

Mini data sheet on *Chrysobothris femorata* (Coleoptera: Buprestidae)
Flat-headed apple tree borer

Chrysobothris femorata was added to the EPPO A1 List in 2021. A full datasheet will be prepared, in the meantime you can view here the data which was previously available from the EPPO Alert List (added to the EPPO Alert List in 2019 - deleted in 2021).

Why: The EPPO Panel on Phytosanitary Measures suggested that *Chrysobothris femorata* (Coleoptera: Buprestidae), the flat-headed apple tree borer, should be added to the EPPO Alert List. This pest was identified as a potential threat by a Norwegian Pest Risk Analysis (PRA) on wood chips, by a German express PRA conducted after an interception on *Juglans nigra* logs imported from the USA, and by the UK Risk register.

Where: *C. femorata* is native to North America.

EPPO region: Absent.

North America: Canada (Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec, Saskatchewan), USA (reported to be present in all continental states, except Alaska).

Note: *C. femorata* is considered to be part of a group of species that are very difficult to distinguish morphologically. The '*Chrysobothris femorata* species group' includes up to 12 species (*C. femorata*, *C. quadriimpressa*, *C. viridiceps*, *C. rugosiceps*, *C. adelpha*, *C. sloicola*, *C. caddo*, *C. comanche*, *C. mescalero*, *C. seminole*, *C. shawnee*, and *C. wintu*) whose distribution and host range overlap. There is some genetic evidence that interbreeding may be occurring between different species. In practice, it seems that most records are made for the 'flat-headed apple tree borer', and pooled as *C. femorata*.

On which plants: This species is highly polyphagous and can attack more than 30 species of deciduous trees, including most fruit, forest and shade trees. Maples, apples and poplar are the most common hosts. Hosts include *Acer rubrum* (red maple), *A. saccharinum* (silver maple), *Amelanchier* spp. (serviceberry), *Carya* spp. (hickory), *Castanea* spp. (chestnut), *Celtis occidentalis* (hackberry), *Cercis* spp. (redbud), *Cornus* spp. (dogwood), *Cotoneaster* spp., *Crataegus* spp. (hawthorn), *Cydonia* spp. (quince), *Diospyros* spp. (persimmon), *Fagus* spp. (beech), *Fraxinus* spp. (ash), *Juglans* spp. (walnut), *Malus* spp. (apple), *Platanus occidentalis* (American sycamore), *Populus* spp. (poplar), *Prunus americana* (common apricot), *P. domestica* (garden plum), *P. persica* (peach), *Pyrus* spp. (pear), *Quercus* spp. (oak), *Salix* spp. (willow), *Sorbus* spp. (rowan), *Tilia americana* (American basswood), and *Ulmus* spp. (elm).

Damage: Larvae develop mainly in the cambium and sapwood of infested trees. Feeding activity disrupts the transportation of water and nutrients in the tree. A single larva is capable of girdling a young tree within one season. Evidence of larval activity can be found under the bark of infested trees as sinuous feeding tunnels packed with frass. Portions of the trunk may show signs of infestation by noticeable oozing of sap.

Throughout its range, *C. femorata* usually completes its life cycle in one year although 2-3 years may be necessary in some northern areas. *C. femorata* overwinters as mature larvae. The adult beetles emerge from April to October but are most abundant in late May to June. Adults are metallic olive-grey to brown beetles with a broad oval shape, about 7-16 mm long and up to 5-7 mm wide. They are marked with dull grey spots or bands. Females lay approximately 100 eggs, singly, in cracks or crevices of bark. Eggs (approximately 1.5 mm diameter) are pale yellow, flattened, disk-like, wrinkled. Larvae are pale yellow, legless with a flattened, sclerotized (hardened) thoracic area. The last instar is 18-25 mm long. As

soon as larvae are fully developed, they tunnel from the cambium deeper into sapwood where pupation occurs in late spring to early summer. Pupation lasts 1-2 weeks, after which the adult emerges by cutting a distinctive D-shaped exit hole in the bark.

Pictures can be viewed in EPPO GD: <https://gd.eppo.int/taxon/CHRBFE/photos> and on Bugwood: <https://www.forestryimages.org/search/action.cfm?q=Chrysobothris+femorata>

Dissemination: Adults can fly but there is no data on the natural spread of the insect. Over long distances, trade of infested plants, wood and wood products can disseminate *C. femorata*.

Pathways: plants for planting, wood, wood chips from countries where *C. femorata* occurs.

Possible risks: *C. femorata* is highly polyphagous and host plants are widely present in the EPPO region, in forests and plantations, as well as in parks and gardens. The wide geographical distribution of *C. femorata* in North America, under various climates, strongly suggests that this insect has the potential to establish throughout the EPPO region. *C. femorata* is reported as a pest in ornamental and forest nurseries but can also damage mature trees. Young trees can be killed in a single year and larger trees can be damaged and killed in successive years. Stressed trees (e.g. by drought) are more prone to damage but the insect can attack healthy trees. Control of wood borers is generally difficult as most of the life cycle occurs within the trees. In North America, several control methods have been recommended, such as cultural control options, chemical control (drench treatment against larvae, sprays against adults). Several natural enemies of *C. femorata* have been reported in the literature but are not available commercially. Considering the known host range, it is considered that *C. femorata* could further extend its host range and damage deciduous species present in the EPPO region if it was introduced.

Sources

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