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Euplectus frivaldszkyi frivaldszkyi Saulcy in Poland (Coleoptera: Staphylinidae: Pselaphinae)

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Abstract. *Euplectus frivaldszkyi* Saulcy is recorded from Poland based on specimens collected in the southeastern part of the country. Important diagnostic characters of this species, including the aedeagus, are illustrated and compared with those of highly similar *E. brunneus* (Grimmer).

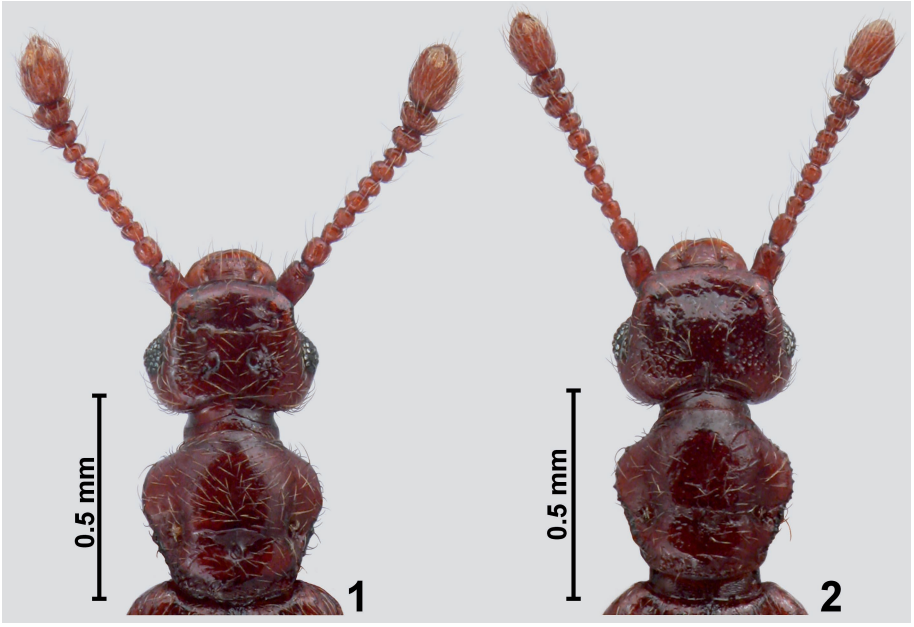
Key words: entomology, faunistics, Coleoptera, Staphylinidae, Pselaphinae, Euplectini, *Euplectus*, new records, Palearctic, Poland.

INTRODUCTION

Cosmopolitan *Euplectus* currently includes nearly 120 species (Newton & Chandler 1989); 39 species and subspecies are known to occur in Europe, including Caucasian countries (Löbl & Besuchet 2004; Löbl & Mattila 2010). The highly uniform external morphology and small body size (usually 1-2 mm) make species of *Euplectus* difficult to identify, although the shape, proportions and sculpture of various body parts, modifications of the male abdominal sternites and highly diverse aedeagi allow for unambiguous determinations. As for most species of minute and obscure beetles, distributional data on *Euplectus* are scarce and fragmentary even in European countries with a long tradition of entomological and faunistic research. The first country records for many widely distributed *Euplectus* species are surprisingly recent. For example, *E. bescidicus* Reitter, 1882 was recorded from the Netherlands for the first time in 1995; *E. bonvouloiri narentinus* Reitter, 1882 from East Germany in 1989 and from

Poland in 2005; *E. bonvouloiri rosae* Raffray, 1910 from Britain in 1987; *E. duponti* Aubé, 1833 from Poland in 2006; *E. frater* Besuchet, 1964 from Bulgaria in 2004; *E. frivaldszkyi* Saulcy, 1878 from Austria in 1993; *E. infirmus* Raffray, 1910 from the Netherlands in 1995, from Bulgaria in 2008 and from Poland in 2010; *E. piceus* Motschulsky, 1835 from Latvia in 2001; *E. punctatus* Mulsant & Rey, 1861 from Britain in 1978; and *E. tholini* Guillebeau, 1888 from Poland in 2005 (Barševskis 2001; Bekchiev 2008; Borowski, Piętka & Byk 2010; Bowestead & Eccles 1987; Gawroński & Oleksa 2006; Jałoszyński et al. 2005; Jałoszyński & Sienkiewicz 2011; Johnson 1978; Lapeva-Gjonova 2004; Neuhäuser & Kreissl 1993; Pütz 1989; Vorst 1995). During relatively recent studies it also became evident that some distributional data are obscured by records based on misidentifications, e.g. in Great Britain the name *E. brunneus* (Grimmer, 1841) for a long time has been misapplied to *E. bescidicus* (Allen 1994); *E. frater* in Hungary has been known as *E. linderi* Reitter, 1884, a species that in fact does not occur in this country (Besuchet 1983); all records of *E. brunneus* from the Netherlands were based on misidentified specimens of *E. duponti* and *E. bescidicus* (Vorst 1995), while some records of *E. duponti* from Great Britain refer to misidentified *E. brunneus* (Allen 1994).

