

**Two parasitoid beetle species new to the fauna of Hungary
(Coleoptera: Meloidae, Ripiphoridae)**

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Abstract – The first records of *Ripiphorus subdipterus* Bosc, 1792 (Ripiphoridae) and *Stenoria analis* Schaum, 1859 (Meloidae) from Hungary are provided.

Key words – new country records, faunistics, taxonomy, *Ripiphorus subdipterus*, *Stenoria analis*

INTRODUCTION

The Coleoptera fauna of Hungary has been well studied, although checklists have been published only for certain families (e.g., MERKL 2004, PODLUSSÁNY *et al.* 2019). A complete catalogue treating all beetle species known from the present-day Hungary was under preparation by the late Ottó Merkl (1957–2021), who unfortunately was not able to finish this much anticipated work. In the present paper we provide the first Hungarian records for two beetle species.

Ripiphoridae (wedge-shaped beetles) is a small cosmopolitan family containing about 400 described species. The Central European fauna was summarized by BATELKA (2007a). In Hungary only four species were known until 2011: *Macrosiagon bimaculata* (Fabricius, 1787), *Metoecus paradoxus* (Linnaeus, 1760), *Pelecotoma fennica* (Paykull, 1799) and *Ptilophorus dufourii* (Latreille, 1817) (KASZAB 1956). The last species has not been found in Hungary since 1928, hence it may be considered extinct in Hungary. In 2011 a specimen of a fifth species, the extremely rare *Ripidius quadriceps* Abeille de Perrin, 1872 was discovered in Western Hungary. The record was published by SZALÓKI *et al.* (2012), who also presented a checklist and all Hungarian data of

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the family. One year later MERKL *et al.* (2013) summarized the life history of the five Hungarian species.

The Meloidae (blister beetle) fauna of Hungary has been subject of considerable research, however, the last comprehensive accounts were published decades ago (KASZAB 1956, TÓTH 1973). Additional records were provided in subsequent faunistic papers (e.g., SZALÓKI 1986) and reports concerning the fauna of different national parks.

SPECIES NEW TO HUNGARY

Ripiphorus subdipterus Bosc, 1792

Material examined – “HUNGARY, Bács-Kiskun Co., Dunavecse: Milkópuszta, N46.9165°, E19.0751°, 93m, sown wildflower plot, from *Cephalaria transsylvanica* 26.VII.2021, leg. L. Somay, *Ripiphorus subdipterus* Bosc, 1792, det. L. Somay” (one female). The specimen is deposited in the Hungarian Natural History Museum (HNHM), Budapest.

Notes – In his revision of the ripiphorid fauna of Hungary KASZAB (1956) tentatively included this genus (and *Ripidius*) in the generic key, noting the possible occurrence of *Ripiphorus subdipterus* in the Carpathian Basin. The specimen found in the summer of 2021 in Central Hungary (Fig. 1) represents a new country record. The first Hungarian specimen was observed in a network of sown wildflower plots at the edge of fields (Wildflower Fields Experiment) created by the Centre for Ecological Research in 2020 (Fig. 2). The actual flowering plot was on the edge of a cornfield bordered by a saline steppe. The female specimen rested in a stem branch of one of the mass-flowering *Cephalaria transsylvanica* (Dipsacaceae). This plant species does not occur outside the sown plot, the beetle may have arrived from the saline steppe. Proposed Hungarian name of the species: rövidszárnyfedős darázsbogár.

Ripiphorus contains about 70 species, but it is badly in need of a revision. The genus is distributed worldwide, at least 30 species are known from North America. The Palearctic Catalogue lists nine valid species from the region; in Europe only the widespread *Ripiphorus subdipterus* (widely distributed in the Mediterranean) and *Ripiphorus spalatensis* (Obenberger, 1917) (only recorded from Croatia) were listed (BATELKA 2008, BARCLAY 2020). After CHABAUT (1907), all the previously described Western Palearctic *Ripiphorus* species and varieties were considered as synonyms of *Ripiphorus subdipterus*; *Ripiphorus spalatensis* was described later, based on a single female collected in Split, Croatia (BATELKA 2007b).

BATELKA (2007b) described a new species, *Ripiphorus creticus* Batelka, 2007, from Crete (Greece), and removed two species, *Ripiphorus syriacus* (Pic, 1904) and *Ripiphorus turcicus* (Pic, 1914) (both from Turkey), from the synonymy of *Ripiphorus subdipterus* and reinstated them as valid species.

