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Eye on the Environment

Mountain Hemlock

By Steve Lamar

While elk hunting last fall through a section of older, mature forest in the Mission Mountains, I emerged from the dark woods to find myself standing in a young forest comprised mostly of mountain hemlock trees. Judging from the burnt and charred snags scattered about this area, I realized that this young stand was borne from a long ago lightning strike.

What I thought unusual was the large number of mountain hemlock trees growing here. In previous treks, I had found this uncommon tree in much smaller stands scattered here and there, mostly along this eastern side of the Mission Mountains. Obviously, a nearby abundant seed source along with favorable growing conditions combined to produce this remarkable stand of young trees.

In Montana, mountain hemlock (*Tsuga mertensiana*) is one of our rarest coniferous tree species. Some researchers consider this species a relict, a remnant of a former widespread species that now only persists in isolated pockets. Interestingly, the east side of the Mission Range seems to be the eastern most extent of its distribution. In fact there is a young mountain hemlock growing on the Jocko Ridge west of Lindbergh Lake that could be the most eastern tree of this species in the United States.

Several years ago, Northwest Connections staff spotted this young sapling growing near our campsite while conducting the Winter Field Studies course. We thought it was unusual because the nearest mountain hemlock seed source was several miles away. The tree seemed out of place. Mentally, I filed this interesting observation away. I didn't think much more about it until I recently gathered information from a number of long-time residents, researchers, and scientists. Mountain hemlock has not been documented east of the Mission

Range. It certainly seems at this point, that this young tree has the unique distinction of guarding the eastern boundary of this species' territory.



Illustration of Mountain Hemlock by Mary Curry Tresidder, 1932.

Mountain hemlock is a native shade-tolerant tree that is often found in protected sites with moderate to high precipitation in the elevation range from 5000' to 7500'. This species is a slow growing evergreen tree that has the distinguishing trait of having a slightly drooping leader growing at its top. Its trunk consists of a rough furrowed bark, dark grayish-brown in color. Its needles are bluish green in color, 1/2 to 3/4 inch long, and project from all sides of the twig giving the branchlet a brush-like appearance.

Somewhat resembling spruce cones, mountain hemlock cones, 1 1/2 to 3 inches long, change from purple, to tan, to brown as they ripen. Mature trees generally produce moderate to heavy cone crops at three-year intervals. In one study, trees averaged 1000 cones per tree with 70 to 100 seeds per cone. These lightweight winged seeds are dispersed by the wind often many miles away. Seed production is better during a normal to wet season. Successful

germination generally depends on favorable soil moisture with exposed but partially shaded soil.

Young mountain hemlock seedlings and saplings do not tolerate summer drought conditions very well, but will tolerate heavy winter snowpacks. In fact, in North America, mountain hemlock tends to occupy the snowiest forest zone. Although this species will endure the deep snows of winter, it does not tolerate summertime fire very well. Forest fire often results in a stand-replacing event in this type of forest.

The mountain hemlock derives its common name from the aroma of its crushed needles, which smells similar to the poisonous herbaceous hemlock plant in the parsley family. Even though this tree species is not fatal like the hemlock plant that poisoned Socrates, it does have a mixed reputation. Of the many beneficial uses, several native cultures used the fragrant boughs of the mountain hemlock for sleeping mats. However, some woodworkers report getting dermatitis from the dust and sap of this tree.

Its scientific name is *Tsuga mertensiana*. *Tsuga* is from the Japanese word 'tsu-ga' that translates to 'tree' and 'mother'. 'Mertensiana' is named for the German naturalist Karl Mertens. He was credited with 'discovering' this species at Sitka, Alaska in 1827 even though the native cultures had known and used this species for thousands of years.

In the *Montana Register of Big Trees*, a mountain hemlock tree in the Plains-Thompson Falls Ranger District of the Lolo National Forest scored 298 compared to the national champion of 413. Champion trees are scored on a point system that combines the circumference, spread of the crown, and tree height. The Montana champion tree has a diameter of 34", circumference of 148", spread of 34", and a height of 141'.

Although mountain hemlock can grow to 800 years old in the coastal areas, here in Montana the oldest on record is approximately 365 years old. Montana's frequent fire history combined with the mountain hemlock's shallow-rooted propensity to be toppled by wind events, have prevented this species from getting as old as those found in the wetter coastal areas.

Mountain hemlock is important for watershed protection. Because of its location in the snowiest forest zone, snow tends to melt slowly in mountain hemlock stands, keeping stream levels flowing during the dryer summer months.

Wildlife utilizes the mountain hemlock in several ways. Because this tree species is prone to develop heart rot, woodpeckers often carve out cavities that ultimately benefit numerous cavity nesters. A number of birds, including the spruce grouse, feed on the seed of this tree.

In Montana, the vegetation associated with mountain hemlock habitat types provide summer range for mule deer, elk, and bear. This vegetation includes huckleberry, grouse whortleberry, alder, fool's huckleberry, beargrass, arnica, pyrola, violet, and smooth wood rush.

In areas like Washington and Oregon, where mountain hemlock is more common, the moderately strong straight-grained wood is utilized in products including flooring, doors, windows, and moulding. It is also used for pulp in paper production.

Because of the uniqueness and prevalence of mountain hemlock along the Mission slopes of Swan Valley, several local features were named after this tree species. According to early-day residents, R.W. (Babe) Wilhelm and John Stark, Hemlock Point was named for the mountain hemlock trees that grew along the lower slopes leading up into this area of the Mission Mountains. North Hemlock Lake, Hemlock Lake and Hemlock Creek are also found in this general area.

So the next time you are out in the mountains look around to see if you can find this uncommon droopy-topped 'Mother Tree'.

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