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A revision of the genus *Luzea* (Coleoptera, Staphylinidae, Paederinae)

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Abstract

The genus *Luzea* Blackwelder, 1912 of the subtribe Medonina is revised. Eight species are recognised, among them *L. shavrini* sp. n. from Iran and *L. schuelkei* sp. n. from Yemen. The distribution of the genus is confined to the Western Palaearctic region and Middle Asia. (Re-)descriptions or diagnoses and illustrations of the external and male sexual characters of all species are provided. The following synonymies are proposed: *Luzea nigritula* (Erichson, 1840) = *L. marocana* Coiffait 1985, syn. n.; *L. infirma* (Erichson, 1840) = *L. caucasica* (Luze, 1912), syn. n., = *L. vulpina* (Koch, 1938), syn. n., = *L. deserticola* Coiffait, 1984, syn. n. *Luzea rossica* (Bernhauer, 1908) and *L. graeca* (Kraatz, 1857) are revalidated. Lectotypes are designated for *Lithocharis nigritula* Erichson, 1840 and *Medon vulpinus* Koch, 1938. A key to species and a catalogue are provided. The distributions of the genus as a whole and of the individual species are mapped. Numerous new country records are reported.

Introduction and taxonomic history

Luze (1912) described the subgenus *Micromedon* as a subgenus of *Medon* Stephens, 1833 to accommodate the type species by monotypy, *Medon caucasicus* Luze, 1912. This subgenus was listed neither by Bernhauer & Schubert (1912) nor by Scheerpeltz (1933). Blackwelder (1952) recognised the homonymy of *Micromedon* Luze with *Micromedon* Casey, 1905 and replaced the former with the new name *Luzea*.

Coiffait (1961a) elevated several previous subgenera of *Medon*, among them *Luzea*, to generic rank. In the same year, he provided a key to the four *Luzea* species known to him at the time (*L. nigritula* (Erichson), *L. graeca* (Kraatz), *L. caucasica* (Luze), *L. vulpina* (Koch)), stating that the genus was closely allied to *Pseudomedon* Mulsant & Rey, 1878, but distinguished by the narrower gula and particularly by the characteristic morphology of the aedeagus (Coiffait 1961b).

Based on a study of type material, Bordoni (1980) transferred *Medon lutrellus* Fauvel to *Luzea*. In an updated key, Coiffait (1984) recognised seven species, including the five species previously attributed to *Luzea*, one species, *L. rossica* (Bernhauer), transferred from *Medon* and one new species, *L. deserticola*. He listed *Luzea cephalica* (Eppelsheim), which had previously been treated as a synonym of *L. nigritula*, as a variety of *L. nigritula*. Remarkably, he did not consider – or accept – the placement of *Scopaeus infirmus* Erichson in *Luzea*, which was proposed by Jarrige (1960). An additional new species, *L. marocana*, was described by Coiffait (1985).

Gusarov (1995) examined the type material of several *Luzea* species, synonymised *L. deserticola* with *L. caucasica*, and *L. rossica* with *L. cephalica*, and treated the latter as a distinct species.

Based on an examination of the type material of *Scopaeus infirmus*, Frisch (1999) found that Jarrige's (1960) interpretation of this species was correct and moved it to *Luzea*.

In the recent Palearctic Catalogue, Smetana (2004) listed eight valid species and twelve synonyms. Since then, only

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two taxonomic changes have been proposed: Assing (2006) synonymised *L. graeca* with *L. nigritula*, and Assing (2008a) added another synonym of *L. nigritula* from *Hypomedon*, so that, prior to the present revision, the genus included seven valid species and fourteen synonyms.

The present revision was originally initiated by material of an unidentified species from Ukraine forwarded to me by Andrej Gontarenko. An examination of these specimens revealed that they were conspecific neither with material previously identified as *L. caucasica* nor with any other of the valid species. In order to clarify the identity of the Ukrainian material, the types of all the valid names and relevant synonyms were revised.

Material and methods

The material referred to in this study is deposited in the following public institutions and private collections:

BMNH	The Natural History Museum, London (R. Booth)
HNHM	Hungarian Natural History Museum, Budapest (Gy. Makranczy)
MHNG	Muséum d'Histoire naturelle Genève (G. Cuccodoro)
MNHNP	Muséum national d'Histoire naturelle, Paris (A. Taghavian)
MNHUB	Museum für Naturkunde der Humboldt-Universität Berlin (J. Frisch, J. Willers)
NHMB	Naturhistorisches Museum Basel (M. Brancucci, I. Zürcher-Pfander)
NHMW	Naturhistorisches Museum Wien (H. Schillhammer)
SDEI	Deutsches Entomologisches Institut, Müncheberg (L. Behne, L. Zerche)
cAss	author's private collection
cFel	private collection Benedikt Feldmann, Münster
cGon	private collection Andrej Gontarenko, Odessa
cKas	private collection Vitaly Kastcheev, Almaty
cRen	private collection Klaus Renner, Bielefeld
cSch	private collection Michael Schülke, Berlin
cSta	private collection Werner Starke, Warendorf
cWun	private collection Paul Wunderle, Mönchengladbach

The morphological studies were carried out using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). For the photographs a digital camera (Nikon Coolpix 995) was used.

Head length was measured from the anterior margin of the clypeus to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra.

The maps were generated using the online generic mapping tool (GMT) of the Geomar website at www.aquarius.ifm-geomar.de/omc.

Luzea Blackwelder, 1952

Luzea Blackwelder, 1952: 228; replacement name [for *Micromedon* Luze, 1912]; type species: *Medon caucasicus* Luze, 1912.
Micromedon Luze, 1912: 396; preoccupied by *Micromedon* Casey, 1905 [today a synonym of *Sunius* Stephens, 1829]
Stictomedon Scheerpeltz, 1968: 51; nomen nudum.

Diagnosis. Habitus and morphology of head, including mouthparts, similar to those of *Pseudomedon* and *Sunius*. Gular sutures narrowly separated. For illustrations of the mouthparts see Coiffait (1984).

Small species, body length 2.5–4.2 mm. Coloration variable, yellowish to blackish. Punctation of forebody highly variable, extremely fine and dense to moderately coarse and moderately sparse. Length of elytra and hind wings often di- or polymorphic. Protarsi not dilated. Metatarsomere I longer than II, but shorter than the combined length of II and III.

♂: sternite VII not distinctly modified; posterior margin of sternite VIII broadly, weakly to moderately concave (e.g., Figs 6, 16), not triangularly excised in the middle; aedeagus of characteristic, derived morphology: basal part weakly sclerotised; ventral process rather stout at base, gradually tapering apicad, distinctly curved to almost angled in lateral view; internal sac with pair of massive, strongly sclerotised, somewhat ear-shaped latero-apical structures distinctly projecting beyond apex of ventral process, these latero-apical structures usually somewhat concealing apex of ventral process in lateral view (e.g., Figs 7–9, 17–19) and distinctly projecting on either side of ventral process in ventral view (Fig. 45); internal sace with additional membranous subapical structures.

Comparative notes. The species with a distinctly punctured head and pronotum are most similar to species of the genus *Sunius*, those with a very fine and dense punctation of the forebody are extremely similar to species of the genus *Pseudomedon*. From both genera, *Luzea* is reliably separated only by the characteristic morphology of the aedeagus, particularly the shape of the ventral process (see above) and the conspicuous latero-apical structures of the internal sac, from *Sunius* and some *Pseudomedon* species additionally by the broadly concave posterior margin of the male sternite VIII. Characters distinguishing females of *Luzea* on the generic level from *Sunius* and *Pseudomedon*, respectively, were not found. Based on the derived morphology of the aedeagus, undoubtedly a synapomorphy, there is no doubt that the species currently attributed to *Luzea* form a monophylum. Whether or not this taxon represents a distinct genus, however, can only be clarified in the context of a phylogenetic analysis of the subtribe Medonina.

Identification. Owing to weakly pronounced character divergence in some species pairs or species groups, some character overlap, as well as often pronounced intraspecific variation of external characters such as coloration, body size, eye size, wing length, punctation, and microsculpture, a reliable identification is sometimes possible only based on the male sexual characters. This particularly applies to the two most common species of the genus, *L. nigritula* and *L. graeca*. In order to assess the shape of the ventral process of the aedeagus, microscopic preparation and examination under a compound microscope are in these cases required.

Diversity, distribution and bionomics. Based on a study of types and additional material from numerous local-

ities, eight species are recognised. Thus, *Luzea* is much less speciose than the medonine genera *Medon* Stephens, 1833 (57 species and subspecies in the Western Palaearctic region) (Assing 2007, 2009b) and *Sunius* Stephens, 1829 (99 species and subspecies in the Western Palaearctic region) (Assing 2008c), and comprises a similar number of species as *Pseudomedon*, which is represented in the Western Palaearctic by ten species (Assing 2008b, 2009a).