Ripiphorus subdipterus occurs in the southern part of Europe: Portugal, Spain, France, Italy, Croatia, Serbia, Montenegro, Bulgaria, Albania, Greece and Ukraine (DROGVALENKO & KONOVALOV 2016); in North Africa: Algeria, Morocco and Tunisia; and in Asia: Cyprus, Israel, Iran (SAMIN *et al.* 2018), Armenia, Azerbaijan, Kazakhstan and Uzbekistan (BATELKA 2008, BARCLAY 2020). Previous data from Turkey pertain to *Ripiphorus syriacus* and *Ripiphorus turcicus* (BATELKA 2007b).

Ripiphorus species at first appear more like a sawfly rather than a beetle. The elytra are very short, scale-like, not extending beyond metathorax. The hind wings are unfolded and entirely exposed. The antennae of males are biflabellate, those of females are pectinate. In *Ripiphorus subdipterus* the head and prothorax are black, the elytra are beige, almost transparent, and the abdomen is variably coloured, ranging from orange to uniformly black, with numerous transitional patterns. The antennae are also variable in colour, ranging from entirely black to yellow. The legs are yellowish with darkened femora. Body length: 5–10 mm.

Ripiphorus beetles are specialized parasites of ground-nesting bees (Hymenoptera: Apidae and Halictidae). The life cycle and host are unknown for most species. The life cycle of the Californian *Ripiphorus smithi* Linsley et MacSwain, 1950 has been explored in the most details (LINSLEY *et al.* 1952). Adults live only a few days and can be found on flowers and other plants, males often around colonies of their hosts, waiting for the newly emerged females. After mating, females lay eggs into the buds of still closed flowers. When the flower opens and pollinators visit them, the eggs hatch into first instar larvae (so-called triungulins). These are very active and hold themselves erect on the apex of the abdomen until a host individual lands on the flower. Once a suitable host is contacted, the larva attaches itself to the host and it is carried back to its underground nest where they feed on the brood, first as internal parasites, but as external parasites in their later instars.

Life history of *Ripiphorus subdipterus* is poorly known but it probably develops in nests of *Halictus* bees. Females often occur on vegetation and inflorescences of various genera of Dipsacaceae (*Scabiosa* spp.), Asteraceae (*Carduus* and *Cirsium* spp.) and Apiaceae (*Eryngium* and *Daucus* spp.) (PÁRAMO *et al.* 2006), on which they lay eggs from July to August.

Stenoria analis Schaum, 1859

Material examined – “HUNG., Pest megye, Kémence, Asztal-kő környéke, sziklagyep [rocky grassland], 2021.VIII.2., 48.001360, 18.901365, leg. T. Németh, *Stenoria analis* Schaum, 1859 det. T. Németh, 2021” (one female). The specimen is deposited in HNHM.

