

CONIFER FEEDING SAWFLIES



Introduction

Sawflies are a diverse group of insects that feed on the foliage of trees and shrubs. Sawflies are plant feeding insects in the order Hymenoptera, related to horntail wasps (wood borers), bees and ants. Sawflies that feed on conifers can cause serious, but localized defoliation of trees, especially in plantations. In Idaho, several different species of sawflies from two different families feed on pines, hemlock, spruce, fir, and larch (Figure 1).



Figure 1. Sawfly larvae feeding on western larch foliage. Photo by Idaho Department of Lands.

Larvae usually feed gregariously, and often selectively feed on the previous year's foliage. Adults are small wasps that do not feed or sting (Figure 2).

Identification of adults is difficult, and is usually confirmed by the host on which the larvae feed. Larvae will often assume a defensive posture when alarmed, often taking the form of a "U" or "S" (Figure 3).



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Figure 2. Conifer sawfly adult.. Photo by Donald Owen, www.bugwood.org.

Biology

Most sawflies only have one generation per year. Females lay eggs inside the needles or shoots of their host plant using their saw-like ovipositor (giving this group its common



Figure 3. Defensive or alarm posture of a larch sawfly larva. Photo by Idaho Department of Lands

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name). A common sawfly on ponderosa pine in Idaho (*Neodiprion autumnalis*) lays its eggs in the fall and the eggs overwinter. Some species overwinter as prepupae in cocoons in the soil or duff layer around the base of the tree, and emerge as adults in the spring. After the eggs hatch, the larvae begin to feed on the previous year's growth. Larvae molt several times, and the older larvae move from the tree and form a cocoon in the duff layer. Adults emerge (either in the fall or spring, depending on species) to complete the life cycle. The larch sawfly (*Pristiphora erichsonii*) belongs to a different family of sawflies, and it reproduces asexually (only females are known).

Insect Recognition

Larvae resemble caterpillars, but can be separated by the number of abdominal prolegs (false legs) that they possess. Sawfly larvae have 6 or more pairs of abdominal legs, while moth and butterfly

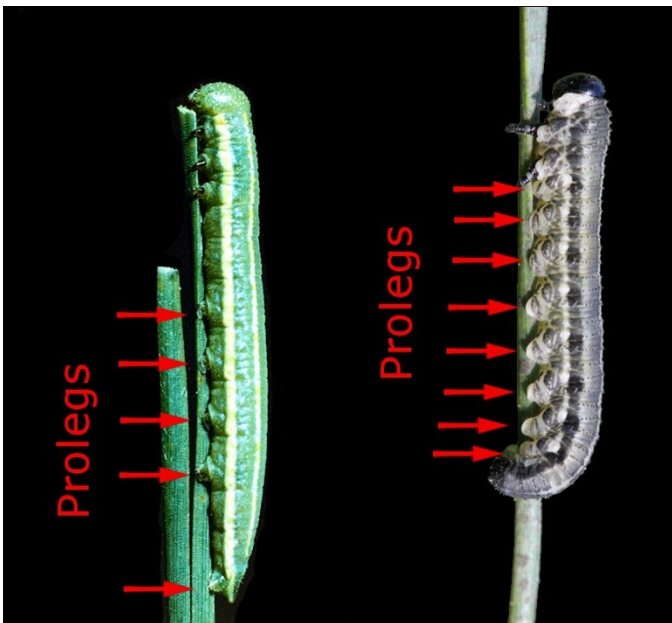


Figure 4. Comparison of the prolegs of a caterpillar on the left (pine butterfly) with a sawfly (conifer sawfly) on the right. Photo modified from images from Steven Katoich and Ladd Livingston, www.bugwood.org.

caterpillars have 5 or fewer pairs (Figure 4). Adults are non-stinging wasps that do not feed, and are rarely observed. Males have feathery antennae, while female antennae are toothed (Figure 5).



Figure 5. Mating conifer sawflies. Compare the antennae of the female (left) with the feathery antennae on the male (right). Photo by John Ghent www.bugwood.org.

Damage

Since most pine feeding sawflies prefer to feed on older growth needles, trees are not often killed by sawfly feeding alone. Their preference for the previous year's growth causes distinctive damage on trees. Older needles will be consumed and only the new growth at the end of the limb remains. This type of injury is called "lion-tailing" (Figure 6).



Figure 6. Damage to older needles of ponderosa pine, leaving new growth at the ends of branches. Photo by Sandy Kegley, USDA Forest Service

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The new growth will continue to grow, but continued infestations can weaken the tree. Heavy infestations of larvae can produce large amounts of frass (fecal droppings), which can accumulate on the ground and on understory plants. Outbreaks are most frequently noticed in plantations, and are usually of short duration. A combination of natural enemies and a virus disease often keep populations in check.

