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Faunistical records of Tenebrionidae (Coleoptera) from Bulgaria and Republic of Macedonia

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Abstract. New faunistical data about 4 species and genera of the family Tenebrionidae are presented as follows: one new species for the fauna of Balkan Peninsula – *Eledonoprius serrifrons* (Reitter, 1890); three genera and three species are new records for Bulgaria – *Eledona agricola* (Herbst, 1783), *Eledonoprius serrifrons* and *Latheticus oryzae* Waterhouse, 1880; and a new genus and species to the fauna of the Republic of Macedonia - *Hymenalia graeca* Seidlitz, 1896. Distribution maps and photos of these species are also provided. The male genitalia of *E. agricola* are illustrated for the first time.

Key words: faunistics, Tenebrionidae, distribution, genitalia

Introduction

Tenebrionidae are still insufficiently explored group of the order Coleoptera, even in some areas of Europe. This taxonomically complicated group is not regularly studied everywhere, and regions such as the Balkans and in particular Bulgaria and Republic of Macedonia need extensive research. Bulgarian records even for species widespread in Europe are very scarce. About 200 species of the family Tenebrionidae (including subfamily Alleculinae) are reported for the Bulgarian fauna. However, the list of the Bulgarian species needs revision mainly because most of the records come from old references. For example, Angelov & Medvedev (1981) published the most comprehensive list of Bulgarian Tenebrionidae and excluded 12 species reported by previous authors. Also, they commented on further 11 species which occurrence in the country is questionable. Our investigation revealed that nearly 40 further species are in need of re-examination (confirmation or exclusion) from the species list of Bulgaria. Fauna of the Tenebrionid beetles of Macedonia is also poorly studied. This paper reports some new faunistical records for 4 species and genera of Tenebrionidae from these two countries.

Eledonoprius Reitter, 1911 and *Eledona* Latreille, 1796 are closely related genera of mycetophagous tenebrionid beetles included in the tribus Bolitophagini Kirby, 1837. Both are small genera with only two species each, distributed in the Western Palaearctic region.

Eledonoprius is known from nearly entire Europe reaching Caucasus to the east. There are only two Bulgarian records for this genus, both for *E. armatus* (Panzer, 1799): Dajoz (1984) [from Petrohan (Stara planina Mountain, Western Bulgaria)] and Picka (1987) (from Strandzha Mountain in southeastern Bulgaria). *E. armatus* has a wide geographic

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range and so far it has been known for approximately 50 localities in 21 European countries (Carpaneto *et al.*, 2013). Another species of this genus, *E. serrifrons* (Reitter, 1890), is quite rare with only a few records noted in the literature, which till now demonstrated a disjunct range with two centers of distribution: 1) in the western Mediterranean, and 2) in the Caucasus and the easternmost part of the Mediterranean. Recently the present authors collected *E. serrifrons* from the Balkan Peninsula (southwestern Bulgaria) for the first time. This fact disproves the disjunct range of the species and demonstrates its continuous distribution from Spain in the west to the Caucasus in the east.

Genus *Eledona* also contains two species: *E. hellenica* (Reitter, 1885) from Greece and Turkey and *E. agricola* (Herbst, 1783) with wider distributional range. The authors collected *E. agricola* in Bulgaria, which is the first record of this genus and species for the country.

According to Löbl *et al.* (2008), *Eledonoprius* and *Eledona* are found also in the Nearctic region, but this seems to be an error and these genera should be considered as Palaearctic. The Nearctic species of *Eledona* were found to be synonyms of *E. agricola* (LeConte & Horn, 1883; Gebien, 1939; Löbl *et al.*, 2008). Dr. Warren Steiner (pers. comm.) stated that *E. agricola* has not become established in the Nearctic region, but continues to be listed. No recent collections are known. Dr. Steiner is not aware of any North American occurrence or literature record for *Eledonoprius* and suspects that the record in Löbl *et al.* (2008) is also an error. Instead, only the native bolitophagine genera *Bolitotherus* Cand ze, 1861, *Bolitophagus* Illiger, 1798, *Eleates* Casey, 1886, *Megeleates* Casey, 1895, and *Rhipidandrus* LeConte, 1862 occur in USA and Canada.