The known distribution of *Luzea* is confined to the Western Palaearctic region, including the northern parts of the Sahara, the Arabian Peninsula, and Middle Asia (Fig. 1). However, in view of the similarity of some *Luzea* species with *Pseudomedon*, as well as the general distribution of *Luzea*, the possibility that some of the nine *Pseudomedon* species described from the Afrotropical region in fact refer to *Luzea* cannot be ruled out. At least three species are widespread, one of them from Algeria to eastern Kazakhstan. Five species have been reported from only few localities (*L. lutrella*, *L. rossica*, *L. cephalica*, *L. schuelkei*, *L. shavrini*), but their actual ranges require further clarification.

Little is known about the ecological requirements of *Luzea* species. The two most common species are usually found in unforested habitats (pastures, meadows, fallows, arable land, river banks, lakeshores, etc.), mostly at lower and intermediate elevations. They are collected in greater numbers especially when the soil is wet (after floods, heavy rain, spring run-off), suggesting that their usual reproduction habitat is subterranean. At least two species, *L. infirma* and *L. schuelkei*, are distributed also in semi-arid regions.

All *Luzea* species appear to be capable of flight, though this may not be true of the brachypterous morph of species such as *L. nigritula*. Flying specimens are apparently attracted to light.

The species of *Luzea*

In view of the similarity of most external characters, a detailed redescription is provided only for the type species, *L. nigritula*. The diagnoses of the remaining species focus on distinguishing characters.

Luzea nigritula (Erichson, 1840)

Figures 2–11

Lithocharis nigritula Erichson, 1840: 625.
Lithocharis minuta Lucas, 1846: 119; synonymy by Fauvel (1869).
Lithocharis castanoptera Kraatz, 1857: 716 f.; synonymy by Ganglbauer (1895).
Lithocharis sicula Kraatz, 1857: 716 f.; synonymy by Fauvel (1873).
Lithocharis maura Wollaston, 1864: 588; listed as synonym by Smetana (2004).
Lithocharis macropepla Kraatz, 1889: 220; synonymy by Ragusa (1891).
Hypomedon puncticeps Coiffait, 1971: 174; synonymy by Assing (2008a).
Luzea marocana Coiffait, 1985: 315; **syn. n.**

Type material examined. H. puncticeps: see Assing (2008a).

L. nigritula: Lectotype ♂ [dissected prior to present study], present designation: "6388 / nigritula Er., Sicil. Helf. / Zool. Mus. Berlin / Lectotypus ♂ *Lithocharis nigritula* Erichson, desig. V. Assing 2009 / Luzea nigritula (Erichson), det. V. Assing 2009" (MNHUB). Paralectotypes: 4 ♀♀: "Sicilia Helf, Nr. 6388 / Zool. Mus. Berlin" (MNHUB).

L. castanoptera: Lectotype ♀: "Bavar. / Waltl / castanoptera mihi / Holotypus / coll. Kraatz / coll. DEI Eberswalde / coll. DEI Müncheberg / Holotypus Lithocharis castanoptera Kraatz, V. Gusarov rev. 1996 / Luzea nigritula (Er.) ♀, V. I. Gusarov det. 1996 / Lectotypus ♀ Lithocharis castanoptera Kraatz, rev. V. Assing 2009 / Luzea nigritula (Erichson), det. V. Assing 2009" (SDEI).

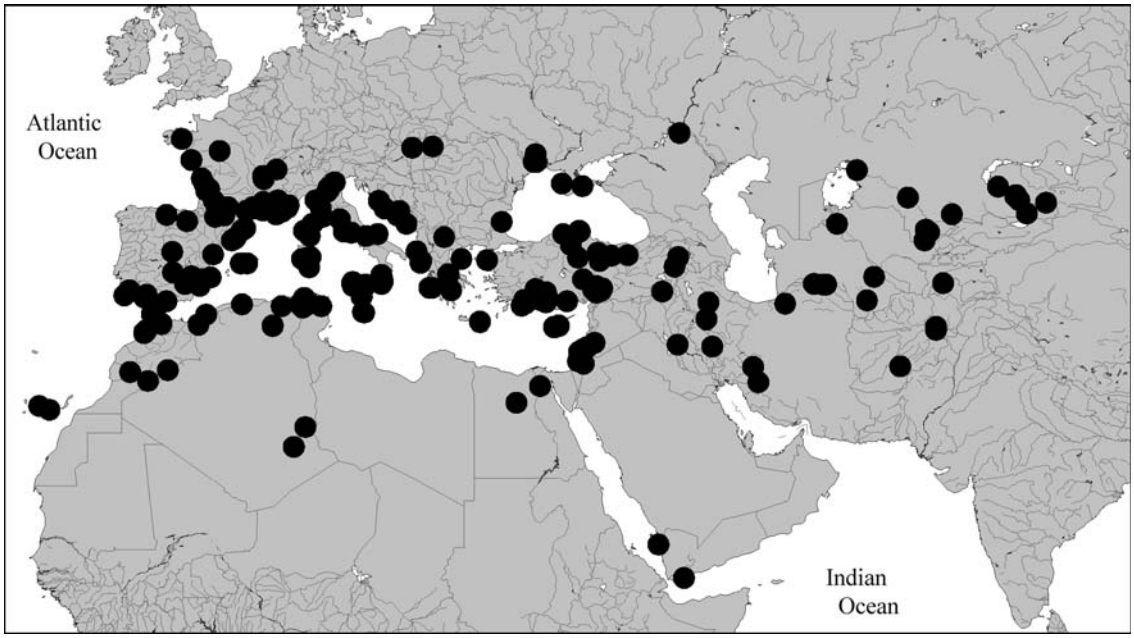


Figure 1. Distribution of *Luzea* in the Western Palaearctic region and Middle Asia (all records pooled).

L. sicula: Lectotype ♀ [considerably damaged: legs and one antenna missing, one antenna glued on the label separately]: "Sicilia / Holotypus / sicula mihi, Sicil., Grohm. / coll. Kraatz / coll. DEI Müncheberg / Lectotypus ♀ Lithocharis castanoptera Kraatz, rev. V. Assing 2009 / Luzea nigritula (Erichson), det. V. Assing 2009" (SDEI).

L. marocana: Holotype ♂ [slightly teneral]: "Maroc, Kenitra, M. S. [?] / Type / Luzea marocana, H. Coiffait det. 1984 / Luzea nigritula (Erichson), det. V. Assing 2009" (MNHNP).

Comment. Lithocharis nigritula was described from an unspecified number of syntypes from "Sicilia, Dom. Dr. Helfer" (Erichson 1840). Five syntypes, a male and four females, were located in the historical collection of the MNHUB; the male is designated as the lectotype.

The original description of *Lithocharis castanoptera* is based on an unspecified number of syntypes from "Baiern" collected by "H. Dr. Waltl" (Kraatz 1857), that of *L. sicula* on an unspecified number of syntypes from "Sicilien von Herrn Grohmann mitgetheilt" (Kraatz 1857). One female syntype of *L. castanoptera* and one of *L. sicula* are deposited in the Kraatz collection at the DEI. In using the term "Holotypus" for these specimens in a type catalogue, Gaedike (1981) unintentionally designated them as lectotypes. The holotype labels attached to them are of no taxonomic significance.

According to Zerche (pers. comm.), the type material of *Lithocharis macropepla* Kraatz could not be found. However, based on the original description and the type locality (Sicily) of this name, as well as those of *L. minuta* Lucas (described from Algeria), there is little doubt that the previously established synonymies are correct. The same is true of *Lithocharis maura*, which was conditionally described by Wollaston (1864), who states that he had "little doubt that this small *Lithocharis* is conspecific with Erichson's *L. nigritula* from Sicily" and "If, however, it should prove hereafter to be distinct, I would then propose for it the trivial name *maura*". In a work published only one year later, Wollaston (1865) does not even mention the name *maura*, but refers the two syntypes to a "very distinct *Lithocharis*, which (...) I have little doubt is conspecific with Erichson's *L. nigritula* from Sicily".

The original description of *L. marocana* is based on a male holotype from "Maroc environs de Kenitra" deposited in the Coiffait collection at the MNHNP and a paratype of unspecified sex from "Rabat, estuaire, 1-7-1983" deposited in "collection Gautier" (Coiffait 1985). An examination of the somewhat teneral holotype revealed that it is conspecific with *L. nigritula*; for an illustration of the aedeagus of the holotype of *L. marocana* see Figure 10.

