Department for Environment Food & Rural Affairs

Plant Pest Factsheet

Asian longhorn beetle

Anoplophora glabripennis

Figure 1. Adult Asian Longhorn Beetle (*Anoplophora glabripennis*) © Crown Copyright

Background

Anoplophora glabripennis (ALB) is a large invasive species of longhorn beetle native to Asia. The larvae can feed and develop within the wood of broad-leaved trees including many of our common native species, and this can result in significant damage or even the death of the host. In March 2012 an outbreak of ALB was discovered at one location in Paddock Wood, Kent. Following years of joint effort and careful monitoring, the outbreak was officially declared eradicated in 2019, after seven years with no findings of ALB.

Geographical Distribution

ALB is originally from East Asia, mainly China and the Korean Peninsula, it also occurs in parts of Japan (Honshu). It has been spread through international trade, especially in wood and wood packaging material. As a result, it has managed to establish in parts of North America, where it is still present but with a limited distribution in some of the USA, outbreaks in Canada have been eradicated. In Europe, there have been several outbreaks. It is still present but localised in mainland France, Italy and parts of Switzerland. Outbreaks in Austria, Belgium, Finland, Montenegro, the Netherlands, the UK and Corsica have been successfully eradicated. The current global distribution of ALB can be found on the EPPO website.

Host Plants

The Asian longhorned beetle is highly polyphagous (feeds on a wide range of host plants). It has been recorded on 69 different species of broad-leaved trees, many of which are commonly found in urban and forested environments. The most preferred hosts by ALB are listed below. A more comprehensive list of hosts can be found on the EPPO website.

Maples (*Acer spp.*), **Trident maple** (*Acer buergerianum*), **Box elder** (*Acer negundo*), **Striped maple** (*Acer pensylvanicum*), **Painted maple** (*Acer pictum subsp. mono*), **Norway maple** (*Acer platanoides*), **Sycamore maple** (*Acer pseudoplatanus*), **Red maple** (*Acer rubrum*), **Silver maple** (*Acer saccharinum*), **Sugar maple** (*Acer saccharum*), **Shantung maple** (*Acer truncatum*), **Horse chestnut** (*Aesculus hippocastanum*), **River birch** (*Betula nigra*), **Japanese katsura** (*Cercidiphyllum japonicum*), **Eastern cottonwood** (*Populus deltoides*), **Black poplar** (*Populus nigra*), **Hybrid poplar** (*Populus × canadensis),* **Weeping willow** (*Salix babylonica*).

Description

The immature stages are found inside their host and are less likely to be encountered.

Egg: white, smooth, and shaped like an elongated oval, reaching up to 6 mm in length (Figure 2).

Larva: Legless (apodous), white or a creamy white colour with a distinctive light brown plate behind the head and measuring up to 50 mm in length (Figure 3).

Pupa: A pale, soft and partially formed version of the adult, found in a pupal chamber just under the bark of the host, but does not form a protective cocoon. This chamber is characteristically sealed by a mass of wood shavings (Figure 4).

Adult: Between 20 and 40 mm in length and entirely black and shiny apart from a varying number of white spots on its wing cases; white bands on the antennae and some blue/grey colouration on the legs (Figure 1). Males tend to be smaller with longer antennae in relation to their body size (up to 1 ½ times their body length).

Figure 2. Egg of *Anoplophora glabripennis* © Larry R. Barber, USDA Forest Service, Bugwood.org

Figure 3. Larva of *Anoplophora glabripennis* Courtesy EPPO © Franck Hérard, European Biological Control Laboratory, Montferrier-sur-Lez (FR).

Figure 4. Pupa of *Anoplophora glabripennis* in chamber with wood shaving cap. © Kenneth R. Law, USDA APHIS PPQ, Bugwood.org

Figure 5. Exit holes and oviposition pits of *Anoplophora glabripennis* Courtesy EPPO © Matteo Maspero, Fondazione Minoprio, Vertemate con Minoprio (IT).

Figure 6. Sawdust-like droppings of *Anoplophora glabripennis* © Crown Copyright

Biology

Emerging adult beetles are most likely to be spotted from mid-summer until early autumn, with individuals living for about 30 days. After they emerge, they are not ready to reproduce. They need time to feed and mature before they can successfully mate, and the females can lay their eggs. During this period the beetles feed on the soft bark of shoots in the canopy of the host. After mating the female chews slits in the upper trunk and branches of the host in which she deposits her eggs. Females can produce between 30 and 200 eggs.

After around two weeks the eggs hatch and the first instar larvae burrow into the host where they feed and develop through seven to eight larval instars (life stages). In spring, the final instar larvae make a chamber under the bark of the host in which metamorphosis to a pupa and then the adult form takes place before emergence.

Climate modelling and experience of outbreaks in both North America and Europe indicate that in most locations where it has been found, *A. glabripennis* completes its life cycle in one to two years, but this may extend to three or four years in cooler regions. The life cycle in Kent was thought to have generally been three years, with a two-year life cycle possible.

Dispersal and Detection

Both males and females can fly and disperse up to 2 km to other suitable hosts, but emergent adults particularly the females, will remain on, and re-infest the host from which they have emerged if it is still of good quality.

Longer-distance spread can result from the movement of larvae in infested and untreated timber and wood packaging material such as crates, boxes and pallets. It is thought likely that the 2012 outbreak in Paddock Wood, Kent, resulted from beetles emerging from crates made from untreated wood which had been used to import slate from China to an importer in the village.

Other than spotting the adults, which are large and distinctive beetles unlike any of our native species, the next most obvious symptoms of ALB presence are adult emergence holes in the trunks and branches of an infested host. These are circular; about 10 mm in diameter and are usually found in the main trunk and branches (Figure 5) especially at the junction between the trunk and main branches.

Other signs of infestation that can be harder to detect include piles of sawdust-like droppings that accumulate at the base of infested trees, produced by actively feeding larvae (Figure 6); oviposition scars in the trunk and branches (Figure 5) where eggs have been laid that may or may not cause sap bleeding; adult feeding damage to the bark of smaller branches and shoots; and the appearance of broken or dead branches and crown dieback.

Economic Impact

Anoplophora glabripennis is a destructive pest of a very wide range of broad-leaved host trees including species grown commercially for timber and fruit production. If it was to become established it has the potential to significantly alter and disrupt the wider environment, as well as having an economic impact.

Pest Management and Reporting

Suspected outbreaks of ***Anoplophora glabripennis*** or any other non-native plant pest should be reported to the relevant authority:

For finds in the wider environment:

In GB, please use Tree Alert: treealert.forestresearch.gov.uk/

For finds at garden centres, plant nurseries or private gardens in England and Wales, contact your local APHA Plant Health and Seeds Inspector, or the PHSI headquarters, in York

For **England and Wales**, contact your local **APHA Plant Health and Seeds Inspector** or the **PHSI Headquarters**, York. Tel: 0300 1000 313

Email: planthealth.info@apha.gov.uk

For **Scotland**, contact the **Scottish Government's Horticulture and Marketing Unit:**

Email: hort.marketing@gov.scot

For **All Findings in Northern Ireland**, contact the **DAERA Plant Health Inspection Branch:**

Tel: 0300 200 7847 Email: planthealth@daera-ni.gov.uk

Web: www.daera-ni.gov.uk/topics/plant-and-tree-health

For additional information on UK Plant Health please see:

planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/

planthealthportal.defra.gov.uk/

www.gov.uk/plant-health-controls

www.gov.scot/Topics/farmingrural/Agriculture/plant/PlantHealth/PlantDiseases

www.daera-ni.gov.uk

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