Genus *Latheticus* Waterhouse, 1880 (tribus Triboliini) is also new for Bulgaria. This genus contains two species, but only *L. oryzae* Waterhouse, 1880 occurs in the Palaearctic.

Hymenalia graeca Seidlitz, 1896 is a new species and genus for the fauna of Republic of Macedonia. *Hymenalia* Mulsant, 1856 is a large genus of the subfamily Alleculinae, including numerous species distributed throughout the Palaearctic. Many new species were described recently from the Arabian Peninsula, Iran (Novák, 2007) and China (Novák, 2010), and the number of species and subspecies in the genus increased to 52.

Material and Methods

The beetles were either collected manually and fixed in a mixture of ethanol, acetic acid and glycerol (Hood, 1953) or collected by pitfall traps (filled with formaldehyde-vinegar solution in ratio 1:7) and then preserved in 70% etanol. The specimens from Bulgaria were identified, pinned and preserved in the collection of the Department of Zoology and Anthropology, Faculty of Biology, Sofia University, and these from Macedonia in the Institute of Biology, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University in Skopje.

Results

Eledonoprius serrifrons (Reitter, 1890) (Fig. 1a)

New data: Southwestern Bulgaria, Lebnitsa river valley, west of Lebnitsa village, N41°31'38.01" E23°12'42.07", 160 m a.s.l., 15.VI.2012, 1 ♀ at light in *Platanus* forest, O. Sivilov & B. Zlatkov leg. (Fig. 2).

Body length: 3.60 mm.

Distribution: Mediterranean: southern part of Europe (Spain, Corsica, Italy, Bulgaria); Syria; Caucasus: Azerbaijan, Armenia. Information for all published localities is presented in Table 1 and distributional range on Fig. 3. As mentioned above, the range of this species is not disjunct and shows the typical characteristics of Turano-European species (corresponds to Turano-European chorotype according to the classification of Vigna Taglianti *et al.*, 1999). The statement of Aliquò *et al.* (2007) that *E. serrifrons* has Turanian chorotype is incorrect, because the most of its localities are known from Europe.

