The Nature of Teller

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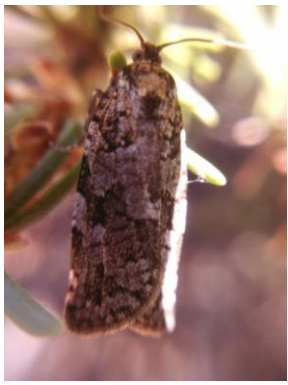
The western spruce budworm (WSBW), *Choristoneura occidentalis* Freeman, is the most widely distributed and destructive forest defoliator in western North America. An outbreak has been prevalent throughout Teller County over the past three-to-four years and is likely to continue into 2015. Their primary host is the Douglas-fir, although they will also be found on white fir, Engelmann spruce, blue spruce, and subalpine fir.

The budworm larvae emerge from their hibernacula in early May through late June and begin feeding on old needles until the new buds emerge, hence their name. They emerge as tiny larvae, approximately 1/8-1/4 inch, with yellow-green bodies and a brown head.

As the new needles continue to lengthen, the rapidly developing larvae continue to feed. It is during this phase that most of the damage occurs when they loosely web the new foliage together, feeding in relative protection from predators. You may not even notice them until they drop, or hang, from the affected trees, attached by what appears to be spider-like thread.

They go through six stages of growth with the final larvae between 1-1.25 inches in length, with tan or light-brown heads, and brownish-olive bodies. Each mature body segment has two conspicuous pairs of white spots.

This process of growth takes approximately 40 days, at which time the larvae pupates and the adult moths emerge 7-10 days later. Some of the first moths identified last year emerged from several Douglas-fir trees along the Lovell Gulch trail on July 15, 2014.



After mating, the females lay masses of overlapping, green eggs on the undersides of host tree needles. The young larvae hatch in approximately 10 days and move to crevices under bark scales, or lichen, where they spin silken hibernacula and overwinter. This completes their cycle, with one generation per year.

The greatest impact to mature trees is reduced growth because the new needles photosynthesize more efficiently than mature needles. Multiple years of defoliation can lead to branch tip loss, top death, and even tree mortality. Saplings and young stands directly beneath the mature host trees are especially affected as the larvae disperse from above, significantly reducing growth, killing tree tops, and potentially leading to mortality.

Even if the WSBW doesn't kill your trees, the injury and stress will make your trees more succeptible to secondary infestations of Douglas-fir beetles and other insects/diseases, which may lead to the death of your trees.

Control:

In most years, the natural predation via arachnids, parasites, climate, and birds will keep them in check. Adverse weather conditions, especially sudden freezes toward the end of May when the larvae have just emerged, could kill a significant portion of the larvae. Unfortunately, with our relatively mild winters over the past decade, this may not be likely. With three plus years of fairly heavy outbreaks in Teller County, you may want to consider other measures.

Cultural practices such as thinning, watering, and fertilizing enhance tree vigor, which may help them withstand repeated attacks. Chemical control is often used to protect high-value trees, much the same way as we protect against mountain pine beetles. For more information on chemical use, please see Washington State University Extension's Forest Health Note: http://ext.nrs.wsu.edu/forestryext/foresthealth/notes/westernbudworm.htm One successful control agent is a naturally-occurring bacteria, Bacillus thuringiensis, or B.t. It is specific to larvae without having any adverse effects on the environment. See the CSU Extension Fact Sheet http://www.ext.colostate.edu/pubs/insect/05556.html for more information on B.t.

It is often cost prohibitive to spray your entire property, especially if you have large parcels of land; although, there are several subdivisions in the county and adjoining areas that have conducted aerial spraying, generally ranging around $55 per acre. If you are interested in aerial spraying, contact Mike Till, a forester with the Colorado State Forest Service office in Woodland Park at 719-687-2921. He will put your name on a list since the sprayer requires a minimum of 450 acres for treatment.

Even with aerial spraying, only the top of the canopy is covered. Between spraying and predation, hopefully the outbreak can be put in check and most of the trees saved. The best time to spray is the two-to-three weeks following bud break, generally occurring early, to mid, June.

For a list of forest contractors who may be qualified to spray your individual trees, please contact the Colorado State Forest Service.

Mark J. Platten is the Colorado State University Extension Director for Teller County. Extension's focus is bringing the research-based information from the university to the community. Some programs include Colorado Master Gardeners, 4-H, Native Plant Masters,

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