

Pine Butterfly in the Bitterroot Valley
written for the MT Tree Farm newsletter, 2012
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Look at the top of any ponderosa pine in the Bitterroot mid-August and you will likely see white pine butterflies fluttering about. Last summer, you couldn't miss them! There were clouds of white in the trees, networks of tangled silk hanging in the forest, and rafts of dead butterflies collecting in creeks. Pine butterfly, *Neophasia menapia*, is a native inhabitant of western Montana forests. They typically occur at fairly low numbers and cause negligible damage. Occasionally, populations build up and the collective impact of caterpillars feeding on needles is hard to ignore.

The caterpillars hatch from eggs in the spring just as the new growth on ponderosa pine expands. The larvae then begin to feed. They prefer ponderosa pine but can feed on additional tree species during outbreaks. They eat older needles and give a tree a very distinct "lion's tail" appearance in which only the new growth remains. During high populations however, caterpillars will also feed on new needles and can completely strip a tree of its foliage in a single year. This does not necessarily kill the tree but is a tremendous stress. Some reports from past outbreak indicate tree mortality up to 90%. However, it is unclear as to whether mortality was caused by pine butterfly or by insects that target weakened trees, such as western pine beetle or pine engraver beetles. In addition to defoliation and tree mortality, the caterpillars themselves can be a nuisance with their abundant frass and silk.

To determine if you have pine butterfly in your forest, you can look for the distinct insects. Caterpillars have green bodies with black heads that eventually turn green and white lines running along the sides of their bodies. They tend to pupate on lower vegetation and have faint white lines as well. The adults resemble the common cabbage butterfly with black markings on the wings. Many landowners will see at least a few of these butterflies in the forest but more than 25 adults in the crown of each tree is considered an outbreak.

Pine butterfly outbreaks are typically controlled by an array of naturally occurring predators and parasites. Broad spectrum insecticides, such as carbaryl (trade name Sevin) will kill pine butterfly caterpillars but will also kill their corresponding predators and parasites. Therefore, sprays are not widely recommended as a control (unless radial growth loss is a critical concern). A bacterial control, *Bacillus thuringiensis kurstaki*, only affects butterflies, moths, and skippers so is not damaging to the beneficial control species. But application is difficult because the caterpillars are active quite high up in the tree. Overall, forest management activities that promote individual tree vigor are recommended. Giving trees adequate space and access to water, light, and nutrients will make them more resilient to defoliation by the pine butterfly. Monitoring defoliated trees for infestation by bark beetles is also recommended.

Pine butterfly in Oregon is rampantly defoliating large acreages of trees. In 2011, they recorded approximately 250,000 acres of defoliated pine forests! Pine butterfly is active across the border in Idaho as well. They are experiencing more defoliation than we have seen in Montana thus far. So far, we have only seen heavy defoliation up Smith Creek and along the Skalkaho Highway. Montana has had

outbreaks in the past (1970's) but we are not yet certain as to how widespread and sustained the current outbreak may be. To anticipate activity levels next year, the DNRC is sampling plots of trees throughout the Bitterroot Valley and counting egg masses. We greatly appreciate the private landowners who are accommodating this survey!