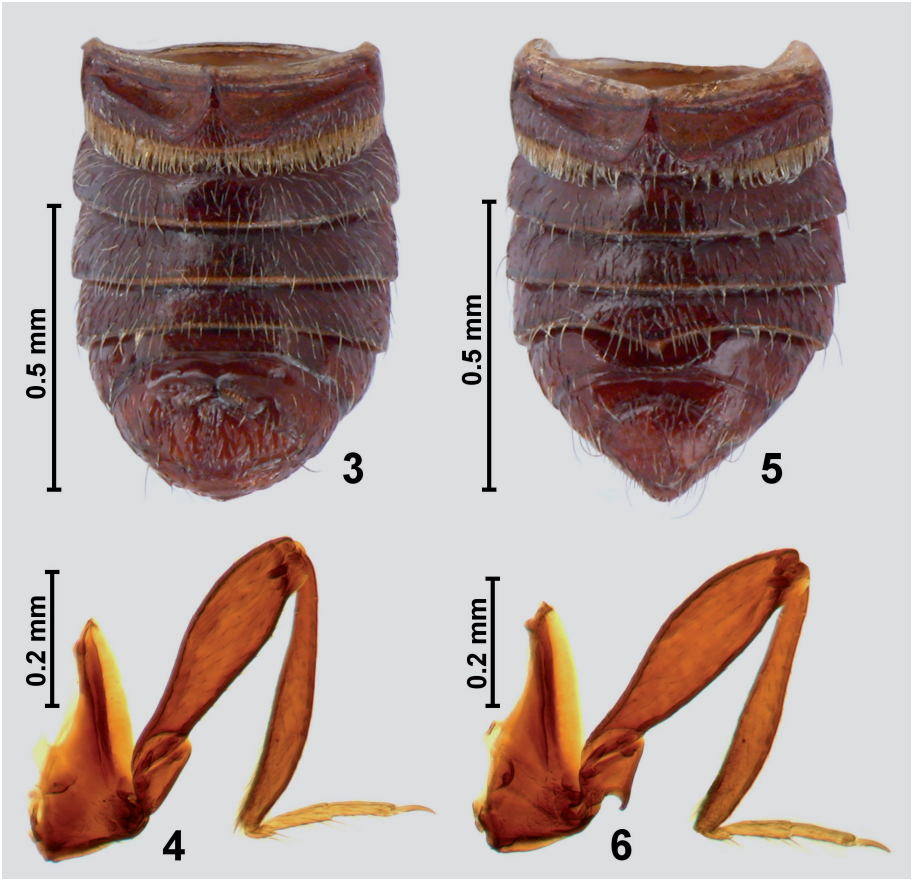
In Poland majority of literature records on all species of *Euplectus* need verification, as they were based on identifications made without examining the male genitalia. For this reason, the amount of published data based on misidentifications is not possible to estimate, and not only museum surveys but also new field studies are necessary to confirm old provincial records. A recent revival of faunistic studies on pselaphines in Poland yielded not only the already mentioned first confirmed country records for



1-2. Prothorax and head in dorsal view: 1 – *Euplectus frivaldszkyi*, 2 – *E. brunneus*

E. bonvouloiri narentinus, *E. duponti*, *E. infirmus* and *E. tholini*, but also some other, interesting and sometimes surprising findings, as the discovery of *Bibloplectus spinosus* Raffray, 1914 (Gawroński & Oleksa 2005), *Bibloplectus strouhali* Beier, 1928 (Jałoszyński, Melke & Twardowski 2013) or *Brachygluta klimschi* Holdhaus, 1902 (Kubisz & Jałoszyński 2009).

