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FOREST Pest LEAFLET

Pacific Forestry Centre

European Pine Shoot Moth

By R.L. Ferris

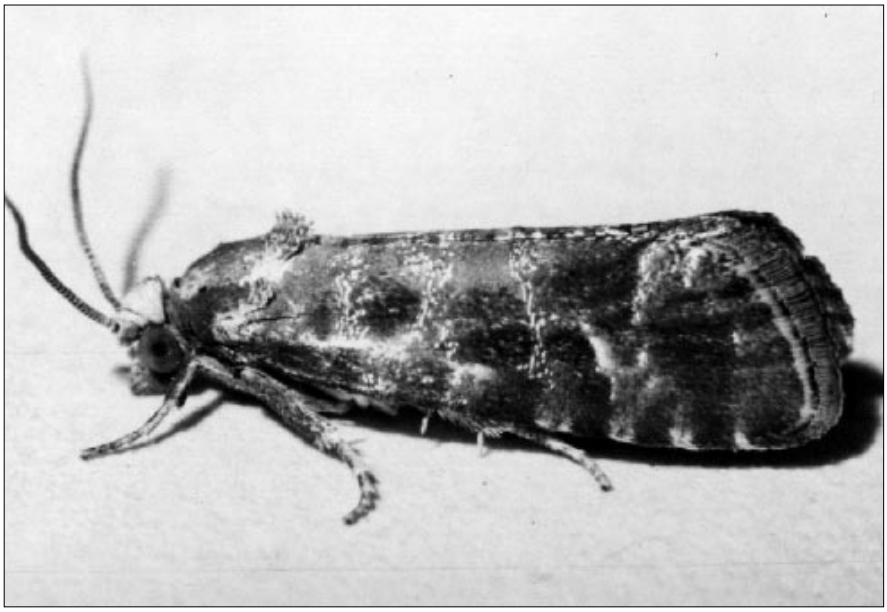
Introduction

The European pine shoot moth, *Rhyacionia buoliana* (Schiffermueller), was introduced to North America in 1914 and British Columbia in 1925. The shoot moth was found in this province on imported nursery stock. Populations have established in ornamental trees in parts of the Vancouver, Kamloops and Nelson forest regions. Significant damage on native pines has never been recorded.

Distribution and hosts

The shoot moth is a pest of exotic pines and is native to Europe. In British Columbia it is found primarily on introduced species of pine, such as Scots pine, *Pinus sylvestris*, or Mugo pine, *Pinus mugo*. Rarely it has been found on ornamental Ponderosa pine, *Pinus ponderosa*, and lodgepole pine, *Pinus contorta*, grown in urban areas. Adults have been reared from Douglas-fir, *Pseudotsuga menziesii*. These were interplanted among infested scots pine in a Christmas tree plantation on Vancouver Island.

In British Columbia it occurs in the southern portion of the province. It has been recorded in the west near Victoria, in the north at Kamloops, in the east at Castlegar and in the Lower Arrow, Okanagan and Fraser valleys.



Adult European pine shoot moth.

Description

Egg: Oval, disk-shaped, cream to orange brown to greyish before hatching; 1 mm long.

Larva: Pale yellow-brown with black head and thoracic shield when young; dark brown when mature; 14 mm long.

Pupa: Shiny reddish dark brown, 10 mm long. May be in loosely webbed cocoons or may protrude from a mass of pitch and webbing on the damaged shoot.

Adult: Head and thorax light orange-yellow, abdomen grey, forewings light reddish orange mottled with silvery cross lines, hind wings grey; 13 to 20 mm wing span. They fly near pine trees during late May to early July. When they are resting the wings are folded over the body.

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Larva

Pupa

Some of the native pine shoot moths may be confused with the European pine shoot moth.

Life history and habits

Eggs are laid in June or July on or near the buds at the ends of leaders and branches. They hatch in about two weeks and the larva begin feeding, mining the bases of the needles. The third instar larva move to new buds and feed before overwintering. Feeding resumes in the spring when the larva leave the overwintering site and bore into another bud. Pupation occurs in May or June inside the mined buds or pitch mass. The adults emerge in two or three weeks and usually mate within 24 hours. The females then begin laying eggs. The adults remain at rest on trees during the day and fly at dusk.

Damage

Shoot defoliation, webbing, pitch and shoot deformity are signs of infestation. Damage is most noticeable in the spring and new attacks are difficult to detect. Small webs covered with resin and debris at the base of the current year's needles will be visible during the summer. The damaged needles turn yellow and then brown from late summer through winter. Additional webbing on buds, and resin aged to a solidified yellowish mass, will also be visible. In the spring newly constructed, resin-coated webs glistening in the sun are the most noticeable sign of shoot moth. Severely infested trees may develop deformity such as dense bushy growth, spike tops or forked stems. It is difficult to determine the species of shoot borer by damage; identification should be confirmed by a taxonomist.

Control

Weather, insects and cultural methods help control shoot moth. Winter weather is important as freezing temperatures may kill larvae. Temperatures below -30 °C are lethal to all overwintering larvae. Larvae overwintering on branches beneath the snow may not be exposed to lethal temperatures, as snow cover may keep temperatures above a lethal level. If the lower branches are removed to above the snow level, winter mortality of the shoot moth may be increased.

Shoot damage caused by
European Pine Shoot Moth

Shoot damage and resin

Native and introduced parasitic wasps attack shoot moth eggs, larvae and pupae. While these do not control shoot moth they help to reduce the population.

Insecticides may be used to control populations. Contact a pesticide dispenser for information on registered products. Pesticide may be applied in the spring when the overwintering larvae resume feeding or in summer when the eggs hatch and the new larvae start to feed.

Clipping and destruction of infested shoots before the adult flight in mid-June may reduce shoot moth populations.

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*This document is in the library of the Pacific Forestry Centre in Victoria, British Columbia.

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