

CONTRIBUTION TO THE KNOWLEDGE OF THE ROMANIAN SPHODRINA (ORDER COLEOPTERA, FAMILY CARABIDAE, SUBFAMILY PLATYNINAE, TRIBUS SPHODRINI)

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Abstract. The taxa included in Subtribus Sphodrina (Tribus Sphodrini) were very rarely mentioned in articles or faunal catalogues published for the Romanian fauna, some of them being recorded in underground environments (natural or artificial cavities). Other taxa were erroneously recorded for the Romanian fauna (*Laemostenus capitaus*, *L. janthinus coeruleus*), and others were omitted to be cited for the Romanian fauna (*Taphoxenus gigas*) in recent faunal catalogues. The presence of other species, which must be confirmed for the Romanian fauna (*Laemostenus janthinus*), or recorded in new geographical regions (*L. janthinus*, *L. euxinicus*) is discussed. In this article we made a brief analysis of the Romanian Sphodrinae fauna in a zoogeographical context, trying to highlight the systematic, faunal and protection problems raised by this interesting taxonomic group.

Keywords: Romanian Fauna, *Sphodrus*, *Taphoxenus*, *Laemostenus janthinus*, *Laemostenus euxinicus*, *Laemostenus stoevi*, taxonomic notes, distribution, protection status.

1. INTRODUCTION

In the last two centuries, sporadic records of the species included in the subtribe Sphodrina from the current territory of Romania have been published in several faunal lists (STEFANESCU, 1885; HORMUZACHI, 1901; MALLASZ, 1899; FLECK, 1904; PETRI, 1912, 1926; OCHS, 1921; ARION et PANIN, 1921; NEGRU et ROȘCA, 1967; IENIȘTEA, 1975; NITZU, 1998, 2022).

Some of these records, being published in old faunistic works, very rare and difficult to access nowadays, have not been included in the modern faunistic database of the European fauna (*Fauna Europaea* database) or in recent catalogs such as *the Catalog Palearctic Coleoptera* (LÖBL et SMETHANA, 2003). Other old records, being considered erroneous or doubtful, required a recent confirmation. KOTZE et al. (2011) supported the need to update the information of the Eastern European Carabidae fauna (including the Romanian fauna). In this work, based on the bibliography and the specimens from the collections (for which no data have been published so far), and our recent studies, we aimed to verify and update the faunal and taxonomic data regarding the species and subspecies of the Romanian fauna included in the Subtribus Sphodrina.

2. MATERIAL AND METHODS

All bibliography published up to present for the Romanian fauna, was consulted (only those papers which contain references to Sphodrinae were quoted in this article). The oldest papers (such as KUTHY, 1896; SEIDLITZ, 1891; ELMER, 1921) were checked in order to verify the first records for possible errors, detect doubtful records, and complement the old Hungarian names of localities with respective Romanian names.

The material from the collections of the “Emile Racovitza” Institute, M.Al. Ienistea collection, Savulescu donation, E. Nitzu personal collection, “Gr. Antipa” Museum collection was checked.

The UTM (Universal Transverse Mercator) system was used to illustrate the distribution of species. The geographic coordinates of the sites are given in MGRS format, omitting the UTM zone designation letter. Each MGRS square is defined by a UTM code formed by two letters (designating the 100 X 100 Km) followed by two digits, representing a 10 X 10 km square within the zone—the accuracy of coordinates on the distribution maps. The UTM codes were provided according to the bio-cartographic code of Romania (LEHRER & LEHRER, 1990) and are presented after the name of each site (cave, or locality). Each site provided with the UTM code can be identified on the distribution maps, following the grid notation.

Images were captured using a Canon A640 camera attached to a Karl Zeiss Discovery V 8 stereoscope (Magnification power from 10X to 80X).

