

### Mini data sheet on *Agrilus bilineatus*

*Agrilus bilineatus* was added to the EPPO A2 List in 2019. 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 2018 - deleted in 2019).

#### *Agrilus bilineatus* (two-lined chestnut borer)

**Why:** *A. bilineatus* (Coleoptera: Buprestidae) is a North American wood borer of *Castanea dentata* and oaks (*Quercus* spp.), both members of the Fagaceae family. It was recently found in Turkey. Considering the importance of oak and chestnut in the EPPO region, the EPPO Secretariat considered that *A. bilineatus* should be added to the EPPO Alert List.

**Where:** *A. bilineatus* originates from Eastern North America. *A. bilineatus* adults have been collected in Turkey in two separate years (2013, 2016) and at two locations more than 200 km apart (near and to the east of Istanbul), thus suggesting that *A. bilineatus* is established.

**EPPO region:** Turkey.

**North America:** Canada (Manitoba, New Brunswick, Ontario, Quebec), USA (Alabama, Arkansas, Colorado, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, Wisconsin).

**On which plants:** In North America, *A. bilineatus* attacks *Castanea dentata* (Fagaceae) and numerous species of *Quercus* (Fagaceae) including *Quercus robur* (pedunculate oak) and *Q. rubra* (Northern red oak) which are widespread in the EPPO region.

**Damage:** Larvae develop mainly on the cambium and in the outer xylem of infested trees. Feeding activity disrupts the transportation of water and nutrients in the tree. In North America, *A. bilineatus* is usually a secondary pest, infesting *Castanea* and *Quercus* trees weakened by different stress events. However, when populations are high (e.g. following a drought), large outbreaks may occur and trees are killed within a few years. Emerging adults leave a distinct D-shaped exit hole in the trunk (about 5 mm wide). In addition to tree weakening or mortality, infestations can significantly reduce the ornamental value of oak trees. *Q. robur* is known to be highly susceptible to *A. bilineatus*, and apparently healthy trees were infested and killed in Michigan. There is no data on the susceptibility of other native European *Quercus* species.

Throughout its range, *A. bilineatus* usually completes its life cycle in one year, although some individuals can require two years. *A. bilineatus* overwinters as mature larvae. The adult beetles emerge from April to September. Adults are about 5-13 mm long. The head of the beetle is bronzy green while the thorax and abdomen are mostly black with a greenish tinge. There is a yellow stripe along each side of the thorax, hence its name. Eggs (approximately 1 mm long) are oval, wrinkled, and milky white to golden brown. Eggs can be laid singly, or in clusters in bark crevices. Larvae are milky white to light yellow, with dark brown mouthparts and urogomphi. There are 4 larval instars, the latter being 18-24 mm long. Pupae are 6-10 mm long. Pupation takes place inside the tree, in pupal chambers that are situated in either the outer bark, if the bark is sufficiently thick, or in the outer sapwood. Pictures can be viewed in EPPO GD: <https://gd.eppo.int/taxon/AGRLBL/photos>

**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 *A. bilineatus*.

**Pathways:** Plants for planting, wood, wood packaging material (including dunnage), wood chips from countries where *A. bilineatus* occurs.

**Possible risks:** Oaks and chestnut trees are widely present in the EPPO region, in forests and plantations, as well as in parks and gardens. The wide geographical distribution of *A. bilineatus* in North Eastern America, under various climates, strongly suggests that this insect has the potential to establish in the EPPO region where its host trees are present. *A. bilineatus* is mainly a secondary pest of stressed trees in North America but it has been documented to infest and kill trees of the European species *Q. robur* planted as ornamentals. As *Castanea sativa* is not grown in the USA, its susceptibility to this pest is not known. If European *Castanea* and *Quercus* species are more susceptible to *A. bilineatus* than North American species, then *A. bilineatus* could become a damaging forest pest in Europe. 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 to lower *A. bilineatus* populations, such as cultural control options, sanitation cutting of infested branches or trees prior to adult emergence, followed by burning or chipping into small pieces. Several natural enemies of *A. bilineatus* have been reported in the literature, including both parasitoids and predators.

The recent finding of *A. bilineatus* in Turkey showed that it could enter the EPPO region with infested material. For the moment no damage is recorded in Turkey but populations are probably still low.

Considering the high susceptibility of the most dominant oak species in the EPPO region (i.e. *Q. robur*), the introduction and establishment of *A. bilineatus* would most probably cause severe outbreaks and damage to oak and chestnut tree species grown in forests, nurseries, parks and gardens.

#### Sources

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