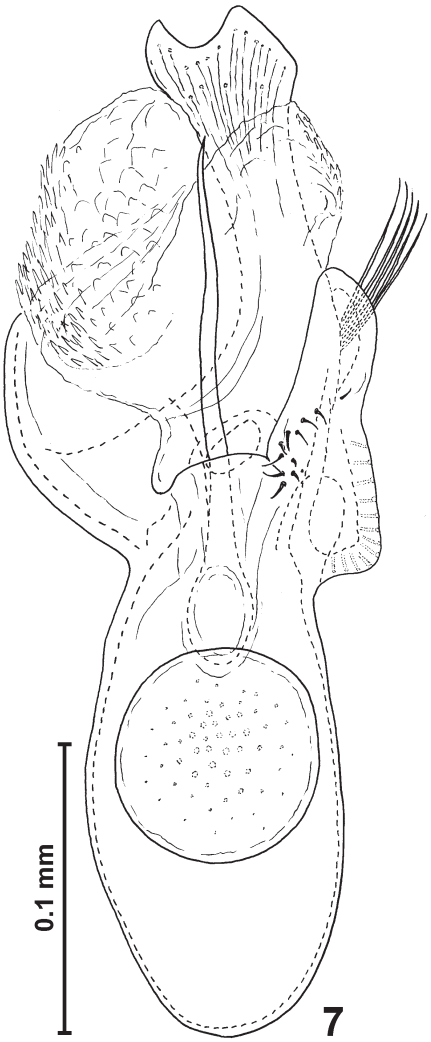
Among fifteen species of *Euplectus* so far reported to occur in Poland, only *E. kirbii* Denny, 1825 requires confirmation. An initial study carried out by the senior author (PJ) revealed that specimens from Polish collections identified as *E. kirbii revelieri* Reitter, 1884 most likely belong to *E. nanus* (Reichenbach, 1816), and the nominotypical subspecies may not occur in Poland at all. Assuming that *E. kirbii revelieri* is indeed a separate and diagnosable taxon (which may require confirmation), its occurrence in Central Europe and adjacent western countries is problematic. *Euplectus nanus*, but not *E. kirbii* was reported to occur in the German states Schleswig-Holstein (Meybohm 1971) and Saxony (Peschel 2009), which suggests that *E. kirbii* is not such a widespread

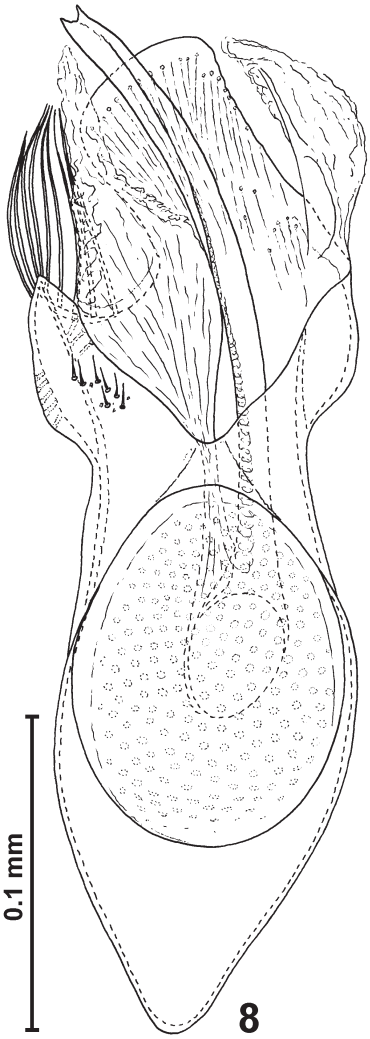


3-6. Abdomen of male in ventral view (3, 5) and left hind leg of male in ventral view (4, 6): 3, 4 – *Euplectus frivaldszkyi*, 5, 6 –*E. brunneus*

species as previously thought. The occurrence in Poland of all other recorded species of *Euplectus* seem well documented, but even the most common representatives (e.g., *E. karstenii* (Reichenbach, 1916) or *E. signatus* (Reichenbach, 1816)), presumably distributed on the entire territory, still remain unrecorded from some large provinces (Burakowski et al. 1978, 2000).

In the present paper we report the occurrence of *E. frivaldszkyi frivaldszkyi* in Poland, based on well-documented recent field studies. Voucher specimens are deposited in the collections of authors (author name's initials are used as collection acronyms).





7-8. Aedeagus in ventral view: 7 – *Euplectus frivaldszkyi*,8 – *E. brunneus*

MATERIAL

Southeastern Poland (11 exx.): 1 ♂, Beskid Niski, Głębokie ad Rymanów (EV68), 17 X 2012, sifted from rotten wood of dead cherry tree and hornbeam in deciduous forest, on shore of the Sieniawskie Lake, leg. D. Twardy (PJ); 1 ♂, Słonne Mts., Załuż ad Sanok (EV98), 15 X 2010, sifted from leaf litter in oak and hornbeam forest, leg. D. Twardy (DT); 3 ♂♂, Słonne Mts., Góra Sobień Reserve (EV98), 24 V 1998, leg. M. Wanat (MW, PJ); 1 ♂, Western Carpathians, Dynowskie Foothills, Brzozów-Podlesie (EA70), 16 IX 2012, sifted from heap of rotten wood with colony of *Formica* sp. ants, on edge of deciduous forest, leg. D. Twardy (DT); 1 ♂, same data except 15 XI 2012 (DT); 1 ♂, 1 ♀, same data except XI 2012 (DT, PJ); 1 ♀, Suchy Obycz ad Arłamów (FV19), 20 VII 2010, by window trap "Netocia" (illustrated in Szujecki 2001), leg. K. Komosiński (KK); 1 ♂, Łuczyce ad Przemyśl (FA31), 28 V 1998, leg. M. Wanat (MW).

