

Short communication

THE FIG BARK BEETLE *HYPOBORUS FICUS* ERICHSON, 1836 (COLEOPTERA: CURCULIONIDAE: SCOLYTINAE) IN SERBIA: FIRST RECORDS FOR MORE THAN A CENTURY

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The fig bark beetle *Hypoborus ficus* Erichson, 1836 is a Mediterranean bark beetle mainly associated with fig trees (*Ficus carica* L.), but also found on *Ailanthus altissima* (Mill.) Swingle, *Corylus colurna* L., *Eucalyptus camaldulensis* Dehnh., *Morus alba* L., *Styrax officinalis* L. and *Vitis vinifera* L. (Avidov & Harpaz, 1969; Mifsud & Knižek, 2009; Sarikaya, 2013; Tuncer *et al.* 2017).

The distribution of *H. ficus* mainly includes Mediterranean parts of Europe, Asia (Near East) and North Africa (*Hypoborus ficus* Erichson, 1836 in GBIF Secretariat, 2021). In Europe, the species was recorded in Austria, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, France (including Corsica), Georgia, Greece, Hungary, Italy (including Sardinia, and Sicily), Malta, North Macedonia, Poland (northernmost record of this species), Portugal (including Azores and Madeira), southern Russia, Slovenia, Spain (including the Canary Islands), Switzerland, Turkey and Ukraine (Fontana, 1925; Knižek, 2011; Alonso-Zarazaga *et al.*, 2017; Witkowski & Mazur, 2019; Vit *et al.*, 2022). Some authors (Knižek, 2011; Amini *et al.*, 2020; Vit *et al.*, 2022) mentioned that *H. ficus* occurs on the territory of the former Yugoslavia or the former successor state, Serbia and Montenegro, as well as the present-day countries located in the Mediterranean region where the species is a well-known member of bark beetle fauna. Langhoffer (1915) stated that the species was recorded in Ruma (Syrmia region, Pannonian Plain), the first and only record for the territory of Serbia, but without giving any details such as the date of finding or the number of specimens. The same data are later cited in Marković & Stojanović (1997). Some authors in later literature or sites do not state the exact presence of *H. ficus* in Serbia (Alonso-Zarazaga *et al.*, 2017; *Hypoborus ficus* Erichson, 1836 in GBIF Secretariat, 2021), probably due to the lack of the mentioned articles that state the presence of this species in Serbia. The data presented here are new findings of *H. ficus* on the territory of Serbia (the first precise records) for more than a century.

The first locality where 36 fig bark beetle specimens were collected is a private garden situated in Vrčin (a suburban settlement of Belgrade, the capital city of Serbia). Apart from figs, other, typically Mediterranean plants are cultivated in the garden, such as pomegranates (*Punica granatum* L.), rosemary (*Salvia rosmarinus* Spenn.) and holly oak (*Quercus ilex* L.). Near this locality, three more specimens were found on a fig tree in another private garden. The third locality was the “Jevremovac” Botanical Garden in Belgrade, where we observed galleries inside a dead fig twig.

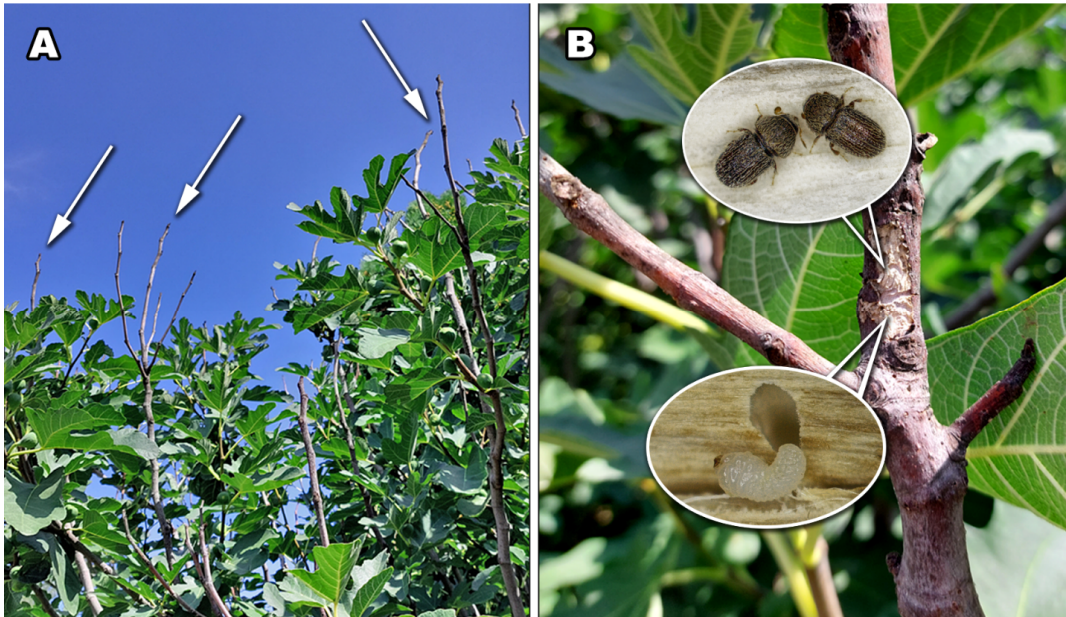


Figure 1. The common fig tree on which *Hypoborus ficus* was registered in Vrčin (near Belgrade), Serbia. Frost-damaged top twigs indicated by white arrows (A), fig branch infested by larvae and adults of the beetle (B). Photos by M. Vujić and N. Vesović.

