

## Invasive species *Anoplophora chinensis* (Forster, 1771) (Coleoptera: Cerambycidae) in Turkey

Yafes Yıldız\*

Bartın University, Faculty of Forestry, Department of Forest Engineering 74100 Bartın, Turkey

\* Corresponding author: yafesyildiz@hotmail.com

**Abstract:** *Anoplophora chinensis* is a poliphagous woodboring beetle native to Eastern Asia with a host range quite wide causes damage on more than 100 species of trees and shrubs. The beetle gets its name from the damage caused to citrus groves in its native China. Unlike many cerambycids that primarily attack dead trees, this beetle attacks apparently healthy trees and sever tissues that carry nutrients, water, and subsequently kill the host tree. The citrus long-horned beetle has been introduced to Europe in several occasions. It was first discovered in Europe in 2000 at Parabiago, Italy and respectively it has been recorded in Netherlands and France (2003) and Switzerland (2006). Adults of *A. chinensis* were captured on 12 June 2014 in Sile region of Istanbul province and it was given as a new record to Turkish invasive alien insect species fauna. And also on the same dates identified as the second time from Bartın. *A. chinensis* is a new threat on a wide range of broadleaved trees and shrubs in Turkey. Therefore its distribution areas and the behaviour of the pest in these areas should be investigated.

**Keywords:** *Anoplophora chinensis*, Citrus longhorned beetle, Cerambycidae, Turkey

### 1. Introduction

Within *Anoplophora chinensis* the genus *Anoplophora* (Coleoptera: Cerambycidae) consists of 36 species of longhorned beetles indigenous to the temperate and tropical regions of Asia (Lingafelter and Hoebeke, 2002). This poliphagous woodboring beetle native to Eastern Asia and damage on more than 100 species of trees and shrubs (Peverieri et. al., 2012; EPPO, 2013a). Unlike many cerambycids that primarily attack dead trees, this beetle attacks apparently healthy trees and sever tissues that carry nutrients, water, and subsequently kill the host tree (Chambers, 2002; Lance, 2002). The citrus longhorned beetle has moved to Europe on several occasions. It was first discovered in Europe in 2000 at Italy and respectively, recorded in Netherlands and France (2003) and Switzerland (2006) according to FAO (2009). In Italy more than 18000 plants have been removed for the eradication program and the cost has amounted to about 12 million euros (Jucker and Lupi, 2011).

*A. chinensis* first detected in Istanbul province and it was given as a new record to Turkish invasive alien insect species fauna by Hizal et al. (2015). And also on the same dates identified as the second time from Bartın (Yıldız, 2017). *A. chinensis* is a new threat on a wide range of broadleaved trees and shrubs in Turkey. Therefore its distribution areas and the behaviour of the pest in these areas should be investigated.

Attacks numerous species of hardwood trees including *Acer* spp., *Aesculus hippocastanum*, *Alnus* spp., *Betula* spp., *Carpinus* spp., *Citrus* spp., *Cornus* spp., *Corylus* spp., *Cotoneaster* spp., *Crataegus* spp., *Fagus* spp., *Lagerstroemia* spp., *Malus* spp., *Platanus* spp., *Populus* spp., *Prunus laurocerasus*, *Pyrus* spp., *Rosa* spp., *Salix* spp., *Ulmus* spp., *Casuarina* spp., *Cryptomeria* spp., *Ficus* spp., *Hibiscus* spp., *Litchi* spp., *Mallotus* spp., *Melia* spp., *Morus* spp. (EPPO, 2013)

### 2. Material and methods

Adult samples (Figure 1) were collected from a private nursery in Bartın region (Figure 2) on ornamental plants consisting of *Acer palmatum purpurea*, *A. negundo/flamingo* and *A. platanoides* by a Japanese umbrella.



Figure 1 . *A. chinensis* that collected from nursery



Figure 2. Location of *A. chinensis*.

Specimens were photographed with Samsung Pro-815 digital camera and they were examined under the Olympus SZX7 stereomicroscope. The identification process was carried out using specific literature (Lingafelter and Hoebeke, 2002; Gyeltshen and Hodges, 2005; EPPO, 2013). The samples are stored in the collection of Bartın University, Faculty of Forestry, Department of Forest Entomology and Protection.