Additional material examined

Tunisia: 1 ex., ca. 20 km WNW Teboursouk, pass, 36°30′ N, 09°10′ E, 700 m, N-slope, pasture with rocks and edge of fields, 26.XII.2004, leg. Assing (cAss); 1 ex., ca. 20 km WNW Teboursouk, pass, 36°30′ N, 09°09′ E, 730 m, N-slope with rocks, grass and moss sifted, 26.XII.2004, leg. Assing (cAss); 5 exs, ca. 15 km N Teboursouk, 36°31′ N, 09°13′ E, 390 m, ruderal pasture and edge of field, under stones, 26.XII.2004, leg. Assing, Wunderle (cAss, cWun); 2 exs, ca. 20 km WNW Teboursouk, pass, 36°30′ N, 09°09′ E, 750 m, N-slope with rocks, litter, grass, and moss sifted, 28.XII.2004, leg. Assing, Wunderle (cAss, cWun); 1 ex., 20 km WNW Teboursouk, pass, 36°30′ N, 09°09′ E, 600 m, edge of field, under stones, 28.XII.2004, leg. Wunderle (cWun); 2 exs, 15 km NW Le Kef, 36°15′ N, 08°34′ E, 410 m, roadside, under stones, 27.XII.2004, leg. Assing, Wunderle (cAss, cWun); 4 exs, 25 km NW Le Kef, SW Touiref, 36°19′ N, 08°31′ E, 830 m, pasture, under stones, 27.XII.2004, leg. Assing (cAss); 8 exs, ca. 30 km E Zaghouan, 36°19′ N, 10°22′ E, 40 m, roadside, under stones, 29.XII.2004, leg. Assing, Wunderle (cAss, cWun); 1 ex., Aïn Sebaa, Tabarka, 17.III.1984, leg. Meybohm (cAss); 1 ex., Tabarka, X.1995, leg. Eichler (cAss); 1 ex., Aïn Draham env., 18.III.1984, leg. Meybohm (cAss); 1 ex., Aïn Draham, 27.–28.III.2003, leg. Lackner (cAss); 1 ex., Aïn Soltane, 23.–26.III.2003, leg. Lackner (cAss).

Algeria: 1 ex., Biskra, XII.1907, leg. Steinbach (cAss); 1 ex., Biskra, leg. Steinbach (MNHUB); 3 exs, St.-Charles, leg. Théry (NHMW, cAss, cSch); 1 ex., Constantine (MNHUB); 3 exs, Mlilia (MHNG); 2 exs, Blida (MHNG); 1 ex., locality not specified (NHMW).

Morocco: 1 ex., Rif, 8 km S Chefchaouen, Derdara, 35°06′ N, 5°17′ W, 400, pasture, 29.II.2004, leg. Aßmann (cAss); 1 ex., Rif, Chefchaouen, 15 km SW Zinat, Tleta-des-Beni-Ydar-Cherki, 570 m, arable land, 14.II.2003, leg. Wrase (cAss); 1 ex., Rif, Bab-Berret [34°59′ N, 4°55′ W], 1250 m, 1.IV.1999, leg. Lackner (cAss); 1 ex., Haute Atlas, Imlil [31°08′ N, 7°55′ W], 1600 m, 28.III.1999, leg. Lackner (cAss); 4 exs, Tanger, leg. Quedenfeldt, Rolph (MNHUB, SDEI); 1 ex., "Marocco", leg. Quedenfeldt (NHMW); 1 ex., Oued Tiflet, 27.XII., leg. Comellini (MHNG); 1 ex., Msila (MHNG).

Portugal: 1 ex., Algarve, Praia de Faro, 37°32′ N, 7°59′ W, 5 m, 26.III.2002, leg. Meybohm (cAss); 1 ex., Algarve, 2.5 km WNW Silves, Odelouca river, 30.IV.1998, leg. Hieke & Wendt (cAss).

Spain: Cantabria: 1 ex., W Reinosa, Pico de Tres Mares, Alto Campóo, 43°03′ N, 4°24′ W, 20.VI.2006, leg. Starke (cFel). **Cataluña:** 2 exs, Barcelona (SDEI); 1 ex., Prat Barcelona, 12.II.1961, leg. Comellini (MHNG); 1 ex., El Prat de Llobregat, 14.XII.1952, leg. González (MHNG); 1 ex., same data, but 18.IV.1953 (MHNG); 1 ex., Sitges, 21.X.1922, leg. Liebmann (SDEI); 1 ex., Girona, 27.IV.1985, leg. Siede (cWun); 3 exs, La Escala, Ampusias, 13.VII.1976, leg. Grimm (MNHUB). **Navarra:** 3 exs, Sierra de Cantabria, ca. 25 km NNW Logroño, 42°36′ N, 02°28′ W, 1000 m, N-slope, grass roots, *Alnus* litter, moss, 14.X.2003, leg. Assing, Wunderle (cAss, cWun). **Madrid:** 1 ex., 10 km W Madrid, Boadilla del Monte, Valdepastores, 21./23.I.1998, leg. Wrase (cSch). **Castilla-La Mancha:** 4 exs, Ciudad Real, Pozuelo de Calatrava (NHMW). **Valencia:** 1 ex., Castellón, Villanueva de Alcolea, 7.IX.1971, leg. Senglet (cAss); 1 ex., Alicante, Altea, Riu de Algar, 4.VI.2003, leg. Forcke (cAss); 5 exs, Alicante, Pinoso, Saladar del Rodriguillo, light source, 26.VII.2008, leg. Lencina et al. (cAss); 2 exs, Alicante, Rio Amadorio, 21.III.1978 (MHNG). **Murcia:** 1 ex., Sierra de Carrascoy, 25.III.1959, leg. Besuchet (MHNG). **Andalucía:** 6 exs, Sierra de Segura, SW Santiago d.l.E., 38°03′ N, 2°38′ W, 1430 m, 16.III.2008, leg. Andújar & Assing (cAss); 1 ex., Sevilla, Villamanrique de la Condesa, Vereda los Labrados, 12.XI.2004, leg. Baena (cAss); 1 ex., Algeciras (NHMW); 3 exs, Malaga, 20.XI.1880, leg. Simon (NHMW); 2 exs, Cádiz, 7 km NNW Tarifa, Santuario Nuestra Señora de la Luz, 28.–29.I.1989, leg. Wrase (cSch); 1 ex., Tarifa, IV.1994, leg. Poot (cWun); 2 exs, locality not specified (SDEI); 1 ex., Huelva, Matalascañas (MHNG), IX.–X.1980, leg. Benick (MHNG). **Baleares:** 1 ex. [macropterous], Mallorca, Rabassa (NHMW); 1 ex. [macropterous], E-Mallorca, Son Carrió, at light, VIII.2003, leg. Feldmann (cFel); 3 exs, same data, but VII.2005 (cFel, cAss); 5 exs, same data, but 20.VII.–1.VIII.2006 (cFel); 1 ex., same data, but 4.–17.VII.2009, leg. Feldmann (cFel). **Locality not specified:** 3 exs, "Hispania", "Hispan.", "Spanien", etc. (NHMW).

France: Midi-Pyrénées: 1 ex., Gers, Gimont (NHMW); 4 exs, Gers, leg. Hervé (NHMW, cAss); 1 ex., Ariège, Caumont, XII.1965 (MHNG); 4 exs, Toulouse (NHMW); 1 ex., Hautes-Pyrénées, leg. Pan-

dellé (NHMW). **Aquitaine:** 2 exs, Sos, leg. Bauduer (NHMW); 1 ex., Gironde, Le-Verdon-Sur-Mer, 4.IX.1929, leg. Tempère (MHNG); 1 ex., Gironde, Camarsac, 18.II.1928, leg. Tempère (MHNG); 1 ex., Gironde, Cambes, 27.III.1939, leg. Giraud (MHNG); 1 ex., Gironde, locality illegible, 2.V.1951, leg. Tempère (MHNG); 3 exs, Gironde, Cussac, 30.III.1930, leg. Tempère (MHNG); 3 exs, Bordeaux env., Boutaut, II.1946, leg. Tempère (MHNG); 1 ex., Bordeaux, Brienne, 1925, leg. Tempère (MHNG). **Pays de la Loire:** 1 ex., Vendée, St.-Jean-de Monts, IX.1920 (MHNG). **Brétagne:** 2 exs, locality not specified, leg. Skalitzky (NHMW). **Poitou-Charentes:** 7 exs, Vienne, Morthemer, leg. Mesmin (MNHUB, NHMW, SDEI). **Centre:** 10 exs, Tours, flood, III.1939, leg. Méquignon (MHNG). **Languedoc-Roussillon:** 2 exs, Montpellier (SDEI); 3 exs, Béziers, leg. Puel (MHNG, NHMW); 17 exs, Aigues-Mortes, leg. Perrot (MHNG); 4 exs, Hérault, Lattes, leg. Perrot (MHNG); 1 ex., Palavas-les-Flots, I.1955 (MHNG); 1 ex., Saint-Gilles, leg. Perrot (MHNG). **Rhône-Alpes:** 2 exs, Lyon (SDEI). **Provence:** 4 exs, Hyères (MHNG, MNHUB, SDEI); 1 ex., Salins d'Hyères, 17.VII.1956, leg. Tempère (MHNG); 2 exs, Nice, leg. Bedel (MHNG); 6 exs, Eyguières, leg. Perrot (MHNG); 2 exs, Avignon, leg. Puel (MHNG); 2 exs, St. Tropez, leg. Sainte-Claire Deville (NHMW); 1 ex., Digne, 1.IV.1985, leg. Renner (cRen); 1 ex., Port-St.-Louis-du-Rhône, V.1979 (cWun); 5 exs, Camargue, leg. Puel (MHNG, NHMW, cAss); 9 exs, Camargue, 8.IV.1985, leg. Renner (cRen, cWun); 1 ex., Camargue (MHNG); 1 ex., Fréjus (MNHUB); 1 ex., Var, Argens river, flood, 26.III.1956 (MHNG); 1 ex., Siagne river, III.1939 (MHNG); 1 ex., same data, but IV.1956 (MHNG); 1 ex., La Garde, IV.1957 (MHNG); 3 exs, Antibes (MHNG); 4 exs, Saint-Aygulf, III.1951 (MHNG). **Corse:** 3 exs, Ajaccio, leg. Guglielmi, Schneider (MNHUB, SDEI, cSch); 2 exs, Folelli, 1905 (SDEI); 1 ex., Porto Vecchio (NHMW); 3 exs, locality not specified (NHMW, SDEI). **Locality not specified:** 5 exs, "Gall. mer.", "Gallia", etc. (MNHUB, NHMW, SDEI).

