Notes from a Rogue entomologist:

A report from inside an insect outbreak

BY RICHARD J. HILTON

If you have noticed large webs in madrones, black walnuts and other trees around the area, then you have observed the fall webworm (*Hyphantria cunea*) in action. Unprecedented populations of the fall webworm have been observed in southern Oregon this year. As an adult, the insect is a white moth, and the caterpillars, which feed together within the webs that they create, are very hairy and are in the same group as the woolly worms, which are also known as woolly bears. The scientific name for this family of moths, *Arctiidae*, is derived from the Greek word for bear, arktos. As an aside, the word "arctic" has the same derivation and refers to the northern constellations, the great and little bears, also known as the Big and Little Dippers.

The fall webworm is native to North America and occurs across the continent. Here in southern Oregon it is most commonly found in our madrones up in the hills, but this insect can live on a wide array of deciduous or broadleaf trees. In searching the literature, the number of hosts that are attacked is quite large and the references range from "over 80" to "more than 200." Clearly, this insect is not a specialist feeding on just one or a few plant species, but is rather an extreme generalist. The fall webworm is considered to be an occasional orchard pest, but it is easily controlled with insecticides. This year I have observed the webworm in a number of orchard and ornamental trees such as apples, pears, peaches, plums, walnuts, filberts, almonds, birch, sweet gum, ash, katsura, and even rosebushes. The worst infestations seem to be in black walnuts—there are a number of black walnut trees that have been almost entirely defoliated and encased in webbing.

The fact that the webworm was showing up in grapes, which are considered to be a non-preferred host, was a clear indication that this year was going to be different.

At our latitude, it seems that the fall webworm has just one generation per year; farther to the south with a longer growing season, multiple generations can occur. The life cycle for this insect consists of the adult moth, which emerges in early to midsummer. The moth then lays a very large mass of eggs, and when the eggs hatch, the caterpillars create a web wherein they feed and skeletonize leaves. As the caterpillars molt and grow, they continue to feed on more foliage and enlarge their web until an entire shoot or branch will be enveloped. Finally, the fully grown caterpillars will disperse from the web often for a considerable distance to find a crack or crevice in the bark or soil where they pupate over winter, emerging the following summer to repeat the cycle.

In the 25 years that I have lived in southern Oregon, the first time I can positively remember seeing the fall webworm in an orchard was last year. In 2010, the fall webworm was observed in a number of orchards, both organic and conventional, as well as in the OSU research orchard on Hanley Road. If you were observant you may have also seen an occasional web in some landscape trees around the Rogue Valley. At the time, the prevalence of the fall webworm around the valley was considered to be an unusual population spike, curious and notable, but nothing to get alarmed about. Then this summer, the white adult moths appeared in June and July in rather large numbers, followed by the egg masses showing up. I had three grape growers bring in moths or egg masses during a one-week period. Considering how much time is spent training the shoots and manipulating the foliage, it is not too surprising that vineyardists would be among the first to find these egg masses. However, the fact that the webworm was showing up in grapes, which are considered to be a non-preferred host, was a clear indication that this year was going to be different.

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John Yungen, agronomist emeritus at the Research Center, moved here in 1955 and cannot recall ever seeing fall webworm in the valley before the past couple of years. So how can we account for the huge population increase of fall webworm over the last two years? Well, our best hypothesis is that the unusual cool and wet spring conditions that we had in both 2010 and 2011 had some effect that resulted in much higher than normal survival of fall webworm. The population size of plant-feeding insects is often regulated by mortality caused by predators, parasites (especially parasitic wasps) and diseases. The unusual spring weather may have disrupted one or more of these biological control agents and allowed the fall webworm to build up to our current unprecedented levels. While this explanation may sound convincing (or not), without more detailed study it is simply an educated guess. Unfortunately, population ecology is a lot like economics in that it is much easier to come up with an explanation as to why something happened than to accurately predict what will happen. That being said, can we predict whether the fall webworm population next year will continue to increase or will it collapse? The short answer is no. To quote Yoda: "Difficult to see, the future is always in motion." However, we will monitor the emergence of the adult moths next summer to give an early indication of overwintering survival and then, probably depending on the weather pattern, we will see how the webworm turns.

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Photos by Lynn Ketchum

Rick Hilton examines webworm outbreak on a filbert tree.

Webworm nest as seen throughout the Rogue Valley.