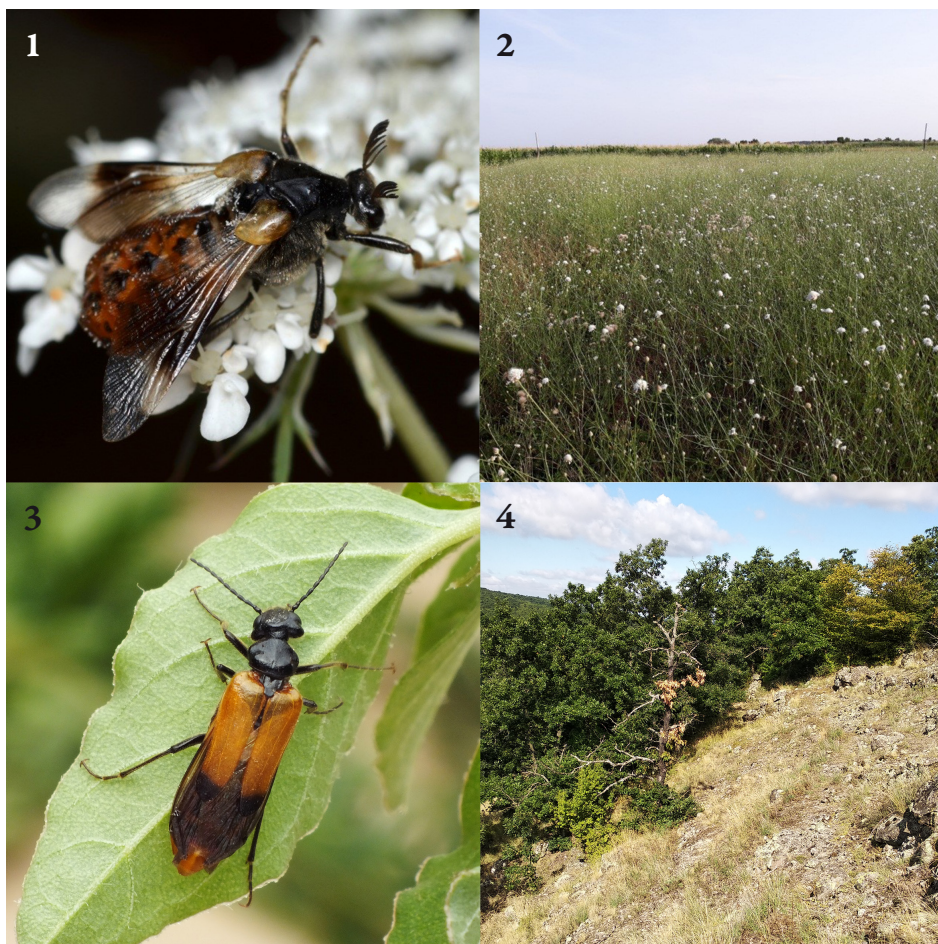
Notes – On 2 August 2021, during a research on the saproxylic beetles of the Börzsöny Mountains led by the Duna-Ipoly National Park, a specimen of *Stenoria analis* was found by the second author (Fig. 3). The specimen was hiding from the dripping rain on the vegetation at the rocky hillside near to the village of Kémence, North Hungary (Fig. 4). Previously the species was known from Croatia, Czech Republic, France, Germany, Italy, Poland, Portugal, Spain, South European Territory of Russia, Switzerland, Turkey (BOLOGNA 2008), Belgium, Slovakia and the Netherlands (LÜCKMANN 2017). With this species the number of Meloidae species known from Hungary is raised to 42. Proposed Hungarian name: feketenyakú élösdibogár.

The genus *Stenoria* was represented by a single species in Hungary so far. *Stenoria apicalis* (Latreille, 1804) prefers sandy areas of the Great Hungarian Plain; it is active in the late summer. Most of the specimens at the Coleoptera Collection of HNHM are from the last few decades and were collected in the area of Kiskunság. *Stenoria* species are cleptoparasitic, developing in the nests of certain Hymenoptera.

VERECKEN & MAHÉ (2007) and BAHMER (2017) mentioned the ivy bee (*Colletes hederæ* Schmidt & Westrich, 1993) as the host species of *S. analis*, but triungulin larvae have exceptionally been observed on other bee species as well (LÜCKMANN 2017). The ivy bee was described recently (SCHMIDT & WESTRICH 1993), and is currently known to occur in Western, Southern and Central Europe, but it seems to be spreading; it was first detected in Hungary in 2016 (VOIGT & SZALAI-DOBOSNÉ 2019). The ivy bee is one of the latest swarming bee species, with a peak of activity during the ivy flowering period; it nests in the soil, with several specimens aggregating at preferred sites.

Stenoria analis adults can be observed from the end of July to the beginning of October, with the main activity period in August, before the flight time of the host begins. After copulation the females soon start to oviposit. The clutches consist of 150–400 eggs; they are attached to dry blades of grasses, herbaceous plants or leaves of shrubs, often near the host’s nesting sites. The triungulin larvae hatch after about 12–19 days. After hatching, larvae remain in close aggregation for about 3–6 days. The activity period of the triungulins begins in mid-August and lasts until the beginning of October, with an activity peak in September (LÜCKMANN 2017).

The way of finding the host by the triungulins has remained unclear. VEREECKEN & MAHÉ (2007) and MAHÉ (2008) observed ivy bee males approaching, patrolling and inspecting triungulin aggregations^{**}. From this they hypothesized that the clusters likely attract male bees via chemical imitation of female sex pheromones. This behaviour was not observed in some cases. Occasionally the mass of triungulins is hanging on a kind of cord, forming a droplet, and finally falls on the ground. The larvae later disperse and actively search for nest of their hosts or climb up the vegetation and try to grab bees when they settle on the ground or on plants (LÜCKMANN 2017).



Figs 1–4. Figs 1–2: adult specimen and habitat of *Ripiphorus subdipterus* at Dunavecse (photos by László Somay); Figs 3–4: adult specimen and habitat of *Stenoria analis* at Kemence (photos by Tamás Németh)

^{**} https://www.flickr.com/photos/nico_bees_wasps/albums/72157607463849348

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