DISCUSSION

The only report on the occurrence of *E. frivaldszkyi* (misspelled as *E. frivaldskyi*) within the contemporary Polish territory was recently published by Krivosheyev (2012), who mentioned a single specimen in the collection of the State Museum of Natural History, Lviv, Ukraine (SMNH). Krivosheyev (2012) gives the following data: "Brylince, leg. et det. T. Trella". Brylińce is a village in SE Poland, ca. 10 km from the Ukrainian border, and Tadeusz Trella was active as an entomologist till late thirties of the 20th century. However, according to the label data, this specimen is a female identified by Trella as *E. bescidicus*, later confirmed as *E. bescidicus* by Lazorko, and by Krivosheyev identified as *E. frivaldskyi* (sic!) (email from V. Rizun (SMNH) to P. Jałoszyński dated 22.04.2013). We were not able to examine this specimen to confirm its identity.

In the Polish fauna, *E. frivaldszkyi* is most similar to *E. brunneus*. These two species are largest among Central European *Euplectus*, reaching or even slightly exceeding 2 mm in length, they are also similar in the shape and sculpture of the head. Identifications can be made using descriptions, illustrations and identification keys of Raffray (1910), Roubal (1935), Karaman (1962) and Besuchet (1974). *Euplectus frivaldszkyi* (Fig. 1) has less transverse frons and vertex, lateral margins of frons feebly convergent anterad, eyes more convex in dorsal view, and usually the head is slightly, but distinctly narrower than the pronotum. *Euplectus brunneus* (Fig. 2) has the frons and vertex more transverse, lateral margins of frons more distinctly convergent anterad, eyes weakly convex and the head slightly broader than the pronotum. Males can be readily distinguished on the basis of abdominal sternites, metatrochanters and aedeagi. The male abdomen of *E. frivaldszkyi* (Fig. 3) has unmodified ventrite IV and the median impression of the ventrite V with diffused margins, while in *E. brunneus* (Fig. 5) the posterior margin of abdominal ventrite IV is distinctly expanded in middle and the median impression of ventrite V is sharply delimited posteriorly and laterally. The male metatrochanter of *E. frivaldszkyi* (Fig. 4) is unmodified, while that of *E. brunneus* (Fig. 6) bears a distinct hook-like projection. The aedeagi (Figs. 7-8)

of these two similar species differ clearly not only in their distal parts, but also in the shape of the basal capsule. One character included in the most popular identification key to Central European species of *Euplectus* (Besuchet 1974) may pose problems. The length of carinae on the second visible abdominal tergite is variable and cannot be used as the deciding character to distinguish *E. frivaldszkyi* from *E. brunneus*. Also the width of head in relation to the pronotum is somewhat variable and some females with a subequal width of head and prothorax may be difficult to identify. In such cases the shape of head must be taken into account, and uncertain identifications should be confirmed by direct comparisons with series of specimens belonging to both species. During the present study specimens belonging to *E. frivaldszkyi* and *E. brunneus* and collected from the same sample of leaf litter were found. This co-occurrence must be considered to avoid misidentifications.

Euplectus frivaldszkyi is a relatively rare species. It is distributed mainly in Central and East Europe, with the nominotypical subspecies recorded to date from the Balkans (Bosnia and Herzegovina, Croatia, Macedonia, Slovenia, Bulgaria, Greece), Romania, Austria, Hungary, Germany, Slovakia and Ukraine, and *E. frivaldszkyi pelopis* Reitter, 1884 known to occur only in Greece (Löbl & Besuchet 2004). The biology of *E. frivaldszkyi* is poorly known, the beetles were collected from leaf litter near old trunks of deciduous trees, sometimes in a company of ants *Lasius brunneus* (Latreille) and *Formica rufa* L. (Neuhäuser 1995). In Bulgaria *E. frivaldszkyi* was collected from a rotten wood of a dead Caucasian spruce *Picea orientalis* (L.) (Bekchiev 2008). This minute pselaphine species is mainly found on foothills and lower mountain localities, e.g. in Austria it was collected on the altitude of 250-500 m (Kreissl & Neuhäuser 1993, Neuhäuser 1995), and in Bulgaria 500 m (Bekchiev 2008).

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