

**First record of *Epitrix hirtipennis* in Hungary  
(Coleoptera: Chrysomelidae)**

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**Abstract** – *Epitrix hirtipennis* (Melsheimer, 1847) (Coleoptera: Chrysomelidae: Galerucinae: Alticini), a leaf beetle native to North America, is recorded for the first time from Hungary. Several specimens were found on tobacco (*Nicotiana tabacum* L.) plantations in the eastern and central parts of the country. Its life cycle and importance as a tobacco pest are briefly discussed.

**Key words** – leaf beetle, alien species, tobacco pest, distribution

## INTRODUCTION

The genus *Epitrix* Foudras, 1860 (Coleoptera: Chrysomelidae: Galerucinae: Alticini) contains approximately 180 species and has a worldwide distribution (DÖBERL 2000). Thirteen species are native to Eurasia, of which three have been recorded from Hungary (VIG 2003). Several species were accidentally introduced from North America to Europe, and from Europe to other continents. Most species of the genus feed on solanaceous plants, and some of them are pests of potato, tomato, eggplant, tobacco, and other cultivated members of this plant family.

The taxonomy of the genus is not settled. According to BIENKOWSKI & ORLOVA-BIENKOWSKAJA (2016) there are unresolved questions regarding some Palaearctic species and most likely several undescribed species are present in North America. In general, identification of *Epitrix* species is not easy, and usually requires examination of the aedeagus, though female reproductive organs are also of certain diagnostic value. Identification is rendered difficult by the small size and similar overall appearance of these beetles, and the confusion is further increased by the presence of introduced species in many areas worldwide.

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A comprehensive study of the genus, including an identification key to all known Holarctic species, a review of their distribution and history of invasions was published by BIEŃKOWSKI & ORLOVA-BIENKOWSKAJA (2016).

*Epirix hirtipennis* (Melsheimer, 1847), the tobacco flea beetle, is native to North and Central America. In Europe it was first recorded from South Italy (SANNINO *et al.* 1985). Subsequently it spread across southern Europe, reaching Spain in the west, and Turkey, Syria and southern Russia (Krasnodar Territory) in the east (BIEŃKOWSKI & ORLOVA-BIENKOWSKAJA 2016). In 2015 it was detected in Slovenia (SELJAK 2017). In Europe it was reported as a pest of tobacco, eggplant and potato, but it feeds on native Solanaceae species as well (STENBERG *et al.* 2019).

## MATERIAL AND METHODS

On 2 May 2022 the third author collected a female individual of *Epirix* sp. on a steppic sandy pasture near Bököny, eastern Hungary. It was evidently different from the three species of the genus recorded from Hungary so far (*E. pubescens* (Koch, 1803), *E. atropae* Foudras, 1860, and *E. intermedia* Foudras, 1860), but no unambiguous species-level identification was possible due to the sex of the specimen. A search at the same location on 25 June 2022 yielded no additional specimen, and no known foodplants of *Epirix* species could be located either. On the same day, however, a tobacco plantation located at a distance of 3 km from the first locality (Fig. 1) was visited, where 9 additional specimens of the same species were found by inspecting the leaves of tobacco plants. At the end of August three further tobacco plantations were visited in the Nyírség and Kiskunság regions of eastern and central Hungary, and several conspecific specimens were found.

Identifications were based on BIEŃKOWSKI & ORLOVA-BIENKOWSKAJA (2016). A thorough search in the Chrysomelidae materials of the Coleoptera Collection of the Hungarian Natural History Museum (HNHM) resulted in no additional specimens from Hungary. Voucher specimens have been deposited in the HNHM and in the private collection of Márk Lukátsi (Budapest, Hungary) (CLM).



Fig. 1. Tobacco plantation near Bököny, Hungary where *Epitrix hirtipennis* (Melsheimer, 1847) was found (photo by Norbert Tóth)

## RESULTS

### *Epitrix hirtipennis* (Melsheimer, 1847) (Figs. 2–3)

*Material examined* – HUNGARY: Szabolcs-Szatmár-Bereg county, Bököny, Szárhegy tanya, 47°43'20.4"N 21°42'43.7"E, steppic sandy pasture, 2.V.2022, leg. N. Tóth (1 specimen, CLM); Szabolcs-Szatmár-Bereg county, 2.5 km NW of Bököny, 47°45'04.2"N 21°43'59.8"E, tobacco plantation, singled from tobacco leaves, 25.VI.2022, leg. M. Lukátsi & N. Tóth (7 specimens, CLM; 2 specimens, HNHM); Hajdú-Bihar county, Debrecen, Apafa, 47°34'18.6"N 21°40'53.0"E, tobacco plantation, swept, 23.VIII.2022, leg. D. Horváth (6 specimens, CLM; 2 specimens, HNHM); Szabolcs-Szatmár-Bereg county, 5 km N of Nyíregyháza, 48°00'00.5"N 21°41'50.6"E, tobacco plantation, swept, 23.VIII.2022, leg. D. Horváth (1 specimen, CLM); Bács-Kiskun county, 2 km E of Kunadacs, 46°57'30.3"N 19°15'27.9"E, tobacco plantation, swept and beaten, 30.VIII.2022, leg. D. Horváth & M. Lukátsi (4 specimens, CLM; 2 specimens HNHM).

