Department for Environment Food & Rural Affairs

Plant Pest Factsheet

Mulberry longhorn beetle

Trichoferus campestris

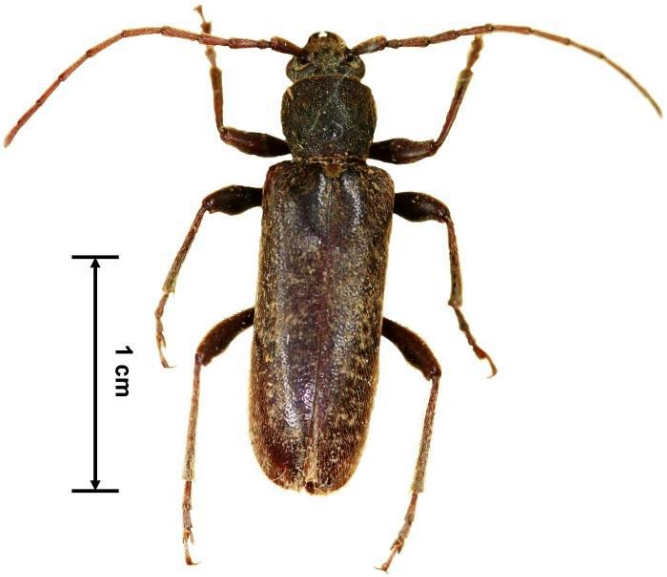

Figure 1. Adult *Trichoferus campestris*. © USDA APHIS PPQ

Background

Trichoferus campestris (Faldermann) (Coleoptera: Cerambycidae), commonly known as the mulberry longhorn beetle, is an Old World species native to Asia and Russia. Adult beetles do not feed, but the larvae feed on and develop within the trunk or large branches of a very wide range of broadleaved and coniferous trees, other woody plants and can also develop in dead or dry wood. Although the beetle is not a listed quarantine pest for the EU, it is seen as a potential threat and was added to the European and Mediterranean Plant Protection Organisation A2 list in 2007. It has extended its range across Eastern Europe and into North America, most likely as a result of movement within wood packaging and manufactured wood products. In 2013 a single *T. campestris* was found at a private house in Windsor, UK, emerging from a wooden cutlery tray imported from China. A subsequent rapid pest risk analysis produced by Fera in 2014 suggested that the beetle has the potential to establish in the UK and might also cause economic damage, particularly to apple orchards in the south west and south east of England.

Geographical Distribution

Trichoferus campestris is native to Asia and Russia, ranging from Eastern Siberia, the Far East and Japan in the east to Kazakhstan, Uzbekistan and the European parts of Russia in the west. It has since extended its distribution further west across Eastern Europe, into the Czech Republic, Hungary, Moldova, Poland, Romania, Slovakia and Ukraine. *Trichoferus campestris* has also established in Utah, USA, and possibly in several other states of the USA and in Canada.

Host Plants

Trichoferus campestris has a known host range of about 40 genera of coniferous and deciduous trees, and this is likely to increase in the future, as more records are published. The beetle attacks weakened, stressed and healthy trees, particularly *Malus* spp. (apple/crabapple) and *Morus* spp. (mulberry), though it also feeds on *Betula* spp. (birch), *Broussonetia* spp. (paper mulberry), *Gleditsia* spp. (honeylocust), *Picea* spp. (spruce), *Pinus* spp. (pine), *Salix* spp. (willow) and *Sorbus* spp. (mountain-ash, rowan).

The larvae of *T. campestris* are tolerant of dry conditions and can complete their development in dead dry wood. This species has also been reported as a pest of structural timbers in buildings. For example, in Craiova, Romania, beetles had developed in and were found emerging from wooden rafters of a house.

Description

It is only the adults that are likely to be seen, as eggs, larvae and pupae are all concealed in tunnels within the wood, but descriptions of all life stages are provided for completeness.

Eggs: Small, 1.9 mm long and 0.6 mm wide, slightly elongated and rounded at both ends.

