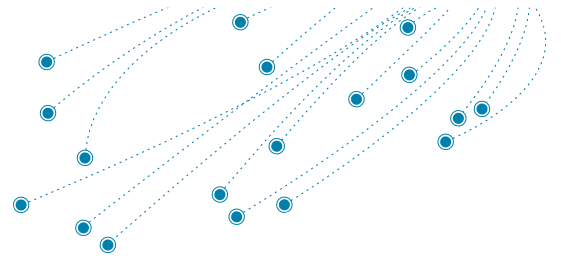


BLACK TWIG BORER



UPDATED: JUNE 2019

Invasive insects are a huge biosecurity challenge. We profile some of the most harmful insect invaders overseas to show why we must keep them out of Australia.

Species

Black twig borer / *Xylosandrus compactus*. Also known as black coffee borer, black coffee twig borer, tea stem borer.

Main impacts

Kills stems of shrubs and trees and sometimes whole plants, including endangered species. Damages food crops and ornamental plants.

Native range

East Asia.¹

Invasive range

South East Asia, Pacific islands, USA, Caribbean Islands, Brazil, Peru, Africa (27 countries).¹

Main pathways of global spread

Trade of infested plants, foliage, wood and packing wood material.¹

ENVIRONMENTAL IMPACTS OVERSEAS

The black twig borer bores into the stems of shrubs and trees of more than 200 plant species, often killing shrubs and sometimes large trees. Fungi associated with the beetle that are important for development of their larvae contribute to the damage².

This beetle was called 'a threat to natural ecosystems in Europe' after infestations in Circeo National Park in Italy caused serious declines, with wilting of oaks, bay trees, mastics, carobs and other trees, and the death of young plants². This came only five years after the beetle was first detected in Europe in 2011².

In Hawaii the beetles have killed Australian trees grown in plantations, notably eucalypts (*Eucalyptus pillularis*, *E. sideroxylon*), brush box (*Lophostemon confertus*), paperbark (*Melaleuca leucadendron*) and turpentine (*Syncarpia glomulifera*)³. All of the killed trees had apparently been vigorous before the



Black twig borers in their gallery, which they inoculate with symbiotic fungi that serve as food for adults and larvae.

Photo: Raffaele Giurato

attack³. The beetle also killed swamp mahogany (*E. robustus*) during droughts³, and has attacked many other Australian trees grown in Hawaii⁴. In Hawaii it increases the susceptibility to stem breakage and death of koa (*Acacia melanoxylon*), a Hawaiian wattle closely related to Australian blackwood (*A. melanoxylon*)⁵.

In Hawaii the beetle is a threat to endangered plants, including Hawaii plum (*Alectryon macrococcus*), which has a population of no more than 3000 individuals, usually 'partially dead as a result of heavy infestation'⁶, and the critically endangered hame (*Flueggea neowawraea*)⁷.

HUMAN AND ECONOMIC IMPACTS OVERSEAS

This beetle attacks many crops including mangoes, macadamias, avocados, figs, coffee and lychees, and many ornamental plants, including hibiscuses and coral trees¹.



An adult black twig borer. Photo courtesy Michael C. Thomas, Florida Department of Agriculture and Consumer Services, Bugwood.org | CC BY-SA 3.0

AUSTRALIAN CONCERNS

This black twig borer could threaten a wide range of Australian plants. Its global distribution suggests it could invade northern, eastern and south-western Australia.

As noted above, it kills Australian plants grown abroad, including eucalypts, brush box, paperbarks and turpentine. Other Australian plants attacked in Hawaii include blackwood (*Acacia melanoxylon*), candlenut (*Aleurites moluccana*), Norfolk Island pine (*Araucaria heterophylla*), beautyberry (*Callicarpa pendunculata*), beach she-oak (*Casuarina equisetifolia*), red ironbark (*Eucalyptus sideroxylon*), Queensland maple (*Flindersia brayleyana*), coast hibiscus (*Hibiscus tiliaceus*), Tahitian chestnut (*Inocarpus fagifer*), macadamia (*Macadamia integrifolia*) and red cedar (*Toona ciliata*)⁴. In Malaysia it damages seedlings of mangium (*Acacia mangium*), an Australian wattle grown there in plantations⁸.

Australia has many other native plants in genera that are attacked overseas, including *Abutilon*, *Acalypha*, *Alectryon*, *Alpinia*, *Antidesma*, *Bauhinia*, *Canavalia*, *Citrus*, *Claoxylon*, *Colubrina*, *Croton*, *Cryptocarya*, *Dendrobium*, *Diospyros*, *Erythrina*, *Ficus*, *Flueggea*, *Graptophyllum*, *Hibiscus*, *Jasminum*, *Metrosideros* and *Pipturus*, *Pittosporum*, *Rubus*, *Santalum*, *Solanum*, *Syzygium* and *Vitex*^{4,9}.

Australia has threatened species in several of the genera attacked overseas, including the critically endangered Phillip Island hibiscus (*Hibiscus insularis*) and two relatives of the endangered Hawaii plum – *Alectryon repandodentatus*, endangered in Queensland¹⁰, and the federally endangered *A. ramiflorus*¹¹. Australia has 30 acacia species listed federally as endangered or critically

endangered, and 22 endangered eucalypts, plus large numbers of vulnerable species, although some occur in regions unsuitable for the black twig borer.

So broad are the borer's tastes that rare species in many other Australian genera are likely to be susceptible. Vulnerability to the borer varies between species, so it is impossible to predict which species are at serious risk, but the large number of threatened Australian plants and the wide tastes of the borer suggest that some could face extinction if it arrives.

Plant Health Australia has identified the black twig borer as a high priority pest of mangoes¹² and a pest of macadamia trees¹³.

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ABOUT THIS PROJECT

The Invasive Insects: Risks and Pathways Project is a partnership between Monash University and the Invasive Species Council. To find out more visit invasives.org.au/risks-and-pathways.

