

Japanese pine sawyer beetle (*Monochamus alternatus*)

EXOTIC PEST DETECTION & SAMPLING GUIDE



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Background

Pine sawyer beetles (*Monochamus spp.*) attack many types of pine tree and some other conifer species. Although none of the known pest species of this group are currently found in Australia, the Japanese pine sawyer beetle is of particular concern – it is a significant problem in many parts of the world and is the species of pine sawyer beetle that is most likely to invade Australia. It is native to Japan but is now widespread across the temperate parts of east Asia. These beetles pose a major threat to commercial pine and other conifer plantations because they are highly effective vectors of Pine Wilt Nematode infection. This disease can kill infected trees in a matter of months.

How would I identify Japanese pine sawyer beetles?

Identification by morphology

At up to 30 mm in length Japanese pine sawyer beetle adults are fairly large and long-bodied. They also have very long, prominent antennae that are longer than their body. Their appearance is quite distinctive with mottled black and pale grey patches and thin orange-brown stripes down the body length.

The other life stages are harder to identify by appearance. Eggs are around 4mm long and slightly curved. Larval stages are long, almost translucent white grubs up to 43 mm long, with small brown heads that are narrower than the rest of their body.

Identification by damage

Adult female pine sawyer beetles chew a small hole in the bark of host trees and lay a single egg in each hole. After hatching, developing grubs will tunnel through and feed on wood tissue. Once mature the grubs pupate within one of these tunnels. Newly emerging adults will then chew an exit hole around 9 mm wide.

On their own, pine sawyer beetles have limited impact on the host trees they infest and mostly attack trees that are already stressed or recently killed. The biggest risk these beetles pose is their potential to carry and spread exotic species of pine nematode (*Bursaphelenchus spp.*). Pine Wilt Disease caused by these nematodes can lead to rapid death of host trees, often within a few weeks or months.

Figure 1. Exit holes created by emerging adults



How do I scout for Japanese pine sawyer beetles?

It may be necessary to peel away some of the outer bark of an infested tree to reveal tunnels and wood pulp frass created by pine sawyer beetle grubs. This feeding damage, along with exit holes created by emerging adults may be far more obvious than the actual grubs or beetles themselves (Figure 1). If you have pine trees or other conifers that show unusual signs of damage, and find evidence of tunnelling beneath the outer bark, dig or chop through the damaged wood to try to find any live grubs.

Could it be confused with an endemic species?

Australia actually has hundreds of native species of long-horned beetles. Adults of some of these beetles are somewhat similar in size and shape to Japanese pine sawyer beetle, but there is no evidence that any of these native species attack commercially grown pine trees, or are vectors for pine nematodes.

However, other exotic pine sawyer beetles from the same genus (*Monochamus*) can cause very similar damage to the Japanese species. These other exotic species tend to have the same general size, shape and life cycle as Japanese pine sawyer beetles, but with more plain or black body colours. These other exotic species primarily occur in Europe or North America and are not found in Australia.

What should I do if I suspect Japanese pine sawyer beetles?

Japanese pine sawyer beetle is a priority plant pest, exotic to Australia. If you have pine trees or other conifers that show unusual signs of damage, and find evidence of tunnelling beneath the outer bark, call the **Exotic Plant Pest hotline on 1800 084 881**. The hotline will divert you to the appropriate state biosecurity agency, which will investigate the suspect detection further. To support an investigation you should take note of:

- The detection location (take a GPS coordinate using your phone);
- The host plant on which the suspect detection has been made;
- Damage symptoms (e.g. tunnelling and wood pulp frass under the bark); and
- A photo of all life stages observed (taking close-up photos of the same specimen from multiple angles is most useful for identification).

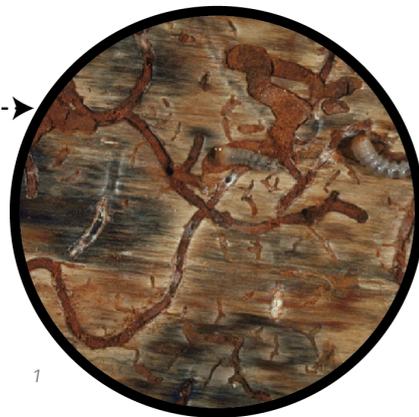
Taking a sample

Taking a sample will also assist in a biosecurity investigation. If possible, collect grubs in a ziplock bag – double bagging of specimens is ideal. Label the bag with the date and collection location and keep in the fridge in case a larval sample is needed by the biosecurity agency.

Figure 2. Reporting decision making for Japanese pine sawyer beetle (*Monochamus alternatus*)

You have detected unusual tunneling damage or rapid death of trees in your pine plantation. **Should you report it?**

If you answer yes to EITHER of the following questions, it could be the exotic **Japanese pine sawyer beetle** (*Monochamus alternatus*) which can carry the **pine wilt nematode**. Report it!



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1 When you peel away outer bark, do you find tunnels and wood pulp? **Yes**

2 When you split open pieces of wood with signs of tunneling, do you find eggs, white grubs, pupae or adult beetles? **Yes**

There are hundreds of wood boring beetle species in Australia, but none are known to damage commercial pine plantation trees or spread pine wilt nematodes. Any sign of boring inside pine should be reported!

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² bugwood.com, Gyorgy Csoka, Hungary Forest Research Institute CC BY 3.0

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More information

[NSW Department of Primary Industries, Sawyer beetles](#)

References

Walker, K. (2005) Pine Sawyer beetle (*Monochamus alternatus*) Updated on 8/30/2021 [Available online: PaDIL](#)