*Remarks* – Based on skeletal morphological characters and the aedeagi of two males the specimens were identified as *E. hirtipennis*. This species differs from the native Hungarian species of the genus by the following characters: pubescence of the elytra is semi-erect, arranged in regular rows (in *E. atropae* and *E. pubescens* it is adpressed; setae of *E. intermedia* are semi-erect but not arranged in regular rows); punctuation of the pronotum and elytra is weaker than in the other three species; aedeagus is strongly curved in lateral view, in ventral view it is narrowed before its apex, and its apex is rounded (Fig. 3) (straighter in lateral view and not narrowed in ventral view in the other three species); receptacle of the spermatheca of the female is rounded (elongated in the other three species). The antenna and the body of *E. hirtipennis* is always testaceous, except a darker transverse band on the elytra and the darkened apices of the antennae. *Epitrix intermedia* is always dark, while *E. atropae* and *E. pubescens* have light colour forms. The light colour form of *E. pubescens* is differently coloured: it has darker bands on the suture and lateral parts of the elytra; the colouration of the pale form of *E. atropae* is similar to *E. hirtipennis*.



**Figs 2–3.** *Epitrix hirtipennis* (Melsheimer, 1847), 2 = specimen from Kunadacs, Hungary, 3 = ventral view of the aedeagus of *Epitrix hirtipennis* (Melsheimer, 1847)

(photos by Aranka Grabant)

## DISCUSSION

After its first record in Europe from Italy, *E. hirtipennis* quickly spread across southern Europe towards the east and west (BIEŃKOWSKI & ORLOVA-BIENKOWSKAJA 2016). Its spread towards north was, however, considerably slower; it was recorded from Slovenia in 2015, from a locality about 240 km from the Hungarian border. A distribution model based on the then available distribution data predicted that *E. hirtipennis* could probably establish in the lowlands of Hungary (STENBERG *et al.* 2019). The current record verifies this model and expands the known range of *E. hirtipennis* to the north. The species was found in both tobacco-growing regions of the country (Nyírség region in eastern Hungary and Kiskunság region in central Hungary), suggesting that it might have already been present in Hungary for considerable time without having been detected. It was recorded in moderate numbers in all locations, without significant specific damage on its host plants, which might explain its spread in the plantations without being noticed. Further studies would be needed to investigate when and how this species reached Hungary.

Although *E. hirtipennis* is a well-known pest of several cultivated Solanaceae, only its importance on tobacco is discussed here. After introduction, it quickly became one of the three most significant pests of tobacco in Greece, along with *Thrips tabaci* Lindeman, 1889 (Thysanoptera: Thripidae) and *Myzus persicae nicotianae* Blackman, 1987 (Hemiptera: Aphididae) (DELIGEORGIDIS *et al.* 2007). Its damage is influenced by the cultivar of tobacco, the growing method (e.g., time of transplantation) and the climate. *Epitrix hirtipennis* overwinters in the adult stage, overwintered individuals start feeding in the spring. Eggs are laid on the ground near the host plants. Larvae burrow in the soil, feed on the roots of the host plants, and pupate in the soil. Three generations per year were reported in southern Italy (SANNINO *et al.* 1986). According to KRSTESKA & SPIRKOSKI (2017) the damage of adults is more significant than that of the larvae in transplanted tobacco plants. Adults chew small round holes on the leaves; a mass occurrence might result in complete defoliation. They prefer to feed on leaves close to the ground. Their feeding inhibits the growth of the plants and can adversely affect the quality of harvested tobacco leaves. LYKOURESSIS (1991) discussed chemical control methods and the effect of plant nutrition levels on the abundance of *E. hirtipennis*. Methods of biological control were also investigated (SANNINO & BALBIANI 1990).

In the tobacco plantation near Bököny, the damage caused by adult beetles was visible on almost every inspected plant as small holes on the leaves (Fig. 4). The plants were young (30–40 cm tall), probably transplanted about a month before. Further studies are needed to assess the importance of *E. hirtipennis* in Hungary as a tobacco pest and to determine its successful control methods.

The proposed Hungarian name of *E. hirtipennis*: dohány-földibolha.



**Fig. 4.** Damage of *Epitrix hirtipennis* (Melsheimer, 1847) on tobacco leaves  
(photo by Norbert Tóth)

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