



# Entomological Notes

Department of Entomology

## EUROPEAN PINE SHOOT MOTH

*Rhyacionia buoliana* (Denis & Schiffermuller)

The European pine shoot moth is a key pest of ornamental pine plantings, pines in production nurseries, and Christmas trees in Pennsylvania. This species is an unintentionally introduced pest that was first recorded in North America on Long Island, New York, in 1914. It is distributed throughout the northeastern United States and southern Canada. Infestations have been reported in the Pacific Northwest. This pest attacks many species of pine that include mugo pine, *P. mugo*, Scots pine, *P. sylvestris*, red pine, *Pinus resinosa*, Austrian pine, *P. nigra*, Japanese red pine, *P. densiflora*, Japanese black pine, *P. thunbergiana*, and eastern white pine, *P. strobus*.

### DESCRIPTION

Adults are orange-red with a wingspread of about 20 mm. The front wings are orange-red marked with several irregular, wavy, silver stripes; the hind wings are dark gray, and the legs are white. Mature larvae are 12-15 mm long, light yellowish brown to brown with black head capsules.

### LIFE HISTORY

This pest overwinters in the larval stage in silk-lined tunnels inside host plant buds. In April immature larvae leave their overwintering sites and bore into buds and new young shoots, covering their entrance holes with webbing coated with resin. Larvae complete development within the mined bud when sufficient plant tissue is present. If not, larvae move to another bud and resume feeding. During May larvae reach maturity. At the end of May larvae form pupal cells within the tunneled shoot. Adults emerge in two to three weeks.

Mated females start to lay eggs in early to mid-June. The eggs are placed on the surface of needle fascicles, on the bark of new and old shoots, and at the base of buds. Eggs hatch in 7-10 days. Young larvae spin resin coated, tentlike webs between needle sheaths and the stems of current year's growth. Larvae can bore through the sheaths and mine the bases of needles. Around mid-summer, larvae move to buds and produce new resin coated webs. They mine these buds and continue to feed through

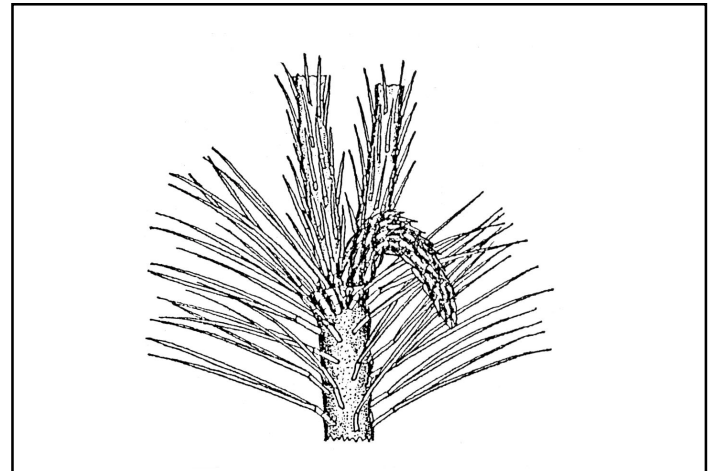


Figure 1. Damaged bud caused by the larval stage of the European pine shoot moth.

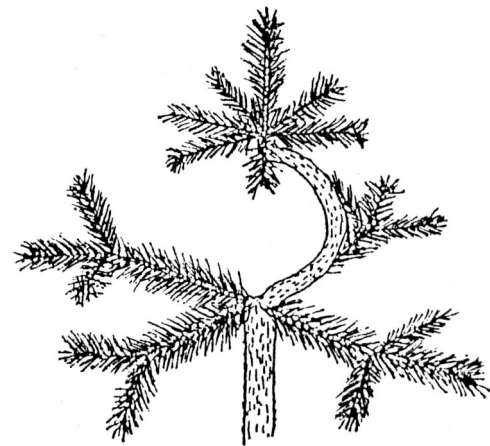


Figure 2. Post horn growth resulting from injury caused by the larval stage of the European pine shoot moth.

August. At the end of August they remain in silk-lined tunneled buds until the following spring. Warm, dry summers followed by mild winter weather permits a high survival rate of overwintering larvae. Overwintering larvae cannot survive temperatures colder than approximately -20 °F. This key pest has only one generation per year, unlike its cousin the Nantucket pine tip moth, which completes two generations per year in Pennsylvania.

## **DAMAGE**

The first sign of damage caused by this pest is wilted shoots that soon turn brown (Fig. 1). Shoots weakened by larval tunneling fall over, but continue to grow. This results in the formation of crooked trunks and branches. The destruction of terminal and lateral buds results in dead, spiked tops. Where the terminal bud is destroyed, lateral shoots will curl up to replace the leader, forming a permanent crook or “post horn” (Fig. 2).

## **MANAGEMENT**

One nonchemical method that may be used to reduce the impact of this pest is to prune dead shoots when they're first detected. Several native and introduced parasitoid species reduce this pest's population by about 10 percent.

This species is most susceptible to a registered insecticide when it's a small active larva. Treatments can be made using a registered insecticide formulation applied according to label directions in early to mid-April when larvae are exiting their overwintering sites. Additionally, an application should be made according to insecticide label directions in early July right after egg hatch. The most vulnerable life stage, the larval stage, can be effectively managed from early to mid-April and in July. Thorough coverage of host plant buds is extremely important for effective management of this pest.

## **WARNING**

Pesticides are poisonous. Read and follow the label directions and safety precautions. Handle them carefully and store in original, labeled containers—out of the reach of children, pets, and livestock. Dispose of empty containers quickly, in a safe manner and place. Do not contaminate forage, streams, or ponds.

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