3. FAUNISTIC AND TAXONOMIC NOTES OF SPECIES INCLUDED IN THE SUBTRIBUS SPHODRINA RECORDED UP TO PRESENT IN THE ROMANIAN FAUNA

(with * are marked species considered as erroneous or doubtful recorded)

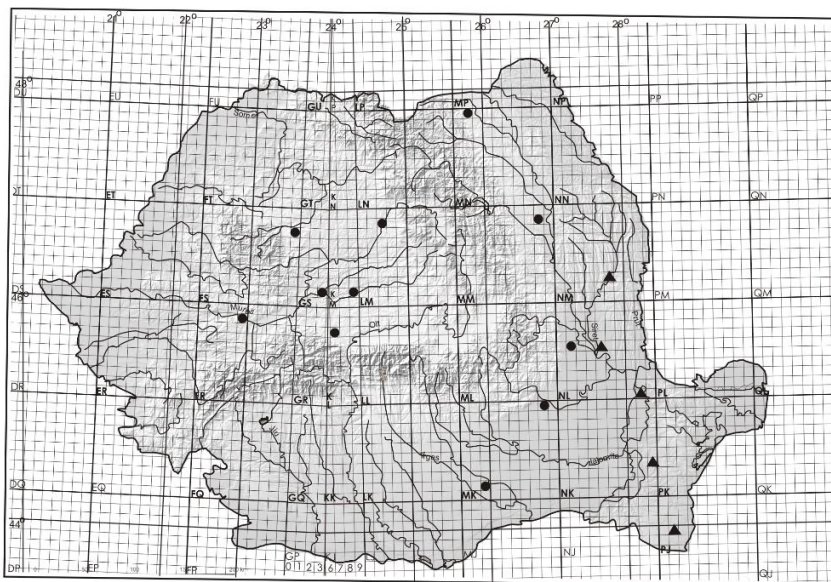
Genus *Sphodrus* Clairville, 1806

Sphodrus leucophthalmus (Linnaeus, 1758)

Species with West Palaearctic range: North Africa, Europe (except the north), Asia Minor, Middle East, Afganistan, Yemen, Kasmir (LÖBL AND SMETANA, 2003; PUTCHKOV AND ALEKSANDROWICZ, 2020). In Romania recorded mostly from cellars, in Broșteni (ȘTEFĂNESCU, 1885) (MM 88), Deva (FR 48) (MALLASZ, 1899), Rădăuți (MN 19) (HURMUZACHI, 1901), București (MK 21), Cluj (FS 97) (FLECK, 1904), Mediaș (KM 91), Sibiu (KL 77), Reghin (LM 28) (PETRI, 1912), Buzău (MK 89), Focșani (NL 15) (OCHS, 1921), Blaj (GS 21), cellar of Lyceum (1939) – IENIȘTEA Collection, 1 female without data collection (Fig. 1).

Predator species, encountered in humid and dark habitats (synanthropic in cellars of old buildings), caverns and outside of old buildings in the south of Europe (ASSMANN, 2004). The adults emerge in the last decade of May and the reproduction takes place in autumn, and the hibernal diapause takes place as larval stage (RIZUN, 2003; ASSMANN, 2004).

The species is considered regional extinct (RE) in Romania due to the habitat lost and fragmentation observed in all Europe (NITZU, 2021). The species has been not recorded in the recent decades in Europe (PUTCHOV and ALEKSANROWICZ, 2020).



● *Sphodrus leucophthalmus* ▲ *Taphoxenus gigas*

Fig. 1. Distribution of *Sphodrus leucophthalmus* and *Taphoxenus gigas* in Romania.

Genus *Taphoxenus* Motschulsky, 1864

Taphoxenus gigas (Fischer von Waldheim, 1823)

Species with East-European-Asiatic range (Romania, Moldova, Bulgaria, Ukraine, European part of Russia, Mongolia, Siberia, China). A very rare and little-known species for the Romanian fauna. It was recorded in Zorleni (NM 52), Măcin (NL 80) (FLECK, 1904), Ivești (Galați county) (NL 45) – July 29. 1933, leg. Et det. M.Al. Ieniștea (preserved in IENIȘTEA scientific collection), Valu lui Traian (PJ 19), May, 25. 1955, leg. et det. N. Săvulescu (SĂBĂDUȘ, 1990). After a long period of “absence”, the species was recorded in 2011 at Crucea (NK 93) (Dobrogea), leg. Ovidiu Mancu (MANCI, com. Pers), det. Nitzu E. (Fig.1)

Predatory, xero-termic species, inhabit the grassy steppe regions. In excessive dry seasons it uses the burrows of small mammals i.e. *Spermophilus citellus*, as ecological microrefuge (BRAGHINA, 2016). After PUTCHOV and ALEKSANDROWICZ (2020), the beetles were observed attacking new-born murid rodents.