The larch sawfly causes a characteristic curling of the new growth when it lays its eggs. Because larch foliage is shed in the fall, larch sawfly females lay eggs into the current year's shoot growth (Figure 7).



Figure 7. Damage to larch branches from sawfly oviposition. Photo by Idaho Department of Lands.

Management

Sawfly outbreaks rarely require direct control measures. Outbreaks are generally only a problem in plantations of young trees, where the growth loss can not be tolerated. In forest settings, outbreaks can occur, but they are generally of short duration and do not cause extensive damage.

Sawflies are readily controlled by foliar applications of insecticides that are labeled for control of defoliating insects. Always follow label directions. Also be aware that products that are used on

ornamentals may or may not be used in forest situations (such as plantations, where more stringent "Agricultural Use Requirements" apply). Consult the label.

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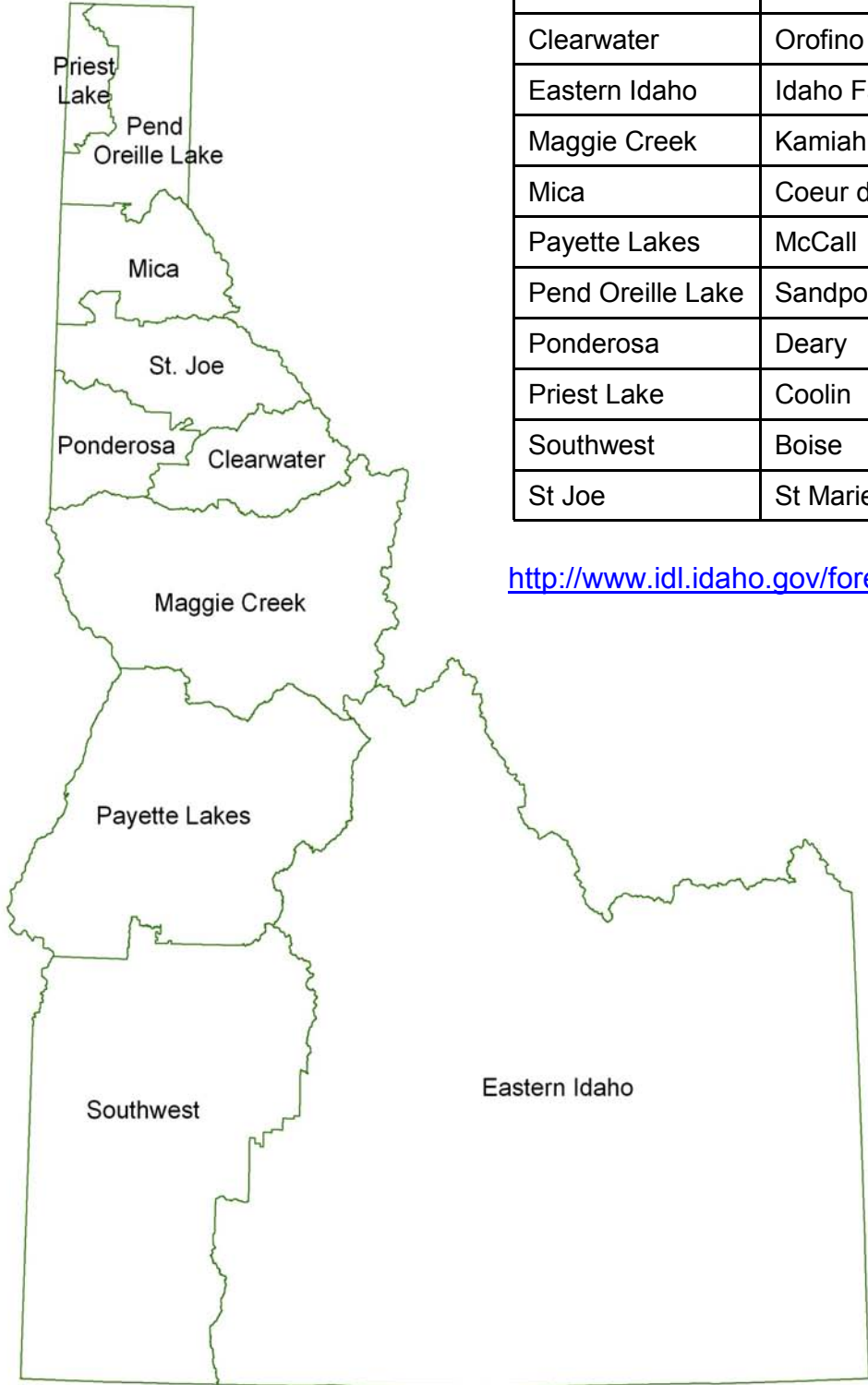
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