Larvae: White-yellow in colour and reaching up to 30 mm in length when fully developed (Fig. 2). The head is brown and flattened dorso-ventrally (from top to bottom).

Pupae: White, 20 mm long and 4.5 mm wide. The head is hairless and the antennae are curved (Fig. 3).

Adults: (Fig. 4) Uniform dark brown to orange brown in colour, with their legs and antennae usually being lighter. Body length 11-20 mm. The elytra (wing cases) are covered in patches of short golden-brown irregularly distributed hairs. As is typical of longhorn beetles, the antennae are long, being about 70-90% the length of the body. The genus *Trichoferus* does not naturally occur in the British Isles but it is possible that *T. campestris* could, superficially, be confused with some native British longhorn beetles such as *Asemum striatum* (Fig. 5). In continental Europe there is a greater chance of misidentification as there are six native species of *Trichoferus* (*T. bergeri*, *T.cinereus, T. fasciculatus, T, griseus*, T. pallidus, & T. spartii)* which are all externally very similar.
* Previously intercepted in the UK from Spain.

Figure 2. *Trichoferus campestris* larva.

Figure 3. *Trichoferus campestris* pupa.

Figure 4. *Trichoferus campestris* (female).

Figure 5. *Asemum striatum*. A native British longhorn beetle.

Biology

In Japan and the Henan province of China, *T. campestris* exhibits a one year life cycle, whereas further North in the cooler regions of Russia and North America, the beetle takes over two years to complete development. Adults generally emerge from June to August, though they may emerge earlier, as they do in Utah, USA, between April and May. Adults are nocturnal and do not feed. Eggs are laid either on the bark or on large branches. After hatching from the eggs, the larvae bore into the bark and tunnel between it and the sapwood (between the phloem and the xylem), with a preference for the wood near the cambium. The presence of bark is considered a prerequisite for larval development. *Trichoferus campestris* overwinters in the larval stage, under the bark or in pupation cells that are formed in the xylem. Following pupation, adults emerge in summer and the cycle is repeated.

Damage and Detection

Larvae tunnel within the trunk and larger branches of the host, and in tree species this activity may lead to a thinning crown, yellowing leaves, and eventually the death of the tree. Other signs of infestation include exit holes in the trunk, and associated frass deposits (or excrement). Wounds caused by the beetle may also provide an opening for infestation or infection by secondary pests and pathogens. It should be noted that the above symptoms could easily be confused with the symptoms caused by other wood-boring insects present in the UK.

Economic Impact

While *T. campestris* is not a serious pest in Asia and impacts have generally been low in Europe, the damage that it causes could potentially lead to reduced fruit yield, lower quality wood and shorter tree lifespans. The mechanical damage caused by larval tunnels may also weaken the trees, so that in times of high winds branches are more likely to break off. Given its preference for *Malus* spp. (apple), the beetle could have a negative impact on apple production and on broadleaved woodlands and hedgerows, in the UK.

Control Measures

Trichoferus campestris is difficult to control because the majority of its lifecycle is spent within the host, where it is protected from foliar insecticides and many predators. The most effective means of eradicating the beetle is therefore to destroy the host.

Advisory Information

Suspected findings of *T. campestris* or any other non-native plant pest should be reported to the relevant authority:

For **England and Wales**, contact your local **APHA Plant Health and Seeds Inspector** or the **PHSI Headquarters**, Sand Hutton, York. Tel: 01904 405138
Email: planthealth.info@apha.gsi.gov.uk

For **Scotland**, contact the **Scottish Government's Horticulture and Marketing Unit:**
Email: hort.marketing@gov.scot

For **Northern Ireland**, contact the **DARD Plant Health Inspection Branch:**
Tel: 0300 200 7847 Email: planthealth@dardni.gov.uk

For additional information on UK Plant Health please see:
https://secure.fera.defra.gov.uk/phiw/riskRegister/
https://www.gov.uk/plant-health-controls
https://www.dardni.gov.uk/

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