The species is considered critically endangered (CR) in Romania, due to the habitat lost and fragmentation (NITZU, 2021).

Due to the lack of information from the last century, the species was omitted as being present in the Romanian fauna, both in the Catalog of Palearctic Coleoptera (LÖBL & SMETANA, 2003) and in the Fauna Europaea database (AUDISIO, 2017).

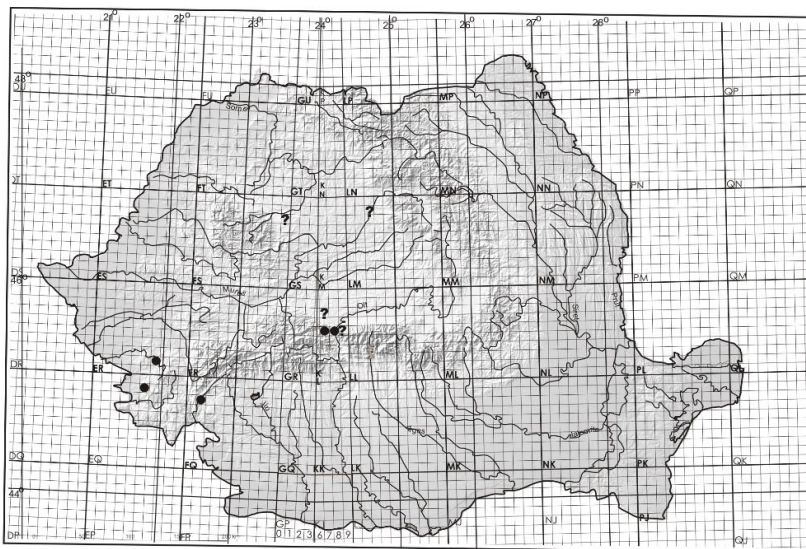
Genus *Laemostenus* Bonelli, 1810

Subgenus *Laemostenus* (s.str)

**Laemostenus janthinus* Duftschmid, 1812

Species with European range (France, Italy, Austria, Bosnia and Herzegovina, Slovenia, Croatia, Slovenia and Switzerland). Also recorded in *the Catalogue of Palaearctic Coleoptera* for Hungary and Romania (CASALE IN LÖBL & SMETANA, 2003), considered as doubtfully present in these two countries by AUDISIO (2017) – In the *Fauna Europaea database*. Recorded for a site in E. Serbia (ĆURČIĆ ET AL., 2007) and surprisingly, newly recorded for Bulgaria by TEOFILOVA (2017).

For the Romanian fauna, the subspecies *L. janthinus coeruleus* Dejean, 1828 was recorded by BIELZ (1887) for Cluj (FS 97) (under the old German name of the city – Klausenburg) and by ORMAY (1888) for Sibiu (Hermannstadt) (KL 77), followed by KUTY (1896) – Valea Lotrioara (KL 85), Reghin (LM 28), Cluj (in Hungarian) (Fig. 2). SEIDLITZ (1891), sizing up the differences between the original description and designated dispersal range of *L. janthinus coeruleus* Dejean, 1828 and Bielez's previous record of this subspecies for Transylvania, *elegantly* attempted to resolve this issue, noting that “*L. janthinus* Dej. was recorded at Hermannstadt (DE) = Sibiu (RO) (Author's note) by Bielez as «*coeruleus* Bielez» – (*coeruleus* Bielez, Hm. Statt H.) (H= Hinter – after Bielez)”, in antithesis, in the identification key with *L. coeruleus* Dej. recorded from Italy (Fig. 3). PETRI (1912), omitting the *fine* observation of SEIDLITZ (1891), reintroduced in his catalog the presence of *L. janthinus coeruleus* Dej. in Transylvania (Romania), based on the old mention of Bielez.



