

New Pest in Alaska and Washington The Green Alder Sawfly - *Monsoma pulveratum* (Retzius)

The green alder sawfly (*Monsoma pulveratum*) was positively identified from Alaska, a new U.S. record, in 2009.¹ The first North American records are from Newfoundland, Canada in the early-mid 1990's.² Green alder sawfly is native to Europe, North Africa and the Near East, where its preferred host is European black alder (*Alnus glutinosa*). In Southcentral Alaska, assessments of riparian thin-leaf alder (*Alnus tenuifolia*) defoliation events began in 1997 following the introduction of the woolly alder sawfly (*Eriocampa ovata*). Green alder sawfly larvae initially turned up in these surveys in 2007. A review of collection records revealed that the first specimen in Alaska was taken in Palmer in 2004. By the time of identification, green alder sawfly was found actively defoliating thin-leaf alder in Anchorage, Kenai, Seward, and in the Matanuska-Susitna River Valley. Green alder sawfly adults have been recently collected in Fairbanks. In 2010, the sawfly has been found on the Columbia River in Washington state.



A late instar green alder sawfly larva.

Biology and Potential Impacts:

There is a small body of scientific literature which focuses on *M. pulveratum* under laboratory conditions and in its native habitat. Observations in Alaska suggest that there may be significant differences between their life history in Alaska and their behavior as described in European literature. In Alaska, green alder sawfly appears to be the first alder-defoliating sawfly to emerge in the spring. Newly emerged adults were actively engaged in egg-laying as early as mid-May in temperatures as low as 15.5 °C. In Washington, adults are active by early April. At this time, alder leaves have begun to flush. One to five eggs are laid on either the upper or lower leaf surface. Females appear to be parthenogenetic. European populations have been documented laying up to 40 eggs per individual, however, this has not been observed in Alaska. Within two weeks, the new larvae emerge and immediately begin feeding. Most young larvae soon migrate to the lower leaf surface to feed and continue their development over the next several weeks. Feeding is not formally gregarious as in some other sawfly species. It is common to find larvae feeding in concert with one or both of the other two major alder-defoliating sawflies in Alaska; woolly alder sawfly and the striped



Alder sawfly damage along the Little Susitna River, Alaska.

Identification:

The newly emerged larvae are very pale green and approximately 2.0-3.0 mm in length. As they develop, the larvae undergo a color change to a vibrant green. Fully mature larvae are 15.0-18.0 mm in length. Adults are 7.0 - 10.0 mm in length. Females of green alder sawfly have a black head and antennae, and a white labrum. The thorax is black, sometimes with some yellow or brownish coloration; their legs reddish brown to black; and the abdomen is black with the margins of the segments white to yellow. Males have not been recorded in North America or the UK.

alder sawfly (*Hemichroa crocea*). When development is complete, the larvae drop to the ground and excavate a chamber 1-5 cm beneath the soil surface. In its native range, *M. pulveratum* are exceptional amongst other sawflies as they burrow into rotten wood or the piths of branches,³ a habit not yet observed in Alaska. In both instances, they diapause in a pre-pupal state. The following spring, they pupate and emerge as adults.

The increase of alder-defoliating sawfly activity, coupled with the widespread mortality of alder in Southcentral and Interior Alaska attributed to a variety of canker fungi (primarily *Valsa melanodiscus*) poses a considerable threat to riparian areas that are dependent on alder for its nitrogen-fixing contribution to soil nutrition. Research suggests that up to 70% of the available nitrogen in the most productive forests may have its origin in stands of alder and that the rate of nitrogen fixation can decline by as much as 73% following defoliation.⁴ Further, studies in Southeast Alaska have shown that the mere presence of alder in riparian habitats could protect or even improve the productivity of aquatic organisms, thus having a positive impact on fisheries and salmon production.⁵ Alder stands affected by this widespread mortality show few signs of recruitment or recovery, suggesting that *A. tenuifolia* may permanently disappear from the majority of the western landscape.^{4,6}

References:

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An adult specimen of green alder sawfly ovipositing on newly expanding alder leaves.



Monosoma pulveratum larvae in the process of completely defoliating *Alnus tenuifolia*.

Prepared by:



US Department of Agriculture
Forest Service, Alaska Region
Forest Health Protection
Anchorage, Alaska

To report infected trees or to receive additional information, please contact your State or Federal forest health specialist. On the internet, visit the Forest Service Alaska Region website: <http://www.fs.fed.us/r10/spf/fhp/>

Contributors: James J. Kruse, Ken Zogas, John Hard, Nicholas Lisuzzo - Forest Service, U.S. Department of Agriculture, Alaska Region, Forest Health Protection.

