Exotic Invasive Insect: A Disturbing Find
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Introductions of exotic invasive insects are a serious threat to biological diversity, both nationally and within Alaska. Increased commercial activity and tourism in Alaska and climate change trends in northern regions increase the probability that non-native organisms that are introduced into Alaska will establish breeding populations and begin to spread. Once established, invasive pest populations can be extremely difficult and expensive to manage.

In the early to mid-1990s, the invasive green alder sawfly was first discovered in North American in Newfoundland, Canada. The green alder sawfly is native to Europe, North Africa and the Near East, where its preferred host is European black alder trees. There were no known populations of the green alder sawfly in Alaska at that time.

After discovering the woolly alder sawfly in Southcentral Alaska, in 1997 researchers began assessments of riparian thin-leaf alder defoliation events. In 2007, during one of these surveys, green alder sawfly larvae turned up. This led to a review of collection records, which revealed that the first green alder sawfly specimen was taken in Palmer, Alaska in 2004. By the time of identification, green alder sawfly was actively defoliating thin-leaf alder in Anchorage, Kenai, Seward, and in the Matanuska-Susitna River Valley. In 2009, the invasive green alder sawfly was positively identified from Alaska, a new U.S. record. Green alder sawfly adults have been recently collected in Fairbanks. In 2010, the sawfly has been found on the Columbia River in Washington State.

How to identify green alder sawfly
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.

Biology and potential impacts to Alaska
There is a small body of scientific literature which focuses on green alder sawfly 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 (a form of reproduction in which an egg develops into a new individual without being fertilized). 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. Green alder sawfly are exceptional among other

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Prepuae found in Eagle River

Adult green alder sawfly
sawflies as they burrow into rotten wood or the piths of branches. They diapause (suspend development) 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 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. 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. Alder stands affected by this widespread mortality show few signs of recruitment or recovery.

The Forest Health Protection staff is conducting an Evaluation and Monitoring project during the 2010 and 2011 field seasons. This project will serve to investigate alder dieback in riparian areas in Southcentral Alaska previously identified via aerial survey; (1) identify the extent to which non-native sawflies contribute directly to alder dieback; (2) identify the extent to which alder canker contributes directly to alder dieback; (3) identify the extent to which non-native sawflies and canker may synergize to cause alder dieback; (4) attempt to identify whether non-native sawflies may serve as infection court facilitators or otherwise predispose alder to pathogens. Ultimately, this work will help determine whether there is a correlation between alder sawflies and alder pathogens, and help determine the necessity for chemical or biological control of non-native sawflies to protect riparian alder forests and salmon spawning streams.

How you can help
To report infected trees or to receive additional information, please contact your state or federal forest health specialist. On the web, visit: http://www.fs.fed.us/r10/spf/ftp

A New Flock of Junior Ornithologists
By Katy Toth-Stauble, Conservation Education Specialist, Seward Ranger District

This spring, the Forest Service has helped fledgling fifth- and sixth-grade students at Seward Elementary School’s junior-ornithologist program. The students were provided with an array of tools and activities to help them identify and learn about the birds in their area. The program culminated in a presentation by a team of junior ornithologists from Seward.

On the second day, after their fifth presentation, the students decompressed by listening to music provided by local musician Mike Glaser. The students were swaying and singing along as Mike played his repertoire of bird songs. The event culminated with the five teams playing “Jepro-Birdy” which included actual “Jepro-Birdy” buzzers and categories pertaining to all the sessions they attended.

The success of this event is because of a phenomenal team of presenters from Forest Service, the Kenai Fjords Park Service, and the Alaska Sea Life Center.

This event is followed up with two to three, post-academy classroom visits for more bird lessons. One of the three classroom presentations is “Bird ID; the 11-Step Program.” This presentation is in preparation for the Bird Watching Field trip to the meadow and wooded area near the Seward Airport; the finale for the multi-week bird unit. On this structured excursion, I challenge these new junior ornithologists to utilize and put into practice all of their newfound knowledge. Watching and listening to the students in the marshy meadow, rich in bird sightings, “wing bars, contour feathers, and palmed feet” are the quiet words that drift away on the gentle spring breeze.