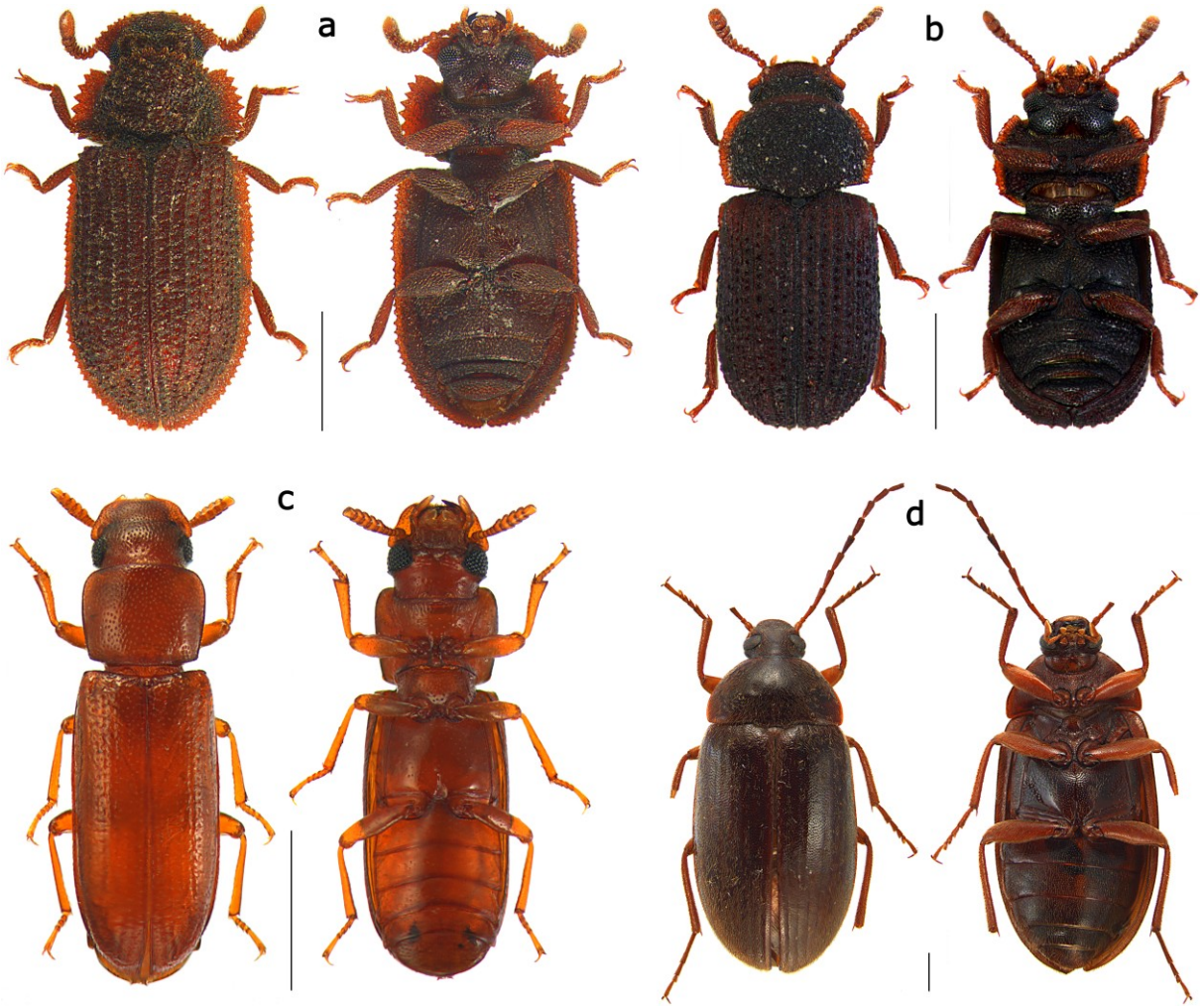

Fig. 1. Habitus [dorsal (left) and ventral (right)] of: *Eledonoprius serrifrons* ♀ (a); *Eledona agricola* ♂ (b); *Latheticus oryzae* ♀ (c); *Hymenalia graeca* ♀ (d). Scale 1 mm.

Eledona agricola (Herbst, 1783) (Fig. 1b)

New material: Southwestern Bulgaria, Ograzhden mountain, Lebnitsa river valley, N41°31'22.00" E23°12'38.00", 280 m a.s.l., 15.VI.2012, 4 ex., at night using head lamp, O. Sivilov & B. Zlatkov leg.; Struma river near Rupite place, N41°28'04.37" E23°15'57.42", 90 m a.s.l., 16.VI.2012, 31 ex., hand collecting from old fungus *Laetiporus sulphureus* (Bull.) Murrill, O. Sivilov & B. Zlatkov leg. (Fig. 2).

Body length: 2.95-3.75 mm.

Distribution: Europe, Turkey to Turkmenistan, also registered in North Africa – Tunisia.

The authors did not find illustrations of the male genitalia of *E. agricola* in the literature, therefore such drawings are first depicted on Fig. 4.

Latheticus oryzae Waterhouse, 1880 (Fig. 1c)

New material: Northeastern Bulgaria, Suha reka, south of village Efreytor Bakalovo, N43°49'13.50" E27°36'26.00", 130 m a.s.l., 21.VIII.2012, 2 ♀♀, at light, O. Sivilov & B. Zlatkov leg; Southwestern Bulgaria, Struma river near Rupite place, N41°28'05.21" E23°16'08.39", 95 m a.s.l., 20.VI.2013, 3 ♀♀, at light, O. Sivilov & B. Zlatkov leg. (Fig. 2).