? *Laemostenus janthinus* (doubtful records) ● *Laemostenus venustus*

Fig. 2. Distribution of *Laemostenus janthinus* (doubtful records – see text) and *Laemostenus venustus* in Romania.

- subg. *Cryptotrichus* Schauff.
- Obers. blau, Kl. gezähmelt, Str. der Flgd fast glatt.
- 1, Schltecke der Flgd als kleines Zähnnchen vorspringend, Flgd fein gestr., mit ganz flachen Zwschr., S. des Hls vor den H \times deutlich ausgeschweift, wodurch diese nach aussen vortreten. L. 16 mm. In Oestr. u. Schlesien, b. uns selten. (coeruleus Bielz, Hm. statt H.) **janthinus** Duft.
- 1' Schltecke nicht vorspringend, Flgd nach vorn mehr verengt, tiefer gestr., die Zwschr. etwas gewölbt, S. des Hls sehr schwach geschweift, die H \times kaum vortretend. L. 15 mm. In Italien. (coeruleus Dej.)

Fig. 3. The photocopy of the identification key from *Fauna Transsylvanica* by Georg Seidlitz (1891), for *L. "coeruleus Bielz"*, versus "*coeruleus Dej.*".

Reanalyzing the range of *L. janthinus* Duft., CSIKI (1946) mentioned that this species is known for Bosnia, Herzegovina and Croatia. In the same publication Csiki also mentioned that previous records for "*L. janthinus* var. *amethystinus* Dej. and var. *coeruleus* Dej." for Transylvania are very probable erroneous, and should be eliminated from the records for Transylvanian fauna. However, in 2003, in the *Catalogue of Palaearctic Coleoptera* (LÖBL and SMETANA, 2003), Romania is added at the distribution of *L. janthinus coeruleus* Dejean, 1828, despite the fact that in a previous work (CASALE, 1988) it is mentioned that this species is known only for France and Italy. According to JEANNEL (1937, 1942) *Laemostenus* (cited under the name *Cryptotrichus* Schaufuss, 1865) *janthinus coeruleus* Dej. was recorded only for the Western Alps, at high altitudes. Finally, AUDISIO (2017) in *Fauna Europaea* database, mentioned for the known distribution of *L. janthinus coeruleus* (Dejean, 1828) only France and Italy.

Our conclusion is that the mention of *L. janthinus coeruleus* Dejean, 1828 should be considered as erroneous and this taxon not belonging to the Romanian fauna.

As far as we know, with the exception of the old citations, previously commented here, no specimen of *Laemostenus janthinus* Duftschmid, 1812 has been found in the Romanian fauna so far. Considering the new and surprising record of *L. janthinus* (s.str.) in Bulgaria (TEOFILOVA, 2017), we agree with CSIKI (1946) and AUDISIO (2017) that the presence of *Laemostenus janthinus* (s.str.) in the Romanian fauna is doubtful and must be confirmed by future investigations.

Laemostenus venustus (Dejean, 1828)

A species with European range (France, Italy, Albania, Greece, Cyprus, Albania, Slovenia, Hungary, Serbia, Bosnia, Herzegovina, Bulgaria, Romania, Southern Ukraine).

L. venustus is a very rare species in the Romanian fauna, not found in the last decades. It was recorded from Turnu Roșu (KL 85), Râul Sadului (Sibiu County) (KL 75), Băile Herculane (FQ 17), Reșița (ER 61) and Oravița (EQ 58) (PETRI, 1912; CSIKI, 1946) (Fig. 2).

