

Mini data sheet on *Xylosandrus crassiusculus* (Coleoptera: Scolytidae)
Asian ambrosia beetle, granulate ambrosia beetle

Added to the EPPO Alert List in 2009 - Deleted in 2021

Reasons for deletion:

Xylosandrus crassiusculus has been included in EPPO Alert List for more than 3 year. The EPPO Study on bark and ambrosia beetles considered that no international action could stop its natural spread. In 2021-06, the Working Party on Phytosanitary Regulations agreed that it could be deleted, considering that sufficient alert has been given.

Why: *Xylosandrus crassiusculus* is a highly polyphagous pest of woody plants which has recently been reported from the EPPO region. The pest was first trapped in Italy, in Toscana (near Pisa) in a mixed forest dominated by *Pinus pinaster* and *Quercus cerris* in 2003. As of 2010, *X. crassiusculus* was trapped from many other places in Toscana (natural parks and harbour of Livorno) but its occurrence could not be related to particular damage to trees. The pest seems to be established in Toscana and its eradication is not considered feasible. In Liguria, the pest was first observed in November 2007 by CERSAA on *Ceratonia siliqua* (carob) in private gardens in Alassio. Later, other infested carob trees were discovered in the same area as well as the municipality of Pietra Ligure (20 km away from the first observation site). In Veneto, few specimens of *X. crassiusculus* were trapped at the Marghera harbour near Venezia in 2010. In the following years, *X. crassiusculus* was also reported from other European countries. This ambrosia beetle originates from Asia and has been introduced to other parts of the world, most probably with trade of plants and wood. In particular, it has been introduced into the USA in the 1970s where it has become a pest of fruit tree orchards and ornamental tree nurseries. As this pest might present a risk to many woody plants in nurseries, plantations, orchards, parks and gardens, the EPPO Secretariat decided to add it to the EPPO Alert List.

Where: It is considered that *X. crassiusculus* originates from Asia, and that it was introduced into Africa hundreds of years ago by early traders. More recently, it has been introduced into the Americas (e.g. detected in the USA in the 1970s; in Costa Rica and Panama in the 1990s).

EPPO region: France (first found in 2014), Italy (first found in 2003 - Liguria, Toscana, Veneto), Malta (first found in 2021), Slovenia (first reported in 2017), Spain (first reported in 2017 near Valencia).

Asia: Bhutan, Cambodia, China (Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanghai, Sichuan, Hong Kong, Xizhang, Yunnan, Zhejiang), India (Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal), Indonesia (Irian Jaya, Java, Kalimantan, Maluku, Nusa Tenggara, Sulawesi, Sumatra), Japan (Hokkaido, Honshu (including Ogasawara Islands), Kyushu, Shikoku), Korea Democratic Peoples' Republic, Korea Republic, Malaysia (Sabah, Sarawak, West Malaysia), Laos, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam.

Africa: Cameroon, Congo Democratic Republic, Côte d'Ivoire, Equatorial Guinea, Ghana, Kenya, Madagascar, Mauritania, Mauritius, Nigeria, Seychelles, Sierra Leone, South Africa, Tanzania.

North America: USA (Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Indiana, Louisiana, Maryland, Mississippi, New Jersey, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Virginia, Washington). *X. crassiusculus* was first recorded in May 1974 in South Carolina on a dying graft of *Liquidambar styraciflua*. It is now well established in South-Eastern USA.

Central America: Costa Rica, Guatemala, Panama. In these countries where it is now considered established, *X. crassiusculus* has been found in primary tropical forests on many tree species. However, in these natural forests, it is not known if it can kill healthy trees.

South America: Argentina, Brazil (Acre, Amapá, Espírito Santo, Goiás, Para, Pernambuco, Rio de Janeiro, Rio Grande do Sul, São Paulo), French Guiana, Uruguay.

Oceania: Australia (Queensland), New Caledonia, New Zealand, Palau, Papua New Guinea, Samoa.

On which plants: *X. crassiusculus* is a highly polyphagous pest which can feed on many tree and shrub species (only Coniferae are apparently not attacked by this pest). In tropical areas, it has been reported on economically important crops (e.g. *Camellia sinensis*, *Carica papaya*, *Cocos nucifera*, *Coffea arabica*, *Mangifera indica*, *Theobroma cacao*) or forest tree species (e.g. *Aucoumea kleineana*, *Tectona grandis*). In more temperate areas, it has been reported on many fruit and nut crops (e.g. *Carya illinoensis* (pecan), *Ceratonia siliqua* (carob), *Diospyros kaki*, *Ficus carica* (fig), *Malus domestica* (apple), *Prunus avium* (cherry), *P. domestica* (plum), *P. persica* (peach)); as well as on many forest and ornamental woody species (e.g. *Acacia*, *Alnus*, *Azalea*, *Cornus*, *Eucalyptus*, *Hibiscus*, *Koelreuteria*, *Lagerstroemia*, *Liquidambar*, *Magnolia*, *Prunus*, *Quercus*, *Populus*, *Salix*, *Ulmus*).