Body length: 3.15-3.25 mm.

Distribution: This species has a cosmopolitan distribution.

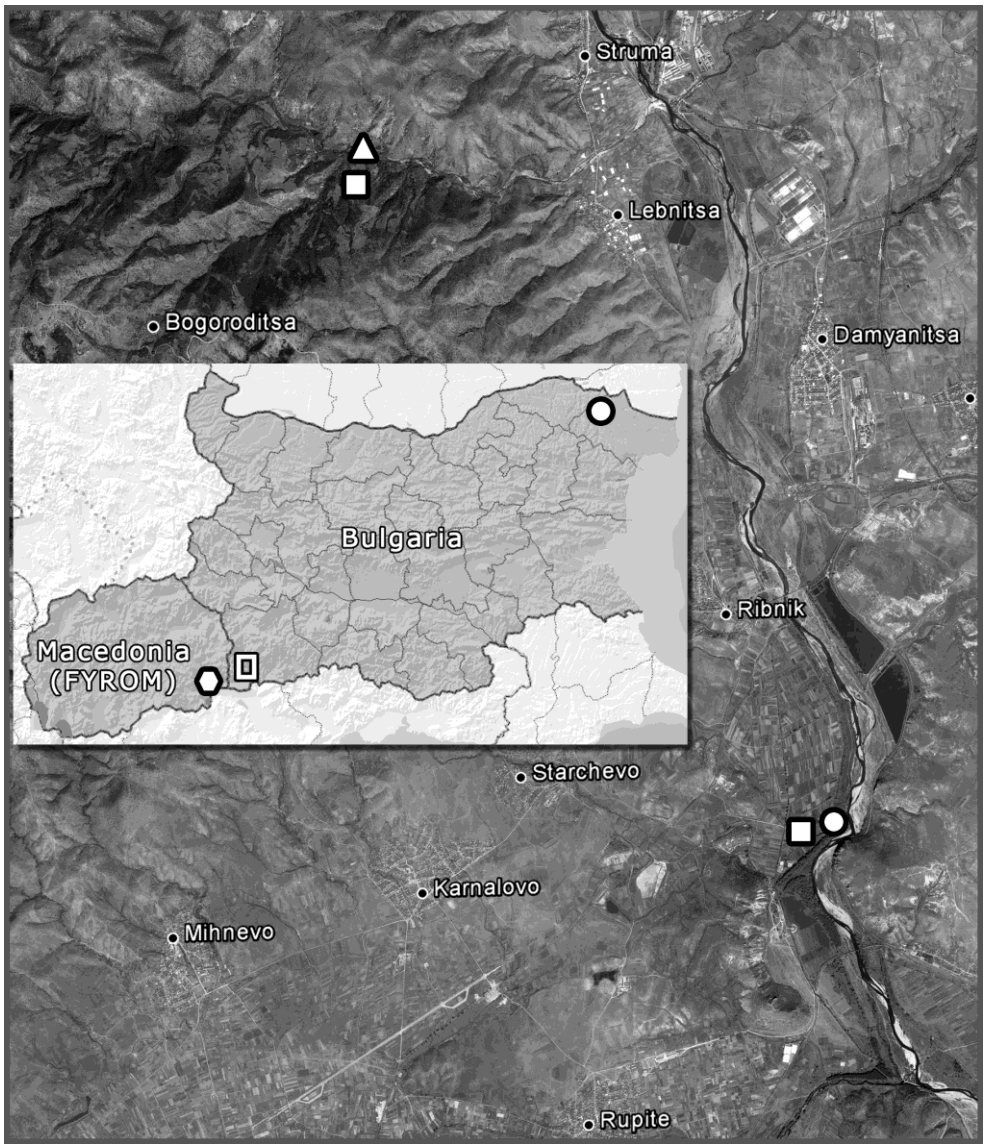

Fig. 2. Localities in Bulgaria and Macedonia of: *Eledonoprius serrifrons* (triangle); *Eledona agricola* (squares); *Latheticus oryzae* (circles); *Hymenalia graeca* (hexagon) (modified Google Earth map).