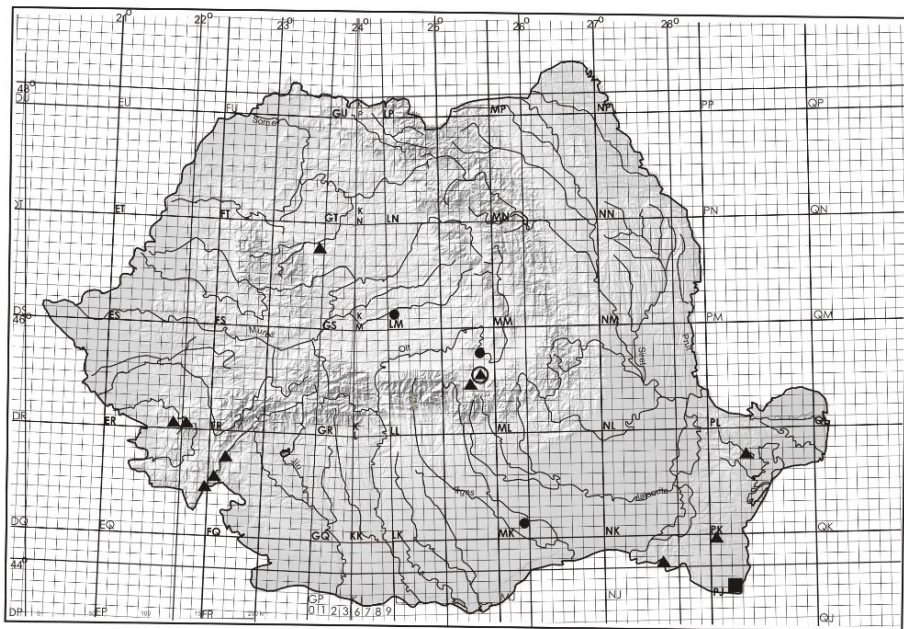
The species was found, as imago stage, under the bark, in rotten wood, in vernal season (PETRI, 1912).

Subgenus *Pristonychus* Dejean, 1828

Pristonychus terricola terricola (Herbst, 1784)

The nominate subspecies has a wide European range (excepting the Italian and Balkan peninsulas) (CASALE, 2003; AUDISIO, 2017), and has been introduced to North America and India (HŪRKA, 1996).

In the Romanian fauna, the nominate subspecies is even less frequent than *P. terricola punctatus* (Dejean, 1828). It was recorded (as *Laemostenus terricola* Hbst.) in the last century, from București (MK 21) (FLECK, 1904), Sibiu (KL 77), Biertan (LM 01) (Sibiu County), Brașov (LL 85), Satu Lung (FS 99), Crizbav (LL 87) (PETRI, 1912).



● *Laemostenus terricola terricola* ▲ *Laemostenus terricola punctatus* ⊙ both ssp.
■ *Laemostenus euxinicus*

Fig. 4. Distribution of *Laemostenus terricola terricola*, *L. terricola punctatus* and *L. euxinicus* in Romania.

Pristonychus terricola punctatus (Dejean, 1828)

This subspecies has a Central-East European range, recorded for Slovakia, Hungary, Serbia, Bosnia and Herzegovina, Macedonia, Albania, Romania and Bulgaria.

In the Romanian fauna it was recorded from Murfatlar (PJ 09) (in April) (HURMUZACHI, 1904), Sighișoara (LM 21) (under the old name Schassburg), Brașov (LL 85) (Kronstadt), Râșnov (LL 74) (Rosenau) (Petri, 1912), Cluj (FS 97) (TEODOREANU, 1961), Ieșelnița (FQ 05) (IENIȘTEA, 1975) (as *Aechmites punctatus* Dej.), Limanu (PJ 24), Canaraua Fetei (NJ 57), Babadag (PK 37) October, 1975, leg. N. Săvulescu, det. E. Nitzu (NITZU, 2001), Cave Gura Ponicevei (EQ 94) (DECOU, 1964; NITZU, 2021), Cave Comarnic (ER 70) (DECOU, 1964) Cave Șoimuș (P. de sub Șoim) (FQ 17), Cave Peștera cu Apă de la Gârliștei (ER 60) (NITZU, 2022) (Fig. 4).