Switzerland: 1 ex., Genève, Lancy, 21.VI. (MHNG).

Italy: Liguria: 1 ex., La Spezia (NHMW). **Veneto:** 2 exs, Colli Euganei [ca. 45°19′ N, 11°40′ E], 16.–19.IV.1921, leg. Moczarski & Scheerpeltz (NHMW). **Emilia-Romagna:** 4 exs [2 brachypterous], San Cataldo, 9.IV.1895, leg. Fiori (MNHUB); 1 ex., San Felice sul Panaro, 6.II.1894, leg. Fiori (MNHUB); 1 ex., Tramuschio, 6.IV.1912, leg. Fiori (MHNG). **Umbria:** 3 exs, Perugia, Orvieto-Prodo, 350–500 m, car-net, 2.VI.2000, leg. Wunderle (cWun). **Toscana:** 7 exs, Piombino (MHNG, NHMW); 1 ex., Livorno, 18.XI.1886 (SDEI); 2 exs, Piombino (NHMW); 2 exs, locality not specified (MNHUB). **Lazio:** 2 exs, Fiuggi (FR), Lago di Canterno, 8.V.1998, leg. Angelini (cAss); 2 exs, Roma env., leg. Luigioni (MNHUB); 1 ex., locality illegible, II.1902, leg. Fiori (MNHUB); 2 exs, locality not specified (NHMW). **Molise:** 2 exs, Campobasso, 1900, leg. Fiori (MNHUB). **Puglia:** 1 ex., San Giovanni Gargano, leg. Holdhaus (NHMW). **Calabria:** 35 exs, Antonimina, leg. Paganetti (MNHUB, NHMW, SDEI, cAss); 17 exs, Cimina, leg. Paganetti (MNHUB, NHMW, SDEI, cAss); 2 exs, Gerace, leg. Paganetti (MNHUB); 2 exs, Africo Nuovo, 17.XI.1993 (cAss). **Sardegna:** 2 exs, 10 km SE Fonni, Gennargentu, bank gravel, 5.X.1989, leg. Wunderle (cAss, cWun); 1 ex., Matacalagonis, 20.I.1985, leg. Leo (cAss); 27 exs, Asuni, leg. Krausse (MNHUB, NHMW, SDEI, cAss); 1 ex., Sorgono, leg. Krausse (SDEI); 1 ex., Cabras, 23.V.1890, leg. Fiori (MNHUB); 2 exs [macropterous], Oristano, leg. Lostia (MHNG). **Sicilia:** 5 exs, Monte Pellegrino, 20.XI., leg. Füge (NHMW); 4 exs, same locality, 8.IV.1906, leg. Leonhard (SDEI); 2 exs, same locality, 20.XI., leg. Füge (NHMW); 6 exs, Nebrodi, 25 km NW Cesaro, 37°56′ N, 14°38′ E, 1300 m, grassy beech forest clearing, under stones, 25.XII.2007, leg. Assing & Wunderle (cAss, cWun); 9 exs, Nebrodi, 2 km S San Fratello, 38°00′ N, 14°36′ E, 750 m, ruderal meadow, under stones, 25.XII.2007, leg. Assing & Wunderle (cAss, cWun); 4 exs, Nebrodi, 7 km ESE San Fratello, 37°57′ N, 14°37′ E, 1120 m, pig pasture, under stones, 25.XII.2007, leg. Assing & Wunderle (cAss, cWun); 1 ex., Madonia, 7 km NW Petralia, 37°52′ N, 14°03′ E, 1410 m, grassy slope, under stones, 27.XII.2007, leg. Assing (cAss); 1 ex., Gela (CL), 6.VI.1993, leg. Angelini (cAss); 2 exs, San Luca, Ponte S. Venere, 16.XI.1993, leg. Angelini (cAss); 8 exs, Palermo, leg. Rottenberg, Studt (MNHUB, SDEI); 1 ex., Palermo, IV.1893, leg. Escherich (NHMW); 4 exs, Palermo (SDEI); 2 exs, Ficuzza, 1906, leg. Leonhard (NHMW); 2 exs, Ficuzza, 16.III.1942 (NHMW); 4 exs, Ficuzza (MHNG, MNHUB, NHMW); 27 exs, locality not specified (MNHUB, NHMW, SDEI). **Locality not specified:** 4 exs, "Italia", "Italien", etc. (MNHUB, SDEI).

Malta: 4 exs, W-Malta, Bongiemma, 235 m, 4.IV.1993, leg. Sprick (cAss); 1 ex., Hagar Kim, 22.X.1989, leg. Mifsud (cAss).

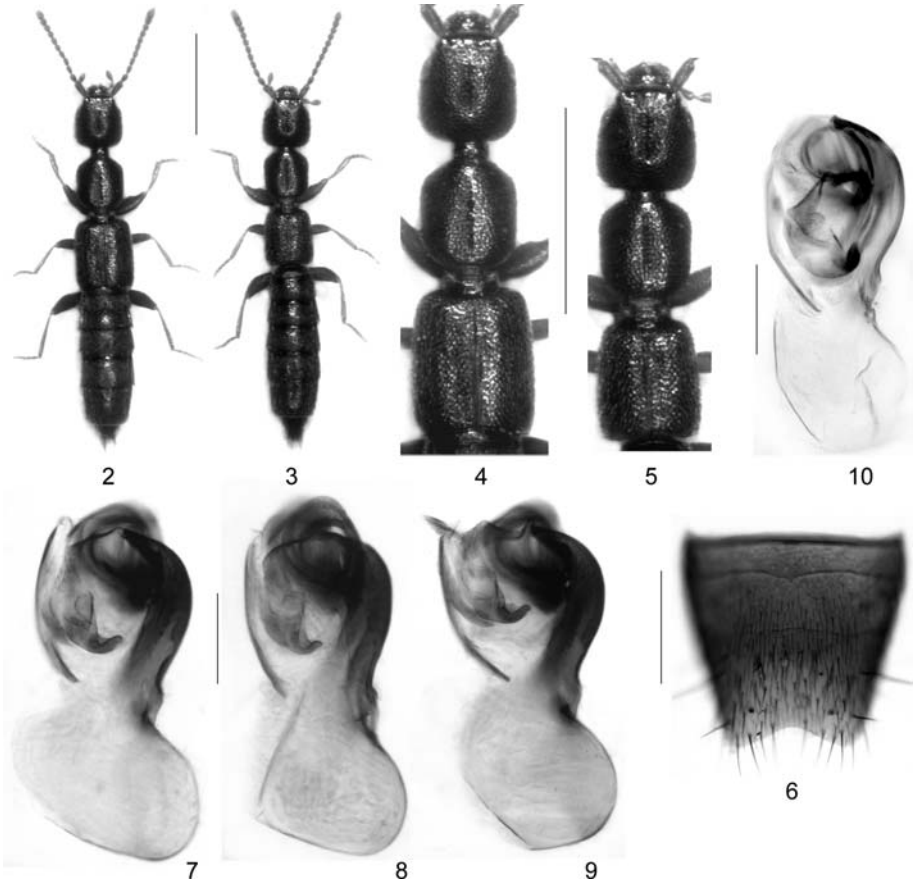
Locality not specified or illegible: 18 exs (MHNG, MNHUB, NHMW, SDEI). **Locality probably erroneous:** 1 ex., "Schlesien" (MNHUB); 4 exs, "Austria" (MNHUB); 2 exs, "Berlin" (MNHUB); 2 exs, "Moravia", leg. Fleischer (MHNG, cAss).

Redescription. Body length 3.0–4.0 mm. Habitus as in Figs 2–3; for a colour image see Tronquet (2006). Coloration: body usually uniformly blackish-brown to black; occasionally with suture or larger parts of elytra reddish or brownish; legs dark brown with paler tarsi; antennae pale brown, with antennomere I often more or less distinctly infuscate.

