

## BALSAM SHOOTBORING SAWFLY

**Insect:** *Pleroneura brunneicornis*

**Hosts:** Balsam fir, Fraser fir

**Damage:** Larvae tunnel into the center of the new shoots, causing the needles to turn red and die. Initially, the affected shoot has a flattened appearance (rosette) and just the center turns red. Later, most of the shoot or the entire shoot turns brown.



**the balsam shootborer sawfly.**

**Bud tips killed by**

The affected part of the shoot looks much like frost damage but unlike frost, it is easily pulled off, revealing a white larva or hollowed-out shoot axis. After the larvae leave the shoots (usually by mid-June in northern New England), the affected part generally drops. Heavily damaged branches develop many small buds behind the killed shoots instead of the usual arrangement of large buds, resulting in a mishapened tree.

**Life cycle:** Larvae overwinter deep in the soil (6-12") inside soil cells and emerge as adults in early spring. Damage tends to be heaviest in even years. The majority of insects spend two winters in the soil and even-year populations are the largest. Adults begin emerging before bud swell and insert eggs through the bud sheath. In northern Vermont, adults generally emerge during the last week of April and the first week of May. Most adults delay egg-laying until the first couple of days of warm weather (above 65°F) occurs in May. Adults are small, about 1/5 of an inch long and are difficult to spot by walking through the plantation. Instead, stand near a tree that has been heavily damaged in the past (usually one nearest the forest edge) and watch for movement as adults fly in or flit from branch to branch. They have prominent black and white stripes on the abdomen. If adults are easily seen, expect noticeable damage.



**Adult balsam shootboring sawfly laying eggs.**

Buds need to be just at the right stage of development for successful attack. The egg and newly hatched larva apparently need the protection of the intact bud sheath. If the bud sheath comes off too soon, they do not survive. In a year with normal to above normal temperatures, the sawfly does poorly on balsams that break bud early so it tends to attack late-breaking balsam fir or Fraser fir. Conversely, in years when cool weather slows bud development following adult emergence, damage to balsam tends to be similar to that of Fraser. In mixed plantations of Fraser and balsam, the insect shows a decided preference for Fraser fir during most years. Because of the later budbreak on Fraser, the injury usually kills the entire new shoot or most of it while balsam may retain the base of the new shoot.

**Control:** Since damage is rarely heavy in consecutive years, control measures are not usually necessary. But repeated damage from this insect has resulted in unmarketable trees in some plantations. One to two applications of chlorpyrifos when adults begin laying eggs will reduce current-year damage but careful monitoring of adults is necessary to determine correct timing. This can be done by hanging yellow sticky cards at mid-crown level in favored trees and examining these frequently until noticeable numbers of adults are caught. Experience so far indicates that an average of 5 or more adults per 3"x5" card can result in heavy damage. Treatment in June just before larvae drop (when lilac is in full bloom) kills larvae and may reduce future damage. Where balsam twig aphid populations are not extremely high, a late application for twig aphid at this time may keep both insects under control.

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Revised 01/02