***Hypoborus ficus* Erichson, 1836**

Material examined: Serbia, Belgrade: Vrčin, N 44° 40' 36", E 20° 36' 28", 30.08.2022, 15 ♂♂, 21 ♀♀, leg. M. Vujić; Vrčin, N 44° 40' 36", E 20° 36' 28", 15.11.2022, 1 ♂, 2 ♀♀, leg. M. Vujić; “Jevremovac” Botanical Garden, N 44° 40' 36", E 20° 36' 28", 18.11.2022, obs. M. Vujić (galleries in dead twigs).

At the first locality in Vrčin, in frost-damaged top twigs (Fig. 1A) of the common fig (*F. carica*), we found numerous fig bark beetle individuals, including larvae (Fig. 2C), pupae (Fig. 2D) and adults (Fig. 2E) under the bark (Figs. 1B, 2A) and inside galleries in wood tissue (Fig. 2B). The fig tree was cultivated in the private garden for several years and was often damaged by frost. During the winter of 2020/2021, the lowest recorded temperatures for this locality ranged from -15 °C to -12 °C. The fig bark beetle is not the only allochthonous species associated with this fig tree. The interior of the dead branches is inhabited by the pharaoh ant *Monomorium pharaonis* (Linnaeus, 1758) and the fig leaf roller moth *Choreutis nemorana* (Hübner, 1799), while the citrus flatid planthopper *Metcalfa pruinosa* (Say, 1830) and the fig leafhopper *Ficocyba ficaria* (Horváth, 1897) were observed feeding on leaves and plant sap. *H. ficus* specimens were

recorded only in the frost-damaged twigs, not in the living parts of the plant. No negative effects on the plant directly made by beetles were observed. Several typically Mediterranean and thermophilous invertebrate species have already been recorded in the same garden, such as the oleander seedbug *Caenocoris nerii* (Germar, 1847), Mediterranean pentatomid *Acrosternum heegeri* Fieber, 1861, band-eyed dronefly *Eristalinus taeniops* (Wiedemann, 1818), and xerophilous snail *Xeropicta* aff. *krynickii* (Krynicky, 1833) (Šeat *et al.*, 2019, 2020; Vujić *et al.*, 2021a; Gojšina *et al.*, 2022).

At the second locality in Vrčin, only three adult *H. ficus* specimens were collected from the young fig tree's dead, frost-damaged twigs.

As regards the "Jevremovac" Botanical Garden situated in the urban center of Belgrade, only galleries were observed in dead fig twigs, but no living specimens of *H. ficus* were found. The same fig tree is also infested by several non-native insects, such as the pharaoh ant *M. pharaonis*, the fig leaf roller moth *C. nemorana*, the fig leafhopper *F. ficaria* and the fig psylla *Homotoma ficus* (Linnaeus, 1758).

The new records presented in this article confirm the existence of *H. ficus* populations in the country. It is another species in a series of Mediterranean or thermophilic invertebrates that have established their populations in Serbia. This phenomenon is most likely aided by climate change and the heat island effect in (and around) large cities. Other influential factors are the spreading and cultivation of Mediterranean plant species, as well as the intensification of international trade and tourism (Musolin & Fujisaki, 2006; Skendžić *et al.*, 2021). Although there are still no literature data summarizing these claims, it is clear that Belgrade and its surroundings lead in the number of established populations of allochthonous species, which can be indirectly concluded from the number of existing published data on non-native invertebrate species (this may be partly due to the fact that most research is conducted in Belgrade and its surroundings). Some of them are the Mexican grass-carrying wasp *Isodontia mexicana* (Saussure, 1867), the fig leaf roller moth *Choreutis nemorana* (Hübner, 1799), pentatomid *Perillus bioculatus* (Fabricius, 1775), giant Asian mantid *Hierodula tenuidentata* Saussure, 1869 and xerophilous snail *X. aff. krynickii* (Četković *et al.*, 2012; Stojanović *et al.*, 2020; Vujić *et al.*, 2021b; Gojšina *et al.*, 2022; Nadaždin & Šeat, 2022).

The fig bark beetle is considered a pest of fig trees, but it usually attacks trees that are already physically and/or physiologically weakened (by disease, pests, drought, air pollution and harsh winters) (Isayeva, 2021), which correlates with the findings we present here.

