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Adult *Rhyacionia buoliana* on Scots pine, New Forest, Hampshire.

European pine shoot moth

The European pine shoot moth, *Rhyacionia buoliana* (Lepidoptera: Tortricidae), is a destructive shoot-boring pest of pine trees (*Pinus* spp.). It is not present in New Zealand. Help prevent the establishment of pine shoot moth by learning what to look for.



Image: Jean-Yves Baugnée.

Rhyacionia buoliana shoot tip damage, on *Pinus sylvestris*, Belgium, prov. Liège, Theux.

The European pine shoot moth threatens New Zealand's forestry industry. The caterpillars bore into the growing shoots of young pine trees (*Pinus* spp.), killing the shoots and leading to stunted or deformed growth. The damage to host trees is quite distinctive.

This species is native to Europe and Northern Asia but has been accidentally introduced to North and South America, North Africa, the Middle East, and Japan. Although rarely causing host tree death, infestations can lead to widespread stunting and deformation of host trees, the loss of wood volume, and unmarketable timber. It is considered a serious pest of *Pinus radiata* in Chile and would be expected to be a serious pest of *P. radiata* in New Zealand if it were to become established here.



Pine tree deformed by Rhyacionia buoliana.

Symptoms to look for

- Early signs include yellowing and curling of shoot tips, and fresh deposits of resin near bud clusters.
- Mined needles turn brown and die.
- Wounded areas of the shoot become covered in resin.
- Old damage can be marked by scarring and deformation.
- Widespread damage causes stunting and the loss of an obvious leader on host trees.



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Rhyacionia buoliana pupa inside stem.

Hosts

Primary hosts in the native range are *Pinus sylvestris* and *P. nigra*, but other *Pinus* spp. in its invaded range are also susceptible, including *P. radiata*. Pines under 15 years of age face the highest risk, but in Chile the greatest damage occurs on *P. radiata* that are only 1-4 years old.

Moth life cycle

Adult moths emerge in spring and lay their eggs on needles near the tips of growing shoots. Young caterpillars mine the needles, while older caterpillars enter the shoot (approximately 10-20 cm from the tip) and bore up towards the shoot tip, where they overwinter in a silk-lined, resin-covered chamber. The following spring, caterpillars resume feeding on the growing buds and shoots to complete their development. Pupation occurs within the shoot and takes 2-3 weeks. One generation is produced each year.

Identification and testing

Adult moths are about 10 mm long, with distinctive orange and silver forewings. Caterpillars are up to 15 mm long when fully grown and are a dull yellowish- to dark brown colour with a black head. Adults can most reliably be identified by comparison to specimens in well-curated collections, by skilled individuals. The identification of caterpillars may require either rearing to adulthood or the use of molecular sequencing techniques for confirmation.

As required by the Biosecurity Act (1993), if you encounter any insects or tree damage which you suspect could be European pine shoot moth, call the Biosecurity New Zealand Pest and Disease hotline – 0800 80 99 66. The Ministry for Primary Industries will coordinate how best to proceed with sampling and identification.

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