



European pine shoot moth

Rhyacionia buoliana

Order Lepidoptera, Family Tortricidae; tortricid moths
Introduced pest

Host plants: Austrian, Eastern white, red, Scotch, and Mugo pines are preferred. Open growing young trees (less than 6–8 m in height) are most susceptible.

Description: Adult moths are approximately 10 mm long, rusty orange-red with a wingspan of 20 mm. The forewings are marked with silvery cross lines. Larvae are brown with a black head and legs, and are approximately 18 mm when mature.

Life history: In spring, newly hatched larvae construct tent-like webs between needle sheaths and stems of the current year's growth. They then bore into the sheaths and mine the base of the needle, eventually moving to buds about midsummer. Feeding ends in August. Overwintering larvae resume feeding in April and move to undamaged buds and new shoots. This feeding is the most damaging. There is one generation a year. A related species is Nantucket Pine Tip Moth (*Rhyacionia frustrana*). It has one generation a year in the northern part of its range and four generations a year in the south.

Overwintering: Larvae in feeding tunnels in buds.

Damage symptoms: Feeding on new shoots results in dead shoots and branches, and in crooked trunks and branches called "post horns."

Monitoring: A sex pheromone trap is available to help monitor moth activity to time insecticide sprays. Look for "post horns" that indicate prior infestation.

Physical control: Prune and destroy infested shoots before June. Prune crooked leaders and branches to maintain tree form. Remove lower branches that are below the snow line to prevent larval overwintering.

Chemical control: Spray in mid April to control overwintering larvae as they move to new shoots. Spraying in late June to early July controls the current season's larvae as they hatch.

Biological control: More than one hundred species of beneficials attack this pest. However, many populations still need pesticide applications.

Plant mortality risk: Medium

Biorational pesticides: *Bacillus thuringiensis* var. *kurstaki*

Conventional pesticides: bifenthrin, carbaryl, chlorpyrifos (nursery only), cyfluthrin, deltamethrin, fluvalinate, lambda-cyhalothrin, malathion, permethrin



Leading shoot damage caused by European pine shoot moth. (109)

Photo: Steve Katovich, USDA Forest Service



Bud damage caused by European pine shoot moth. (110)

Photo: Steve Katovich, USDA Forest Service



European pine shoot moth (continued)



Close-up of European pine shoot moth larva within bud and pine shoot. (113)
Photo: Steve Katovich, USDA Forest Service



European pine shoot moth adult. (111)
Photo: John Davidson



European pine shoot moth pupa. (112)
Photo: John Davidson