Head (Figs 4–5) of variable shape, 1.0–1.15 times as long as wide, lateral margins behind eyes usually subparallel and almost straight, more rarely weakly converging, diverging, and/or weakly convex; punctation somewhat variable, mostly dense and moderately coarse, interstices usually on average narrower than diameter of punctures, usually except for a small shiny median spot with or without sparser punctation; interstices without distinct microsculpture; eyes usually 0.35–0.5 times as long as postocular region in dorsal view. Pronotum approximately 1.1 times as long as broad, weakly tapering posteriad; punctation similar to head, but even denser; interstices usually reduced to narrow ridges, without microsculpture; midline narrowly impunctate and shiny, often except near anterior and posterior margin (Figs 4–5). Elytra of very variable length, in macropterous morph (Figs 2, 4) 1.03–1.15 times, in micropterous morph (Figs 3, 5) 0.90–1.00 times as long as pronotum; punctation rather coarse and dense, but less defined than that of pronotum; interstices usually without distinct microsculpture. Hind wings dimorphic (possibly polymorphic), in macropterous morph fully developed, in micropterous morph of reduced length and less than twice the length of elytra. Abdomen subparallel, widest at segment VI; punctation fine and dense; interstices without apparent microsculpture; posterior margin of tergite VII with palisade fringe, this palisade fringe fully developed in macropterous morph and rudimentary (narrower) in micropterous morph.

♂: sternite VIII with moderately dense pubescence, moderately transverse, posterior margin broadly and distinctly concave (Fig. 6); aedeagus (Figs 7–10) with stout and apically very acute ventral process; internal membranous structure of characteristic shape (visible only when in right position).

Intraspecific variation. External characters such as body size, the density of the punctation of the forebody,



Figures 2–10. *Luzea nigritula* (2, 4, 6–7. Tunisia; 3, 5, 8. Sicily; 9. Morocco; 10. Holotype of *L. marocana*). **2.** Habitus of macropterous morph; **3.** Habitus of brachypterous morph; **4**. Forebody of macropterous morph; **5.** Forebody of brachypterous morph; **6.** Male sternite VIII; **7–10.** Aedeagus in lateral view. Scale bars: 2–5: 1.0 mm; 6: 0.2 mm; 7–10: 0.1 mm.

head shape, eye size, and wing length are subject to considerable variation. The micropterous morph, which was described as *Lithocharis sicula* by Kraatz (1857), is apparently common – and the predominant morph – in some islands (Malta, Sicily, Sardinia) and in Calabria, but is absent or very rare in most mainland populations, as well as in islands such as Mallorca.

Comparative notes. Luzea nigritula is most similar to *L. graeca*, with which it shares the dark coloration, rather coarse punctation of the forebody, the absence of distinct microsculpture on the forebody, as well as the transverse and moderately densely pubescent male sternite VIII, but is distinguished from that species by the denser average punctation of the head and pronotum, the more strongly concave posterior margin of the male sternite VIII, and by the morphology of the aedeagus, particularly by the stouter and apically more acute ventral process and the different shape of the internal membranous structure.

Distribution and bionomics. Luzea nigritula is widespread in the Western Mediterranean (Fig. 11), from the Canary Islands (Tenerife, Gran Canaria), Morocco, and the Iberian Peninsula eastwards to Tunisia, Libya, France, and Italy (Assing 2005, Ciceroni & Zanetti 1995, Horion 1965, Machado & Oromí 2000, Smetana 2004). The only confirmed and plausible record from Central Europe is from the southwest of Switzerland (Genève). The specimens seen from Portugal represent new country records. Gillerfors (1988) collected one specimen from imported pulp wood in the harbour of Varberg, southern Sweden, but, based on the revised distribution, it appears rather unlikely that the species is indigenous in Scandinavia.

The presence of this species in Madeira (Fauvel 1873, Smetana 2004) has not been confirmed (Assing & Schülke 2006). According to Scheerpeltz (1968), *L. nigritula* is distributed in all of Austria, with numerous reference specimens in his collection ("zahlr. Belege in coll. Scheerpeltz") (Horion 1965). However, an examination of all the *Luzea* material in the Scheerpeltz collection did not yield a single specimen from Austria. According to Bohač (1985), the presence of this species in the Czech Republic and in Slovakia has not been confirmed. Similarly, all previous records from Germany (Horion 1965; Köhler & Klausnitzer 1998) have proved erroneous (Köhler 2006). The same is true of previous records from eastern and southeastern Europe, Turkey, and the Middle East. Based on the revised distribution of *L. nigritula*, its presence in eastern and southeastern Central Europe seems most unlikely. If any of the older records should indeed refer to a species of *Luzea*, they are probably based on a confusion with *L. graeca*.

The species is usually found under stones or by sifting litter in unforested habitats such as pastures, meadows, fallows, field margins, road margins, and also on river banks from sea level up to an altitude of 1600 m. On several occasions flying specimens were collected at light sources (July and August) or with car-nets (June). Adult beetles were observed throughout the year, with maxima in late autumn, early winter, and

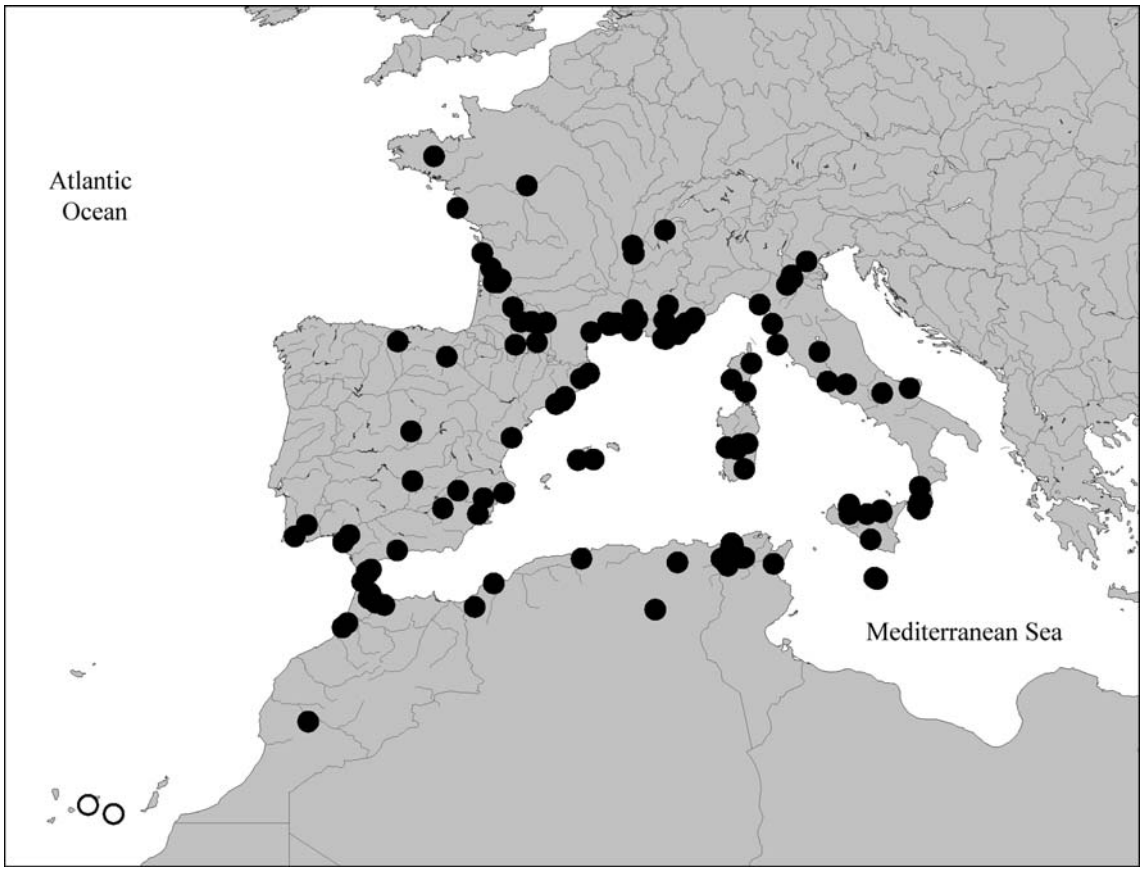


Figure 11. Distribution of *Luzea nigritula* based on examined records (filled circles) and selected literature records (open circles).

spring, and a minimum in summer: January (4 records; 5 specimens), February (7; 9), March (15; 35), April (15; 33), May (4; 5), June (5; 7), July (5; 13), August (1; 1), September (3; 3), October (5; 8), November (7; 16), December (15; 48).

Luzea graeca (Kraatz, 1857), revalidated

Figures 12–20

Lithocharis graeca Kraatz, 1857: 717.

Medon praecursor Iablokoff-Khnzorian, 1961: 142; synonymy by Coiffait (1984).

Type material examined. L. graeca: Syntypes: 1 ♀: "v. Ksw. / Graecia / Syntypus / coll. Kraatz / DEI Eberswalde / Lectotypus ♀ Lithocharis graeca Kraatz, V. Gusarov des. 1993 / Luzea graeca (Kr.) ♀, V.I. Gusarov det. 1993 / coll. DEI Eberswalde / coll. DEI Müncheberg / Syntypus ♀ Lithocharis graeca Kraatz, rev. V. Assing 2009 / Luzea graeca (Kraatz), det. V. Assing 2009" (SDEI). 1 ♀: "Graecia, v. Ksw. / graeca mihi / Syntypus / coll. Kraatz / DEI Eberswalde / Paralectotypus ♀ Lithocharis graeca Kraatz, V. Gusarov des. 1993 / Luzea graeca (Kr.) ♀, V.I. Gusarov det. 1993 / coll. DEI Eberswalde / coll. DEI Müncheberg / Syntypus ♀ Lithocharis graeca Kraatz, rev. V. Assing 2009 / Luzea graeca (Kraatz), det. V. Assing 2009" (SDEI).