Damage: Adults and larvae bore into twigs, branches or small trunks of woody host plants and introduce a symbiotic ambrosia fungus (*Ambrosiella* sp.) on which they feed. The insect usually bores galleries within stems of a rather small diameter (2.5-8 cm) but larger logs can be attacked (e.g. up to 30 cm diameter). Unlike other ambrosia beetles which normally attack only stressed or damaged plants, *X. crassiusculus* is apparently able to attack healthy plants. Infested plants can show wilting, branch dieback, shoot breakage and general decline. Newly planted seedlings are often attacked at the root collar and the resulting girdling can stunt or kill the young tree. When boring galleries, frass is pushed out in the form of a compact cylinder which may reach 3 to 4 cm long before it breaks off (resembling a 'toothpick'). On *Prunus* species, abundant gummosis is also produced. In the USA, it is considered that *X. crassiusculus* has become an important pest of ornamental and fruit trees, more particularly in nurseries and trees used in landscaping. Although no figures are given, it is stated that *X. crassiusculus* has caused moderate to heavy losses in US nurseries (e.g. on potted *Quercus shumardii* and *Ulmus parviflora*), on chestnut, peach and pecan orchards. In other parts of the world, tree mortality has been reported on *Mangifera indica* in Pakistan, *Aucoumea klaineana* and *Khaya ivorensis* plantations in Ghana.

Adults are small dark reddish brown scolytids (female: 2-3 mm long, males: 1.5 mm). Larvae are white, legless, C-shaped with a well developed capsule, and cannot be easily distinguished from other scolytids. Populations essentially contain females (1:10 male-female ratio). Adult males do not fly and remain inside the galleries. *X. crassiusculus* is an inbreeding species (females mate with their brothers). When females emerge, they leave infested plants and fly to new hosts. They start to bore a tunnel (round entrance hole of 2 mm diameter) with a brood chamber and one or more branches into the sapwood (and sometimes the heartwood). Eggs are laid in the brood chamber. Larvae hatch and feed on the symbiotic fungus growing inside the galleries. In the tropics, breeding is continuous throughout the year with overlapping generations. In South-Eastern USA, beetles are active from March to the autumn, and the life cycle takes about 55 days, with usually two generations per year.

Pictures can be viewed on the Internet:

<http://photos.eppo.org/index.php/album/427-xylosandrus-crassiusculus-xylbcr->

<http://www.barkbeetles.org/browse/subject.cfm?SUB=2437>

<http://woodypest.ifas.ufl.edu/1005.htm>

<http://www.padil.gov.au/viewPest.aspx?id=1072>

Dissemination: Flight of adult females is the main means of movement and dispersal to new plant and new areas over short distances. There is no data on the distances they can fly but data obtained from flight traps in Panama suggested that *X. crassiusculus* normally flies at heights under 10 m above the ground. Over long distances, trade of infested plants, wood, and packing wood material can transport *X. crassiusculus*.

Pathway: Plants for planting, cut branches, wood, packing wood material from countries where *X. crassiusculus* occurs.

Possible risks: Many woody plants attacked by *X. crassiusculus* are important fruit crops, forest trees or woody ornamentals in the EPPO region. Although Scolytine beetles are usually considered as secondary pests in their native forests, it seems that *X. crassiusculus* can occasionally become a significant and aggressive pest in its introduced range. Although data is lacking on its economic impact, it seems that it has the potential to be a pest in nurseries, orchards and plantations. Data is lacking on its potential impact in forests and wood production. Pest control and detection is difficult due to its concealed mode of life. In the USA, it is recommended to remove and destroy infested plants. Repeated insecticide treatments may help to reduce pest populations. Lindgren funnel traps baited with ethanol lures can be used to monitor flight periods and evaluate the importance of pest populations. In New Zealand, *X. crassiusculus* is included in the 'List of regulated pests potentially associated with woodware'. Considering the areas where *X. crassiusculus* has been introduced and the damage it may cause, it seems that this species has the potential to establish and cause damage to a large number of woody plants in Europe, cultivated for fruit production, forest and ornamental purposes.

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