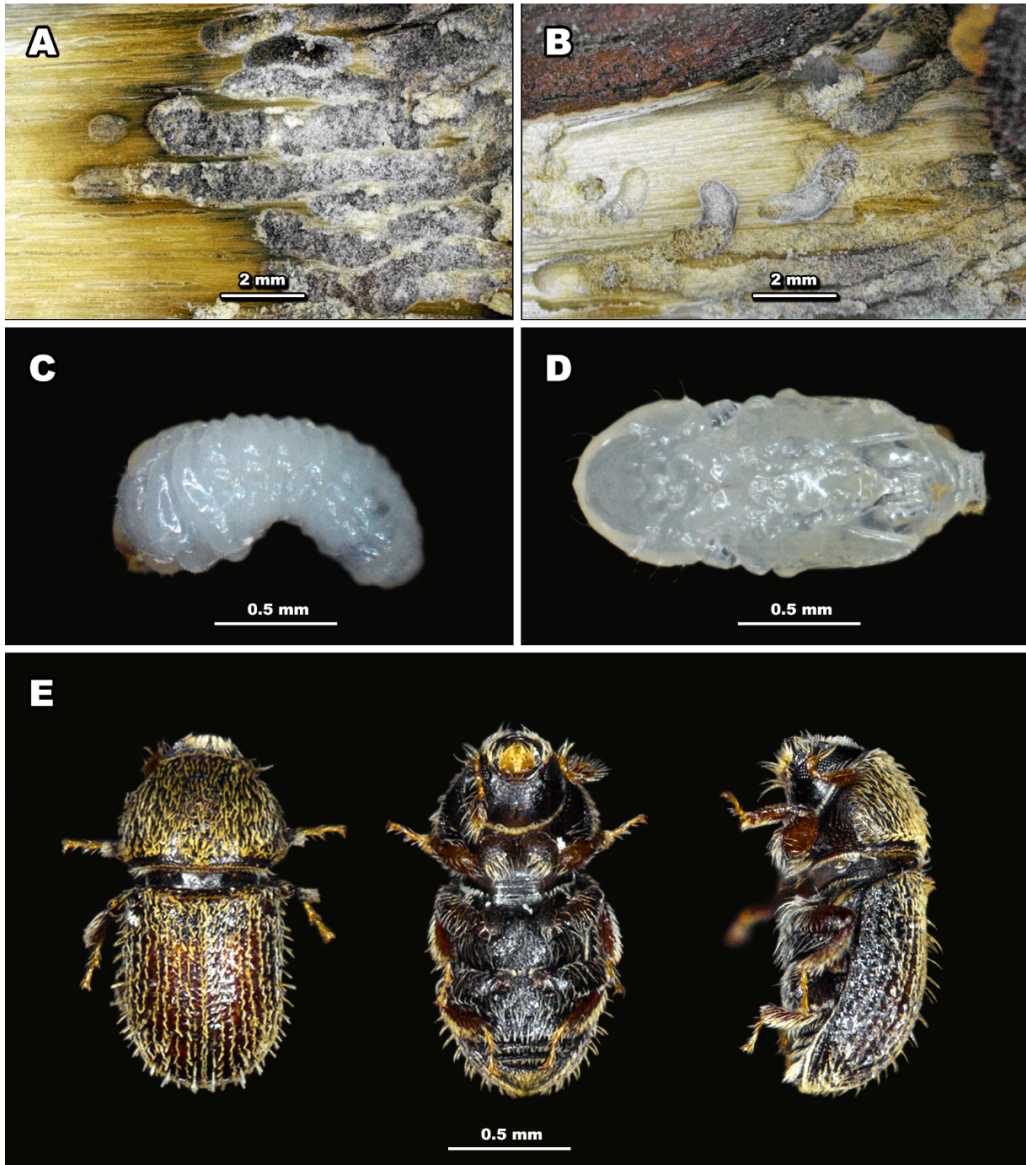


Figure 2. A close-up view of the fig bark beetle *Hypoborus ficus* and galleries on the frost-damaged fig twigs. Damage under the bark (A), bored wood (B), larva (lateral view) (C), pupa (ventral view) (D) and adult (left – dorsal view, middle – ventral view, right – lateral view) (E) of the beetle. Photos by N. Vesović.

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СМОКВИН ПОТКОРЊАК *HYPOBORUS FICUS* ERICHSON, 1836 (COLEOPTERA: CURCULIONIDAE: SCOLYTINAE) У СРБИЈИ, ПРВИ НАЛАЗИ НАКОН ВИШЕ ОД ЈЕДНОГ ВЕКА

МИХАИЛО ВУЈИЋ И НИКОЛА ВЕСОВИЋ

Извод

Смоквин поткорњак (*Hypoborus ficus* Erichson, 1836) забележен је испод коре и у дрвету мразом оштећених вршних граница смокве (*Ficus carica* L.) на два локалитета у Врчину, у околини Београда, као и у Ботаничкој башти „Јевремовац“ у Београду. Пронађени су бројни примерци, а сакупљено укупно 39 одраслих јединки, као и неколико ларви и лутака. Овде изнети налази су нови подаци о присуству поменуте врсте поткорњака на територији Србије (први прецизни подаци), након више од једног века. Ово је још једна медитеранска врста за коју је потврђено да је успоставила популације у Србији.

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