Additional material examined

Hungary: 1 ♀, Budapest, Káposztás megyer [ca. 47°34′ N, 19°04′ E] (NHMW); 7 ♀♀, Tiszacsege, 13.VII.2001, leg. Renner (cFel, cRen, cAss).

Croatia: 2 exs, Split (NHMW, cAss); 1 ex., Bjelina (NHMW); 9 exs, "Dalmatia", leg. Kahr, Merkl, etc. (MNHUB, SDEI); 1 ex., locality not specified, leg. Apfelbeck (NHMW).

Bosnia-Herzegovina: 4 exs, Dračevo near Metkovi (NHMW, SDEI); 1 ex., Metkovi, 1879, leg. Reitter (NHMW); 6 exs, Mostar, leg. Zoufal, etc. (NHMW, SDEI); 1 ex., Čapljina, leg. Apfelbeck (NHMW); 1 ex. "Radopolje, Hrz.", leg. Czerny (NHMW).

Montenegro: 5 exs, Herceg-Novi, leg. Paganetti (SDEI); 4 exs, Herceg-Novi, 1910, leg. Hilf (NHMW).

Macedonia: 1 ex., Vardar plain, leg. Schatzmayr (NHMW).

Bulgaria: 1 ex., Pomorie, 25.V.1984, leg. Wrase (cSch).

Albania: 2 exs, Vlorë ["Avlona"], leg. v. Oertzen (MNHUB).

Greece: mainland: 1 ex., Fthiotis, SSE Lamia, Oros Kallidromo, 38°45′ N, 22°28′ E, 940 m, 6.IV.2001, leg. Assing (cAss); 5 exs, Fthiotis, SSE Lamia, Oros Kallidromo, 38°45′ N, 22°30′ E, 990 m, flooded pasture, 7.IV.2001, leg. Assing, Wunderle (cAss, cWun). **Pelopónnisos:** 1 ex., Ahaia, Kalogria, 23.VI.1998, leg. Angelini (cAss); 2 exs, Nauplia (SDEI); 1 ex., Killini Oros, Lake Stimfalia, 500 m, 3.IV.1992, leg. Frisch (MNHUB). **Corfu:** 7 exs, Val de Ropa, leg. Leonhard, Woerz, etc. (NHMW, SDEI); 2 exs, NE-Corfu, Archaravi, 20.–25.X.1991, leg. Katschak (cWun); 10 exs, locality not specified, leg. Reitter (MNHUB, NHMW, cAss). **Crete:** 1 ♀, Lassithi plain, 26.III.1973, leg. Fülscher & Meybohm (MHNG). **Zakinthos:** 8 exs, Kalamaki [37°44′ N, 20°55′ E], 1909, leg. Hilf (MNHUB, NHMW, cAss); 1 ex., Limni Makry, 1936, leg. Hicker (NHMW).

Cyprus: 1 ex., Mamonia, 4.VII.2000, leg. Besuchet (cAss); 5 exs, Vermasogia river, 10.I.1952, leg. Mavromoustakis (NHMW, cAss).

Turkey: Çanakkale: 6 exs, 25 km S Kumkale, Beşik Koyu ["Besika Bay", ca. 39°49′ N, 26°10′ E] (BMNH, cAss). **Sinop:** 1 ex., ca. 22 km S Sinop, N Lala, 41°53′ N, 35°03′ E, 160 m, oak and laurel forest with undergrowth, sifted, 31.III.2009, leg. Assing (cAss); 1 ex., 15 km SW Sinop, S Kılıçlı, 41°57′ N, 35°02′ E, 80 m, grassy road margin, grass between shrubs, sifted, 3.IV.2009, leg. Assing (cAss). **Kastamonu:** 17 exs, 25 km SE Tosya, Domkayatepe geç., 40°56′ N, 34°14′ E, 1600 m, partly flooded loamy meadow and road margin, un-

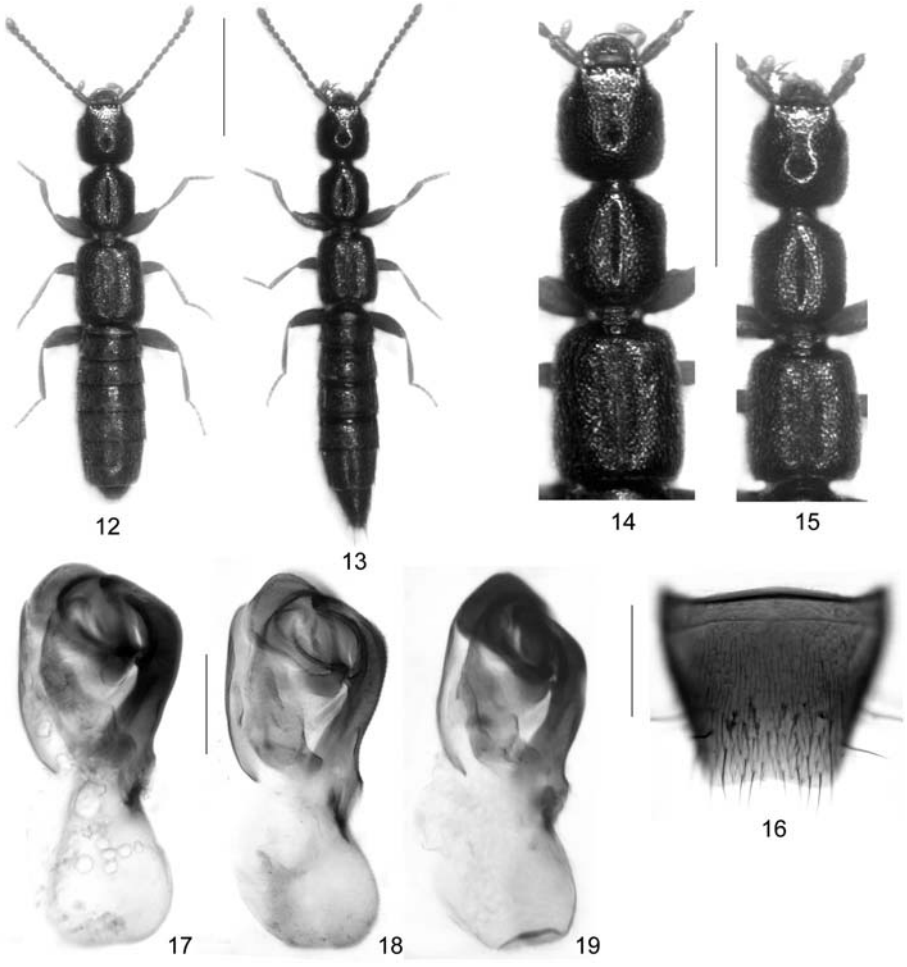
der stones, 6.IV.2009, leg. Assing (cAss); 5 exs, 40 km NW Kastamonu, NE Azdavay, W Yeşilpınar, 41°42′ N, 33°28′ E, 1090 m, flooded field, under stones, 9.IV.2009, leg. Assing (cAss). **Yozgat:** 4 exs, 15 km NE Akdağmadeni, 1200 m, 27.V.1997, leg. Frisch (MNHUB, cAss). **Sivas:** 1 ex., Arpacı env., Suşehri, 800 m, 26.V.1997, leg. Frisch (MNHUB). **Gümüşhane:** 1 ex., Köse, 1650 m, 23.V.1997, leg. Frisch (MNHUB). **Tokat:** 1 ex., 19 km ENE Tokat, 40°22′ N, 36°46′ E, 950 m, stream bank, 16.VII.2008, leg. Assing (cAss). **Antalya:** 2 exs, SW Akyazı, NE Belpınar pass, 36°22′ N, 29°30′ E, 870 m, grassland, 26.III.2002, leg. Assing (cAss); 1 exs, 70 km NE Fethiye, Gülübeli Geçik, 36°50′ N, 29°46′ E, 1525 m, 29.III.2002, leg. Assing (cAss); 1 ex., S Elmalı, Çamkuyusu, 1300 m, 25.IV.2001, leg. Meybohm (cAss); 1 ex., 2 km N Göltarla, 36°34′ N, 29°57′ E, 1070 m, 26.III.2001, leg. Rose (cAss); 8 exs, Manavgat, Kolaklı, 1.–7.I.1991, leg. Wunderle (cWun); 2 exs, Manavgat env., 0–50 m, 5.I.1991, leg. Assing (cAss); 1 ex., Side, 13.III.2000, leg. Esser (cAss); 3 exs, Akseki pass, 12.III.1979 (MHNG). **Isparta:** 1 ex., Kovada Gölü, lakeshore, 37°38′ N, 30°52′ E, 910 m, 15.IV.2008, leg. Brachat & Meybohm (cAss). **Konya:** 1 ex., Bakaran, 1400 m, 7.V.1978, leg. Besuchet (MHNG). **Mersin:** 3 exs, N Silifke, 1 km W Kirobaşı, 36°44′ N, 33°51′ E, 1390 m, 30.IV.2005, leg. Brachat & Meybohm (cAss). **Kahramanmaraş:** 13 exs, ca. 50 km W Kahramanmaraş, 8 km SSE Andırın, Toplar, 37°33′ N, 36°26′ E, 1110 m, on pasture under stones, 19.III.2005, leg. Wunderle, Assing (cAss, cWun); 5 exs, NE Kadirli, Toplar near Andırın, 37°33′ N, 36°26′ E, 1110 m, 30.IV.2005, leg. Brachat & Meybohm (cAss); 5 exs, same data, but 2.V.2005 (cAss); 1 ex., NE Kadirli, 10 km N Andırın, road to Çokak, 37°39′ N, 36°21′ E, 1150 m, 1.V.2005, leg. Brachat & Meybohm (cAss); 1 ex., ca. 60 km W Kahramanmaraş, N Andırın, 37°37′ N, 36°21′ E, 1120 m, bank of stream, flood debris, 26.III.2005, leg. Assing (cAss); 13 exs, ca. 20 km ESE Kahramanmaraş, Elmalar, 37°31′ N, 37°03′ E, 650 m, litter and grass below *Quercus ilex*, 21.&25.III.2005, leg. Wunderle, Assing (cAss, cWun); 3 exs, same data, but 37°32′N, 37°05′E, 820 m, *Quercus ilex* litter (cAss, cWun); 1 ex., Ahır Dağı, 27 km ENE Kahramanmaraş, 37°42′ N, 37°13′ E, 1400 m, N-slope with old cedar and juniper, 11.IV.2004, leg. Assing (cAss); 1 ex., 40 km SSW Kahramanmaraş, W Doluca, 37°23′ N, 36°41′ N, 1040 m, 2.V.2007, leg. Brachat & Meybohm (cAss); 1 ex., Tekir, 1200 m, 4.V.1967, leg. Besuchet (cAss). **Kayseri:** 1 ex., 12 km W Develi, 1000 m, 10.V.1997, leg. Schulz, Vock & Sanetra (cAss). **Hakkâri:** 1 ex., NE Uludere, Tanin-Tanin Geç., 37°28′ N, 42°56′ E, 2100–2200 m, 31.V.–1.VI.1987, leg. Schönmann & Schillhammer (cAss).

