

## ***Xylosandrus mutilatus***

**System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Scolytidae

**Common name** camphor shot-borer (English), camphor shoot beetle (English)

**Synonym**  
*Xyleborus banjoewangi* , Schedl  
*Xyleborus sampsoni* , Eggers  
*Xyleborus taitinus* , Eggers

**Similar species** *Xylosandrus crassiusculus*

**Summary** *Xylosandrus mutilatus* comes from a family of beetles commonly referred to as bark beetles. *Xylosandrus mutilatus* construct galleries in the xylem of host trees which can eventually cause mortality in its host. These galleries also degrade wood products and when it attacks valuable broadleaf species there can be significant economic impacts on lumber industries. Many bark beetles are also known to be vectors of fungal pathogens but it is not known what fungal pathogens *Xylosandrus mutilatus* may or may not be harbouring.



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## Species Description

*Xylosandrus mutilatus*'s head is completely hidden by the pronotum in dorsal view, the antennal club appears obliquely cut, and the body is generally smooth and shining. *Xylosandrus* spp. are distinguished from related genera (*Xyleborus*, *Xyleborinus*, *Ambrosiodmus*) by the stout body, truncate elytral declivity, and non-contiguous procoxae. *X. mutilatus* is larger (>3mm) than any other species of *Xylosandrus* present in the U.S., but is most easily recognized by the elytra, which are shorter than the pronotum. *X. mutilatus*'s declivity is without punctures, dull and granulate. Larvae are typical Scolytidae. They are white, c-shaped, legless grubs with an amber coloured head capsule (Rabaglia, 2003).

Examination of adults by a taxonomist with expertise in the family Scolytidae is required for positive identification to species. The adults and larval galleries have sufficient characteristics to permit entomologists to make field identifications at least to genus (Rabaglia, 2003).

Symptoms of attack by *X. mutilatus* include pin-hole-sized holes in the bark that are either bleeding or have a light coloured boring dust. The galleries in the xylem consist of a short horizontal entrance and a 1-4cm long central, vertical gallery with short brood chambers. Attacked trees may have wilting foliage or twig dieback (Rabaglia, 2003).

## Lifecycle Stages

*Xylosandrus mutilatus* is univoltine with overwintering adult females making dispersal flights from June to August. These females search for suitable host material to establish a gallery. *X. mutilatus* apparently prefers host material of a rather small diameter. Once a female has found a suitable host, she creates a gallery system and inoculates the gallery walls with spores of the ambrosia fungi from her mycangia, a pair of dorsal pouches formed by the intersegmental membrane between the pronotum and mesonotum. From 1 to 38 eggs are laid per gallery. The females maintain the gallery and protect its entrance and will plug the entrance hole with her body as a defense against predators and other enemies. Egg hatching begins about one week after oviposition and the larvae feed on the white coloured mycelium of the ambrosia fungus. Larvae pupate two to three weeks later, and adults eclose about a week after pupation (Rabaglia, 2003; and Schiefer and Bright, 2004).

## Habitat Description

*Xylosandrus multilatus* has a wide host range. Reported hosts in its natural range include: *Acer* spp., *Albizia* spp., *Benzoin* spp., *Camellia* spp., *Carpinus laxiflora*, *Castanea* spp., *Cinnamomum camphora*, *Cornus* spp., *Cryptomeria japonica*, *Fagus crenata*, *Lindera erythrocarpa*, *Machilus thunbergii*, *Ormosia hosiei*, *Osmanthus fragrans*, *Parabezion praecox*, *Platycarpa* spp., and *Sweitenia macrophylla*. Hosts in the southeastern U.S., where this insect has become established, are presently unknown. (Rabaglia, 2003), although The US Forest Service (2003) did find a black walnut plantation in Tennessee infested with *X. multilatus*.

## Reproduction

As is typical of xyleborine ambrosia beetles, *Xylosandrus multilatus* has extremely inbred polygamy. Mating occurs within the gallery immediately after eclosion. Only one to three males develop in each gallery, and these remain in the gallery and mate with more than one of their later-emerging sisters. The males die soon after mating, and the females overwinter within the gallery (Rabaglia, 2003; and Schiefer and Bright, 2004).

## General Impacts

*Xylosandrus multilatus* is established in two southeastern states in the U.S., but its ability to adapt to new hosts, compete with indigenous ambrosia beetles or cause significant damage is not completely known. Its potential to spread to new areas is high: female adults are capable of flight and can travel 2-3 km in search of suitable hosts. They are subject to dispersal by air currents. *X. multilatus* has a high reproductive potential, a broad host range and cryptic habits, which would make it difficult to detect and eradicate (Rabaglia, 2003).

*X. multilatus* construct galleries in the xylem of host trees. These galleries, and the staining caused by their associated fungi, degrade wood products. If this insect should attack valuable broadleaf species such as oaks, ash, walnut, etc., this insect could have a significant effect on the hardwood lumber industry. Moreover, plant quarantine measures designed to slow its rate of spread could have an adverse effect on transport of hardwood logs and lumber from infested to uninfested areas. Since this insect appears to have a preference for small diameter material, it could become a pest of urban trees, especially those stressed by recent planting. (Rabaglia, 2003).

In North America, considering the diverse climatic conditions present in its native range, it seems likely that *X. multilatus*'s distribution will eventually encompass much of the eastern United States (Schiefer and Bright, 2004).

Many ambrosia beetles indirectly impact host trees by vectoring fungal pathogens but currently there is no information on what, if any, fungal pathogens *X. multilatus* might be harboring (Campbell, 2004).

## Management Info

Preventative measures: In 2002, United Nation FAO's (Food and Agriculture Organization) Interim Commission on Phytosanitary Measures imposed a global standard for treating wood packaging [International Standard for Phytosanitary Measures No. 15](#) to stop the spread of invasives.

Rabaglia (2003) reports that, "Control of ambrosia beetles like *X. multilatus* is often difficult and impractical. Some insecticides may be effective as preventative treatments or on infested material. Heat, water and fumigants are also used on wood products infested by ambrosia beetles."

## Pathway

Scolytids were the most commonly intercepted group of insects found in association with solid wood packing materials in Chile and New Zealand (Haack, 2003). Since this species may attack small trees, it may also be transported in nursery stock (Rabaglia, 2003). Scolytids were the most commonly intercepted group of insects found in association with solid wood packing materials in Chile and New Zealand (Haack, 2003).

## Principal source: [Rabaglia, 2003 \*Xylosandrus multilatus\*](#)

Schiefer and Bright, 2004. *Xylosandrus multilatus* (Blandford), An Exotic Ambrosia Beetle (Coleoptera: Curculionidae: Scolytinae: Xyleborini) New to North America

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## ALIEN RANGE

**[26]** UNITED STATES

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