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Dendroctonus valens.

Red turpentine beetle

The red turpentine beetle, *Dendroctonus valens* LeConte (Curculionidae: Scolytinae), is a destructive, wood-boring pest of pine trees (*Pinus* spp.). It is not present in New Zealand. Help us keep red turpentine beetle from establishing here by learning what to look for.



Pitch tubes formed at *Dendroctonus valens* attack sites.

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The red turpentine beetle threatens New Zealand's forestry industry. They primarily attack old, weakened, or freshly killed pines, including *Pinus radiata*, by boring into the lower trunk and roots. Adult beetles burrow under the bark of host trees where they lay their eggs. Developing larvae bore their own feeding galleries in a radiating pattern. Fungi associated with these beetles infest the host tree, compromising the health of the tree and occasionally leading to mortality. This species is native to North and Central America but has been accidentally introduced to China. Although host tree death is rarely attributable to this species in its natural range, in China this beetle is responsible for the deaths of millions of pine trees in infested forests. Outbreaks can be triggered by drought conditions, which weaken host trees over large geographic areas.

Symptoms to look for

- Pitch tubes (comprised of resin, beetle frass, and boring dust) may be seen extruding from the bark on the lower trunks of infested trees.
- Pitch pellets (fallen pitch tubes) may also be seen on the ground under infested trees.
- The needles of infested trees may turn yellow as the trees decline and red as they die.



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Dendroctonus valens larva.

Hosts

The primary hosts in the beetle's native range are ponderosa pine (*P. ponderosa*) and lodgepole pine (*P. contorta*). In China they attack *P. bungeana* and especially *P. tabuliformis*, which is planted widely as part of reforestation initiatives. *Pinus radiata* has been recorded as a host.

Beetle life cycle

Adult beetles bore into the trunk or root collar at or near ground level, creating short, usually vertical galleries, where 10 to 40 or more eggs are laid by each female. Larvae bore radiating feeding galleries and pupate within the tree. Development is temperature-dependent. The larval stage may last up to 2 years in colder climates, while several generations may be produced each year in warmer areas. All life stages may overwinter within the roots of host trees. Adults are highly mobile and may fly more than 35 km in search of hosts.

Identification and testing

Adult beetles are 5.4-9 mm in length with cylindrical, reddish-brown bodies. The head is visible from above and the elytra lack any spines or other modifications. The body is covered in long hairs. Larvae are largely typical of most bark beetle species, but differ in the presence of distinctive sclerotised spines on the end of the abdomen. Adult beetles can most reliably be identified by comparison to specimens in well-curated collections. Bark beetle larvae with distinctive abdominal spines likely belong to this species. The identification of larvae can be confirmed either by rearing to adulthood or the use of molecular sequencing techniques. The presence of pitch tubes on the lower trunk and roots could be indicative of this species.

As required by the Biosecurity Act (1993), if you encounter any insects or tree damage which you suspect could be red turpentine beetle, 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.

Contact information

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