Israel: 2 exs, Golan Heights, Bental Reservoir W Merom Golan, 33°08′ N, 35°47′ E, 940 m, stony pasture near shore, 25.III.2008, leg. Aßmann, Wrase (cFel, cAss); 1 ex., Golan Heights, Bental Reservoir near Merom Golan, 1000 m, stony wetland near shore, 30.IV.2006, leg. Wrase (cSch).

Iran: Azarbayjan-e Gharbi: 1 ex., road Maku-Bazargan, 3 km NW Avajiq, 39°21′ N, 44°07′ E, 2170 m, 27.VIII.2008, leg. Frisch & Serri (MNHUB); 1 ex., N Takab, 13 km E Takht-e-Soleyman, 36°36′ N, 47°20′ E, 2450 m, 7.IX.2008, leg. Frisch & Serri (cAss). **Kordestan:** 2 exs, pass 21 km E Sanandaj, 35°20′ N, 47°09′ E, 2100 m, 5.IX.2008, leg. Frisch & Serri (MNHUB). **Esfahan:** 1 ex., 15 km NNE Semirom, 31°32′ N, 51°37′ E, 2650 m, 12.V.2007, leg. Frisch & Serri (cAss). **Fars:** 1 ex., SE Sepidan, W Dalkhon, 30°17′ N, 52°06′ E, 2100 m, 9.V.2007, leg. Frisch & Serri (MNHUB).

Locality not specified: 1 ex., "Hungaria" (MNHUB).

Comment. The original description of *L. graeca* is based on an unspecified number of syntypes from "Griechen-



Figures 12–19. *Luzea graeca* (12, 14. Turkey, Antalya; 13, 15, 16–17. Turkey, Kastamonu; 18. Turkey, Hakkâri; 19. Greece, Fthiotis. **12.** Habitus of macropterous morph; **13.** Habitus of brachypterous morph; **14.** Forebody of macropterous morph; **15.** Forebody of brachypterous morph; **16.** Male sternite VIII; **17–19.** Aedeagus in lateral view. Scale bars: 12–15: 1.0 mm; 16: 0.2 mm; 17–19: 0.1 mm.

land" collected by "v. Kiesenwetter" (Kraatz 1857). Two syntypes were located in the Kraatz collection at the SDEI. Both of them have (para-)lectotype labels attached to them, but the designation was never published. Since both syntypes are females and evidently conspecific, a lectotype designation appears unnecessary.

Luzea graeca was placed in synonymy with *L. nigritula* by Assing (2006), but the present study revealed that this synonymisation was premature. Both names represent distinct species, which are subject to considerable intraspecific variation and reliably distinguished only by – not very evident – differences in the male primary and secondary sexual characters.

Diagnosis. Habitus and forebody as in Figs 12–15. Highly similar to, and difficult to distinguish from *L. nigritula* based on external characters, due to considerable intraspecific variation and some overlap.

Head with sparser average punctation, in median dorsal area usually with larger shiny spot with sparse punctation; eyes on average larger, 0.4–0.5 times, mostly approximately 0.5 times as long as postocular region (Figs 14–15). Elytra with less pronounced dimorphism, but of variable length, 0.97–1.12 times as long as pronotum (Figs 14–15).

♂: posterior margin of sternite VIII very weakly concave (Fig. 16), moderately transverse, pubescence as in *L. nigritula*; aedeagus with more slender and apically less acute ventral process, and with internal membranous structure of different shape (Figs 17–19).

Intraspecific variation. Like *L. nigritula*, *L. graeca* is subject to considerable intraspecific variation of size, head shape, punctation of the forebody, and elytral length.

Distribution and bionomics. The distribution of *L. graeca* ranges from Iran, Turkey, Armenia, and the Middle East across the Balkans to Hungary; there is apparently no overlap with the distribution of *L. nigritula* (Fig. 20). The above specimens from Cyprus, Macedonia, and Israel represent new country records.

The species has been collected primarily in unforested habitats like pastures, meadows, fallows, wetlands, and road margins, often on loamy soils and near running or standing water (stream banks, lakeshores), by turning stones and by sifting litter or grass roots. It was found in greater numbers particularly after floods (under stones, in flood debris), suggesting that the adult beetles usually inhabit subterranean crevices. On several occasions, the species was also sifted from grass roots in oak forests and beneath old cedar and juniper. The altitudes range from near sea-level to 2650 m. Flying specimens were collected with a carnet in July.

Adult beetles have been observed almost thoughout the year, with a maximum in spring: January (3 records; 15 specimens), March (11; 28), April (11; 37), May (11; 18), June (2; 2), July (3; 9), August (1; 1), September (2; 3), October (1; 2).

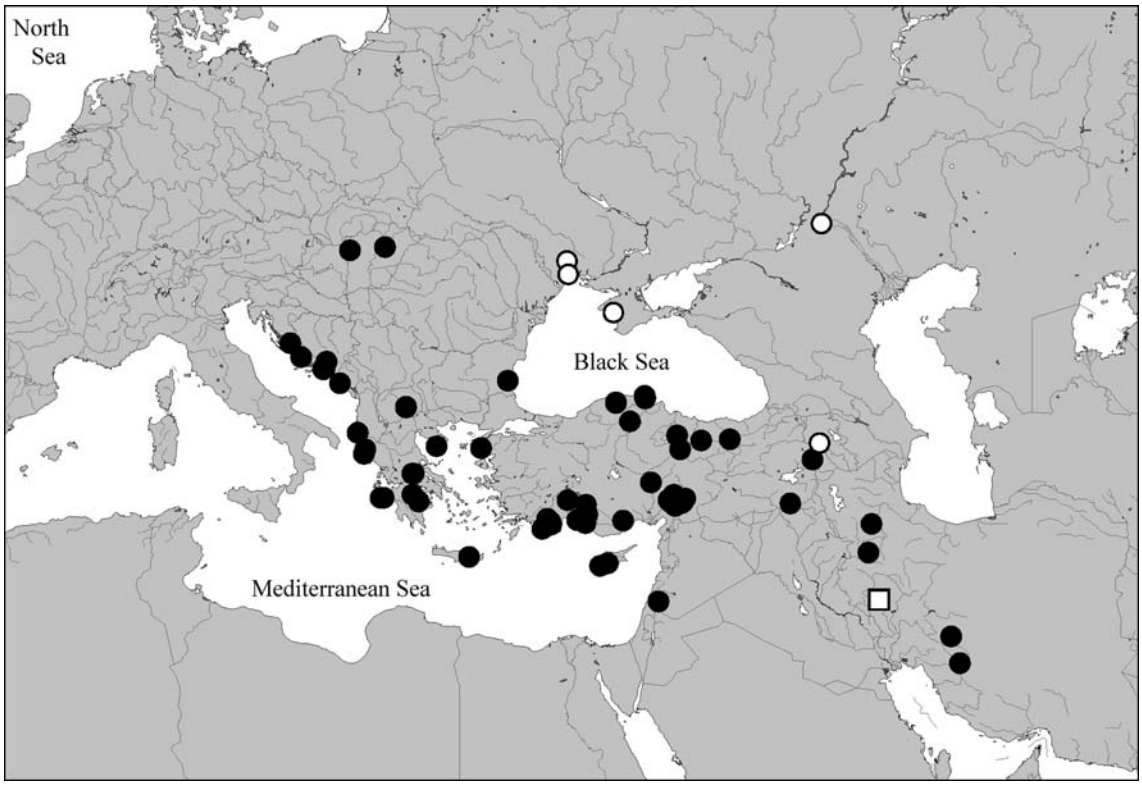


Figure 20. Distributions of *Luzea graeca* (filled circles; only examined records), *L. shavrini* (open square), and *L. rossica* (open circles; examined records and locality of paralectotype).

