



Integrated Pest Management Issues



Figure 1. Defoliated alder along higher elevations of North Fork Road. (L) Landscape view during 2012. (R) Close up during 2013. Photo: John Lundquist

Leaf roller defoliation of alder and other tree species on the Kenai Peninsula and South Central Alaska

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What is defoliating our trees and bushes this year?

An outbreak of defoliators is occurring again this year at various locations in South Central Alaska, especially on the southern Kenai Peninsula. Based on limited preliminary observations, the main cause is the birch-aspen leaf roller. In addition to birch and aspen, this insect also attacks black cottonwood, balsam poplar, and alder. Alder seems to be the main host species currently affected.

What is the current known status of leaf rollers?

For the last couple years leaf rollers have become increasingly active in areas all around the southern Kenai. Two years ago, alder stands north of Anchor Point were severely infested with leaf rollers. Last year, the higher elevations along the North Fork Road between Anchor Point and Homer were severely in-

festated. Forested areas above Seldovia, Nanwalek and Port Graham across the Kachemak Bay experienced major defoliation, presumably caused by the same insect. This year, the affected areas around Homer were already showing major defoliation early in the summer, and what was happening largely above Anchor Point and Homer last year is in, around, and between these towns this year (Figure 1). Leaf rollers are *not the only causes* (*geometrid and sawfly larvae have also been found*) but they do seem to be the main cause, and, despite their name, alder seems to be the main host.

What do leaf rollers do?

Leaf rollers eat leaves. They get their name from their habit of rolling the leaves to make shelters for feeding larvae (Figure 2). Several insect



Figure 2. Leaf distortion caused by leaf roller.

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species use this technique of folding leaves; most are Lepidoptera in the Tortricid moth family. *Epinotia solandriana* (Linnaeus) is one of these; its common name is the birch-aspen leaf roller.



Figure 3. First instar. Photo: Natural Resources Canada, Canadian Forest Service.

Leaf rollers overwinter as eggs at the bases of unopened buds and on last year's twigs. Eggs hatch beginning early May. First instar larvae are pale cream colored caterpillars with a grey brown head (Figure 3), feeding on leaves as they emerge

from buds. During the first couple weeks, larvae stitch together leaves with silken threads and feed within these clusters. Beginning June, later instar larvae are blue-gray caterpillars with a black head



Figure 4. Late instar larva.

(Figure 4). These larvae feed inside shelters made by rolling leaves. After a couple weeks, mature larvae exit the leaf rolls and fall

to the ground where they pupate for 3 to 4 weeks. In August, adult moths emerge to deposit eggs. Adults are small moths approximately 74 mm in length, and about 200 mm wide (Figure 5). Wings show variable patterns of grey brown. The wings of adults commonly have a dorsal blotch.

What can we expect to happen as a result of this outbreak?

Leaf rollers are common on ornamental trees in urban areas of the state. They seldom cause enough damage to require control measures. From time to time in the past, they have reached out-



Figure 5. Variation in color patterns of adult. Note the dorsal blotch. Photo: Dick Davis (left) and Dick Wilson (right).

break conditions outside urban areas, which we are now experiencing. As with many defoliating insects, outbreaks can occur very quickly and spread rapidly. Previous outbreaks have lasted 3 to 4 years before collapsing.

Early surveys indicate that leaf feeding insects will be abundant throughout the 2013 season, and that leaf rollers, in particular, are going to be eating forest trees in southern Kenai for a while. Previously, where outbreaks of leaf roller have occurred, little damage resulted. Impacts have mostly been related to aesthetics, especially in urban areas. As with many defoliating insects, continuous defoliation over several years may increase susceptibility of infested trees to other damaging stresses, like other insect pests, fungal diseases and adverse environmental conditions such as drought stress. Under these conditions, whole plants or parts of plants might die. However, most infested trees recover. While significant in the short term this infestation is part of a living forest ecosystem.

References

Holsten, E.H. 1978. Birch Leaf Rollers Anchorage Bowl. USDA Forest Service, State and Private Forestry. Biological Evaluation R10-78-1. 10 p.