### 3. Result and discussion

#### 3.1. Morphology

The beetle is large, stout, and approximately 21 to 37 mm long with shiny black elytra marked with 10 to 20 white round spots (Lingafelter and Hoebeke, 2002). Generally males are smaller than females, and have their abdomen tip entirely covered by the elytra, in contrast to the partially exposed abdomen of females. Also, the male elytra are distally narrowed compared to the rounded female elytra. Another difference between males and females are antennal sizes. The male's antennae are approximately twice as long as its body compared to the female's antennae which are only slightly longer than the body. Each segment of the long, 11-segmented antennae is basally marked with white or light blue bands (Gyeltshen and Hodges, 2005). The base of the elytra has numerous short tubercles, a morphological character that may help to differentiate *Anoplophora chinensis* from the, *A. glabripennis* (Gyeltshen and Hodges, 2005) (Figure 2 A-B).

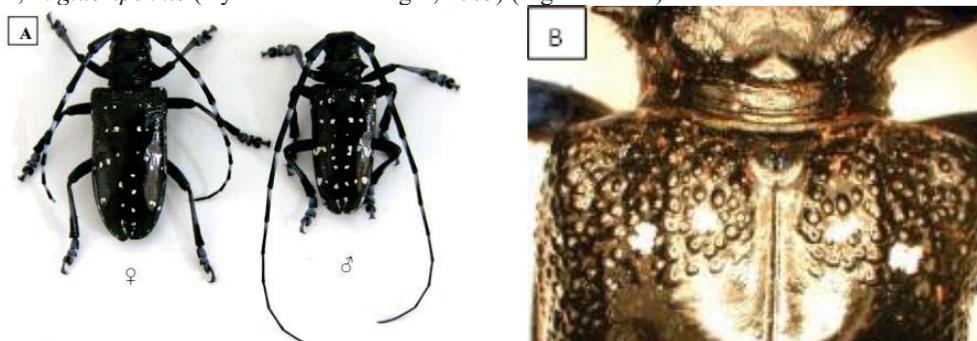


Figure 2. A. *Anoplophora chinensis* B. Tubercles on the base of the elytra

In the study, adults of *A. chinensis* were detected in private nursery on maple trees (*Acer palmatum purpurea*, *A. negundo flamingo* and *A. platanoides*) that imported from China. These beetles were recorded in the same time as it was recorded first time in Istanbul. Due to its polyphagous character, host plant is considered under high risk of attack, especially *Acer* species. The pest is a serious problem for the nursery industry, in the production of ornamental trees; it is also a potentially pest of citrus orchards and of many other deciduous trees.

Adults feed on the fresh bark of small twigs and branches, and sometimes on leaf petioles. The females also chew from the bark of the host tree to the cambial layer, forming 'egg scars'; then inserts her ovipositor and lays a single egg (Lingafelter and Hoebeke, 2002). Larvae feed and develop in the wood of the main roots and trunks, where they create tunnels (Figure 3 A-E). Exit holes have been found only at the base of trees heavy infestations can kill the host trees (Maspero et al., 2005).



Figure 3. A. Larva damage B. Adult damage C. Feed on leaf petioles D. Feed on the fresh bark E. Eggs

This species as regard to European Union *Anoplophora chinensis* commission decision of 1 March 2012 and law no. 2012/138/EC, specifically, by law is prepared and on 17 June 2014 law no. 29033 promulgated on Official Gazette and entered in force (Anonymous, 2014).

Ministries and municipalities should be informed following the detection of the infested areas. Quarantine procedures should be applied of the *Anoplophora chinensis* damage to prevent epidemic and also infested plants should be destroyed. Quarantine zone should be fumigated systematically with insecticides beside physical control methods in line with relevant workplace safety procedures and instructions. Countries should work on the legal regulations regarding the wood packaging in terms of trade. All necessary prevention methods, inspections and strict packaging and shipping regulations should be applied for national and international trade of all kinds of wooden material, ornamental and citrus plants.

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