine larch recorded is found near Baker Lake in the Bitterroots and is now 1025 years old. Through extrapolation, a tree with heart rot in Alberta, Canada is estimated to be approximately 1,937 years old. The alpine larch doesn't usually

produce cones until it is around 100 years old and doesn't produce seed in quantity until 200 years old.

The larch species, which includes the alpine larch, are considered deciduous conifers. Their needles fall from the tree each autumn (deciduous characteristic) but they produce seed bearing cones (coniferous characteristic). In Montana, seed production can be infrequent with large seed production occurring only 1 year out of 10.

The light-weight seeds are winged and wind disseminated in early autumn. Germination of the seeds takes place in summer soon after the winter snows melt. Successful germination rates are enhanced by site scarification from events such as avalanches and forest fires.

The alpine larch is often the first specie to pioneer the barren, rocky sites exposed from retreating glaciers. The seedlings are extremely slow growing – a seedling that is only 8 to 16 inches tall may be 25 years old, but have very long and deep tap roots that aid in its survival during the critical early years.

Because the alpine larch has such deep tap roots it is able to withstand seasonal drought conditions that affect more shallow rooted species. The deep tap roots also anchor the tree from the ferocious winds that topple other species. As it grows into small pole-sized trees, alpine larch exhibit a pliable nature that allows it to spring back when bent over from avalanches and snow creep.

This tree species, with its thin bark, is easily damaged by fire but as a whole doesn't usually suffer greatly from fire effects because fire rarely gets into the cold, rocky, remote sites where the bulk of alpine larch are often found.

In the Montana Register of Big Trees, the number one rated alpine larch in this state is found in Ravalli County on the Bitterroot National Forest. That particular tree rated a score of 255 and is 52 inches in diameter, 163 inches in circumference, 40 feet

crown spread, and 82 feet tall. For perspective, the national record tree scored 387.

Champion trees are scored on a point system that combines the circumference (inches), tree height (feet), and a quarter of the average spread of the crown (feet). More information can be found in the *Montana Register of Big Trees*.

The alpine larch helps to sustain many other species. Blue Grouse will feed heavily on alpine larch needles. Research has shown that alpine larch foliage may be one of its most important summer food sources. In addition to the blue grouse and other birds, a number of mammals are associated with alpine larch communities including mountain goats, hoary marmots, pikas, mule deer, elk, black bears, and grizzly bears.

For those folks who enjoy the autumn colors we are fortunate to live in an area where we can partake in a prolonged autumn as the alpine larch generally peak with their bright golden yellow needles in September and have fallen to the ground when its lower elevation kin, the western larch peaks in color in October.

At this time of the year the alpine larch minus its needles is in a state of dormancy. Like the more familiar Western larch, it may look dead but is only waiting for the changing of the seasons to begin its slow but steady growth cycle once again.

So the next time you get a chance to explore the high country of the Swan and Mission Ranges check out these interesting stalwart sentinels of the timberline.