Hymenalia graeca Seidlitz, 1896 (Fig. 1d)

New material: Southeastern Republic of Macedonia, Belasitsa Mountain, Bansko village, near locality Markova Skala, N41°22'57.00" E22°46'16.50", 242 m a.s.l., (ass. *Querco – Carpinetum orientalis macedonicum* Rudski apud. Ht.), 03.VII. - 31.VII.2010, 1 ♀, pitfall traps, A. Cvetkovska leg. (Fig. 2).

Body length: 9.12 mm.

Distribution: Balkan Peninsula and Anatolia.

Table 1. Known localities of *Eledonoprius serrifrons*.

	Locality	**Author**
1.	Caucasus, Azerbaijan, Nakhchivan Region, Aras river valley at Ordubad	Reitter, 1890: 172 (*Bolitophagus*)
2.	Apennine Peninsula, Italy, Puglia (Apulia) Region, Province of Foggia, Monte Gargano, Forestra Umbra	Schawaller, 2002: 112
3.	Iberian Peninsula, Spain, Extremadura Region, Province of Badajoz, Cabeza la Vaca, Los Cortinales	Castro Tovar *et al.*, 2008: 362
4.	Corsica Island, France, commune Porto-Vecchio, Palavese	Soldati *et al.*, 2009: 33
5.	Caucasus, Armenia, Syunik Province, Tsav	Abdurahmanov & Nabozhenko, 2011: 265
6.	Italy, Basilicata Region, Potenza Province, Cersòsimo (at confluence between Lappio stream and Sarmento river), N40°03'57.00" E16°20'37.80", 400 m a.s.l.	Carpaneto *et al.*, 2013: 174
7.	Spain, Province of Salamanca, Campanarios de Azaba Biological Reserve, N40°29'46.14" E6°47'33.06", 900 m a.s.l.	
8.	Spain, Province of Cáceres, Monfragüe National Park, Las Cansinas	
9.	Syria, Latakia Governorate, Slanfah [Jabal an Nusayriyah mountain range], 1300 m a.s.l.	
10.	Balkan Peninsula, Bulgaria, Blagoevgrad Province, Lebnitsa river valley west of Lebnitsa village, N41°31'38.01" E23°12'42.07", 160 m a.s.l.	New record

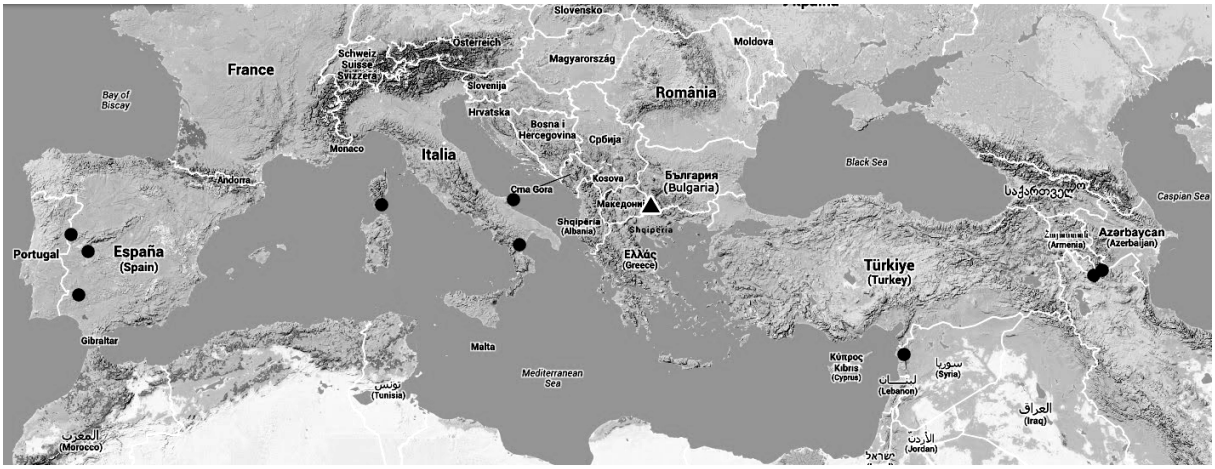

Fig. 3. Distribution of *Eledonoprius serrifrons*. The circles refer to reports in the literature and the triangle to the new record (modified Google Maps map).