NOTE: According to CASALE (1988), ASSMANN (2004), both taxa “*terricola*” and “*punctatus*” are treated as conspecific subspecies (*P. terricola terricola* and *P. terricola punctatus*). According to HŪRKA (1996), AUDISIO (2017) – in *Fauna Europaea* (accessed September 2023) these taxa are considered as different species, following JEANNEL (1937), CSICKI (1946), FREUDE (1976).

Pristonychus euxinicus Nitzu, 1998

An endemic species for Dobrogea. Described by NITZU (1998) for the Romanian Dobrogea – Movile karst area nearby Mangalia (PJ 25), after specimens sampled only in the subterranean superficial habitat, also named Mesovoid Shallow Substratum (MSS) (NITZU et AL., 2010) (Fig. 4). The species was recently recorded for the Bulgarian Dobrogea (CHEHLAROV et AL., 2016; TEOFILOVA et AL., 2020).

GUÉORGUIEV (2003) mentioned that he examined two male specimens of *L.(P.) euxinicus* from Romania (Limanu Cave and Hagieni), but not the type specimens (holotype preserved in the scientific collection of the “Gr. Antipa” National Museum of Natural History). From the Limanu Cave and Hagieni, we have so far sampled and identified only specimens of *L. (Pristonychus) terricola punctatus* (Dej.) (NITZU, 2001).

NOTE: In the quoted article, GUÉORGUIEV (2003) mentioned as an available external diagnostic character for this taxon “the presence of accessory pubescence at the distal end of the anterior margin of the protibia, omitted by Nitzu”. In reality, NITZU (1998) did not refer to the chaetotaxy of the protibia because it does not provide clear/consistent differential diagnostic characters between *L. (P.) euxinicus*, *L. (P.) terricola punctatus* (the only species known from the Dobrogean area until then), and other related species of *Pristonychus* (see CASALE, 1988). The front tibia of *L. (P.) euxinicus* and *L. (P.) terricola*

punctatus are presented in Fig. 5. The major differential characters between *L. (P.) euxinicus* and other species were presented by NITZU (1998) in the original description. Referring to the pubescence of the distal part of the anterior margin of protibia, CASALE (1988) mentioned for general morphology of *Sphodrina* (p. 57–58): “Le protibie, oltre a due serie di brevi spine sul lato posteriore e interno, possono essere quasi glabre, o presenare una fina pubescenza sul lato anteriore nella regione distale; di questa pubescenza si trova traccia in *Taphoxenus* e generi affini sotto forma di alcuni pori isolati o vagamente allineati, talora estetsi in tutta la meta distale della protibia” – (*The protibia, in addition to two series of short spines on the posterior and inner side, may be almost glabrous, or have a fine pubescence on the anterior side in the distal region; Traces of this pubescence are found in Taphoxenus and related genera in the form of isolated or loosely aligned pores, sometimes extending into the distal half of the protibia*). We have no information that the “pubescence” of the “anterior margin” of the front tibia (quoting GUEORGUIEV, 2003) was ever mentioned as a differential taxonomic character between *Pristonychus* species in previous taxonomic works (JEANNEL, 1937; CASALE, 1988; ASSMANN, 2004; PUTCHOV AND ALEKSANROWICZ, 2020), to be used in future taxonomic comparisons. Moreover, among the investigated specimens of *L. (P.) terricola* from Romania, we observed specimens without trace of accessory pubescence at the distal end of the anterior margin of the protibia (site Sic-Pastaraia in Transylvania), or with discrete pubescence (in Banat) or with obvious pubescence at the distal end of the anterior margin of the protibia (Babadag – Central Dobrogea). It is worth noting that chaetotaxy and profemora conformation, and others, such as straight *versus* curved meso-tibia (in both sexes), morphology of aedeagus, have been considered diagnostic characters between *Pristonychus* species by other specialists, some of them mentioned above. Unfortunately, in the description of *Laemosteus (P.) stoevi*, Gueorguiev (2003), briefly mentioned that, for this species, the posterior ventral margins of the profemora show three or four setae (as we observed for *L. (P.) euxinicus* Nitzu, 1998 in the original description), but GUEORGUIEV (2003) did not provide a drawing / photo of this important morphological character illustrated in the most prominent revisions quoted above. Moreover, it is not clear from Gueorguiev’s original description of *L. (P.) stoevi* whether the posterior carina (margin) of the profemora is smooth (without any trace of tubercles), or has small, inconspicuous tubercles, as far as in which the author only mentioned “smooth (absent obvious tubercles)” (GUEORGUIEV, 2003). A figure of the profemora of *L. (P.) stoevi* would be very helpful for comparison with *P. euxinicus*, for which NITZU (1998) noted, and clearly figured “Posterior carina of profemora with 3 setae alternating with 3 small, less obvious tubercles”. The differences between the head shape – (also commented by GUEORGHIEV, 2003) of *L. (P.) euxinicus* and *L. (P.) terricola punctatus* are given in Fig. 6.



Fig. 5. The front tibia of *Laemostenus (Pristonychus) euxinicus* Nitzu (paratypus – Obanul Mare, Mangalia) (A) and *Laemostenus (Prystonichs) terricola punctatus* (Canaraua Fetei) (B).

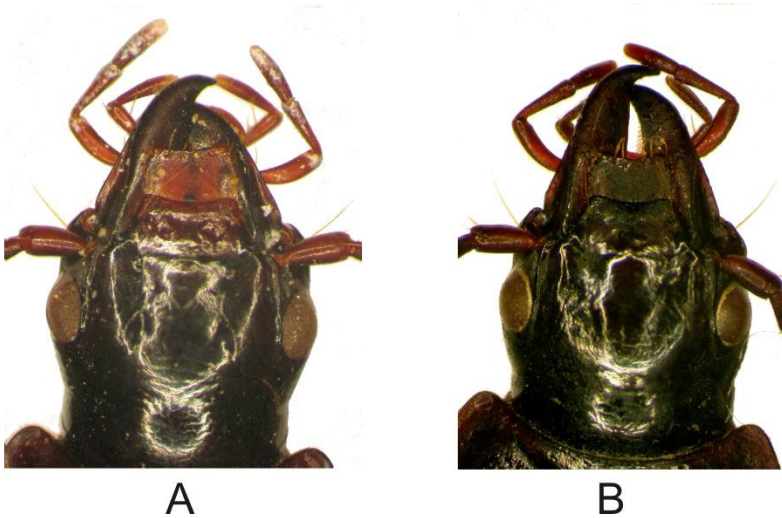


Fig. 6. The head of *Laemostenus (Pristonychus) euxinicus* Nitzu paratypus – Obanul Mare, Mangalia) (A) and *Laemostenus (Prystonichs) terricola punctatus* (Canaraua Fetei) (B).

**Pristonychus capitatus* (Chaudoir, 1854).

This species was originally recorded by MONTANDON (1908) for Mangalia (PJ 25). Based on this record, NEGRU and ROȘCA (1967) again mentioned this species for Dobrogea, citing MONTANDON (1908). No specimens of *L. (P.) capitatus* from Romania are preserved in the scientific collections.

L. (P.) capitatus (Chaud.) is known up to present only from Turkey (CASALE, 1988; CASALE, 2003) and should be considered as erroneously recorded for the Romanian fauna.

4. CONCLUSIONS

The presence of *Taphoxenus gigas* (Fischer von Waldheim, 1823) is certain in the Romanian fauna. *L. janthinus coeruleus* (DEJEAN, 1828) and *L. capitatus* (CHAUDOIR, 1854) should be considered as erroneously recorded for the Romanian fauna. The presence of *Laemostenus janthinus* Duftschmid, 1812 in Romania must be confirmed. Examining the type specimens of *L. euxinicus* in comparison with those of *L. terricola*, we have shown that there are no significant species-specific characters of the chaetotaxy of the front tibia (pro-tibia) between these taxa (with reference to Gueorguiev's adjacent note to the description of *L. (P.) stoevi* Gueorguiev). The old and unique record of *L. (P.) capitatus* (CHAUDOIR, 1854) for the Romanian fauna (Dobrogea) is considered erroneous.

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