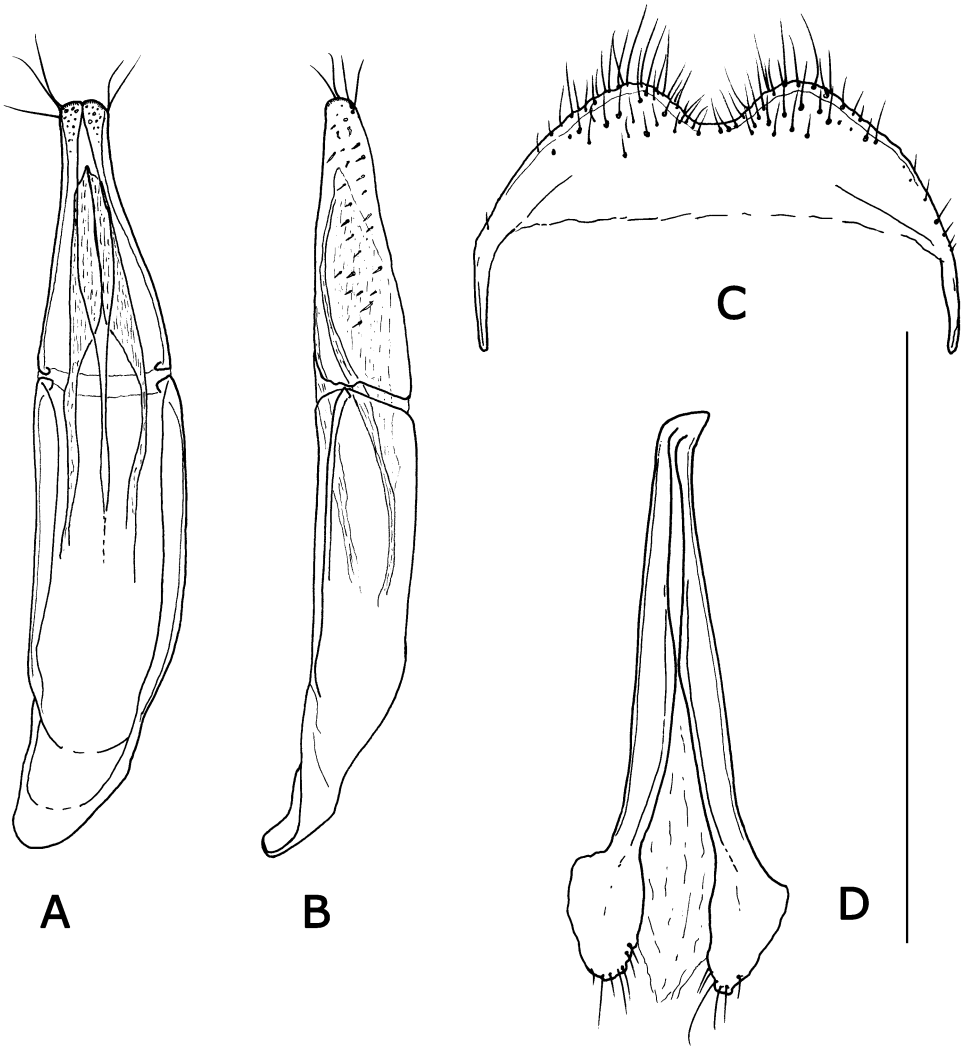

Fig. 4. *Eledona agricola*, male genital structures. (A) aedeagus, ventral view; (B) aedeagus, lateral view; (C) VIII inner sternite; (D) gastral spicula. Scale 0.5 mm.

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