Luzea shavrini sp. n.

Figures 20, 26–28

Type material. Holotype ♂: "Iran, Muruni prov., 20 km N Pol-e-Dokhtar prov., Babo-Zeyd [= Bābā Zeyd; 33°13′ N, 47°44′ E], Anistschenko A., 1.–2.05.2007 / Holotypus ♂ *Luzea shavrini* sp. n., det. V. Assing 2009" (cAss).

Etymology. The species is dedicated to Alexey Shavrin, Irkutsk, also in gratitude for the generous gift of the holotype.

Description. Body length 3.3 mm; forebody as in Figure 26. External morphology as in *L. nigritula*, except as follows: Coloration of forebody dark reddish, abdomen brown; legs and antennae reddish-yellow. Eyes weakly convex, approximately 0.5 times as long as postocular region in dorsal view. Elytra short, 0.89 times as long as pronotum (Fig. 26).

♂: sternite VIII weakly transverse, posterior margin broadly and moderately concave, pubescence moderately dense (Fig. 27); aedeagus with shorter, stouter, and apically more strongly curved ventral process in lateral view (Fig. 28).

Comparative notes. In general appearance, particularly the relatively coarse punctation of the forebody, *L. shavrini* is similar only to *L. nigritula* and *L. graeca*. It is distinguished from both species by the reddish coloration of the body, the short elytra, the shape of the male sternite VIII, and the morphology of the aedeagus.

Distribution. The type locality is situated in the Zagros range, western Iran, approximately 80 km WSW Khorramābād (Fig. 20).

Luzea infirma (Erichson, 1840)

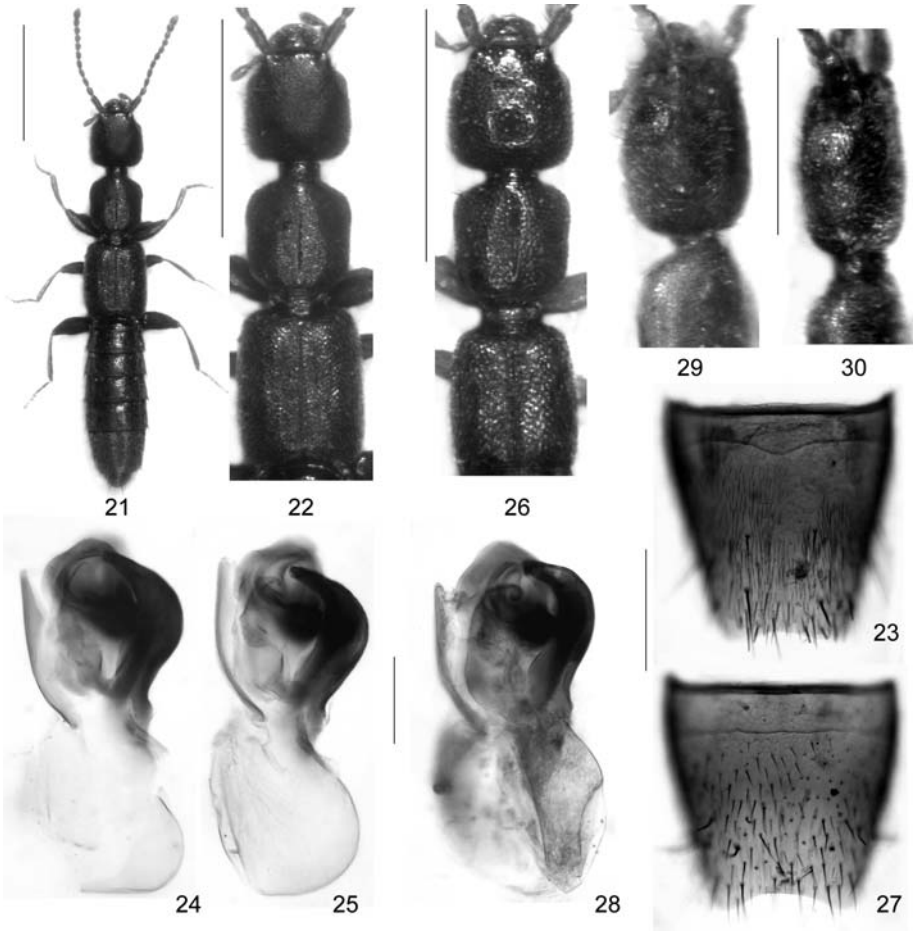
Figures 29, 31–40, 46

Scopaeus infirmus Erichson, 1840: 607f.
Medon caucasicus Luze, 1912: 396; **syn. n.**
Medon (*Micromedon*) *vulpinus* Koch, 1938: 384 f.; **syn. n**
Luzea deserticola Coiffait, 1984: 120 f.; **syn. n**

Type material examined. Scopaeus infirmus: Lectotype ♂: "Aegypten, Ehrenberg S. G. / 6358 / infirmus Er. / Zool. Mus. Berlin / Type / Lectotypus *Scopaeus infirmus* Erichson 1840, des. J. Frisch 1999 / Luzea infirma (Erichson), det. V. Assing 2009" (MNHUB). Paralectotypes: 2 exs [severely damaged, part or all of abdomen missing]: "Aegypten, Ehrenberg S. G. / 6358 / Type / Zool. Mus. Berlin / Paralectotypus *Scopaeus infirmus* Erichson 1840, des. J. Frisch 1999" (MNHUB).

Medon caucasicus: Lectotype ♂: "♀ [sic] / Caucasus / Medon caucasicus Luze / Type. Subg. Micromedon Luze / ex coll. Luze / ex coll. Scheerpeltz / Typus Micromedon caucasicus Luze / Lectotypus ♂ *Medon caucasicus* Luze, desig. V. Assing 2008 / Luzea caucasica (Luze) det. V. Assing 2008" (NHMW).

Medon vulpinus: Lectotype ♂, present designation: "Biskra (Alg.), 1.2.29, A. Schatzmayr / Type VIII.1938 / M. (Micromedon) vulpinus Koch, Typus, det. C. Koch / Holotypus 1956, det. Kamp. / Lectotypus



Figures 21–30. *Luzea lutrella* (21–25; 24. Lectotype), *L. shavrini* (26–28), *L. infirma* (29. Lectotype of *Medon vulpinus*), and *L. schuelkei* (30.). **21.** Habitus; **22, 26.** Forebody; **23, 27.** Male sternite VIII; **24–25, 28.** Aedeagus in lateral view; **29–30.** Head in lateral view. Scale bars: 21–22, 26: 1.0 mm; 29–30: 0.5 mm; 23, 27: 0.2 mm; 24–25, 28: 0.1 mm.

♂ *Medon vulpinus* Koch, desig. V. Assing 2009 / Luzea infirma det. V. Assing 2009" (NHMB).

Additional material examined

Algeria: 1♀, SE-Algeria, Tiglamaiin-en-tisita, 25.–30.IV.1914, leg. v. Geyr (MNHUB).

Israel: 7 exs, Negev, Yerokham Reservoir, 30°59′ N, 34°54′ E, 460 m, 28.II.2009, leg. W. Starke (cFel, cSta, cAss).

Egypt: 1 ex., Cairo, Meadi, leg. Priesner (NHMW); 6 exs, W Desert Oasis, Bahariya, 30.IV.1996, leg. Ullrich (MHNG, cAss, cSch).

Armenia: 1 ex., Verin Dzhrashen ["Aresch", 40°03′ N, 44°30′ E], leg. Schelkownikov (NHMW). **Iraq:** 1♂, Baghdad, 21.VI.1989, leg. Csorba & Forró (HNHM).

Iran: 2 exs, Semnan province, road Shahrud-Mojen, 5 km SE Tash, 36°31′ N, 54°42′ E, 2040 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss).

Turkmenistan: 2 exs, W Ashkhabad, Sulyukly ["Transcaspia, Neu-Saratow", 38°02′ N, 57°25′ E] (MNHUB); 1 ex., 2 km N Ashkhabad, 15.IX.1976, leg. Hieke (MNHUB); 1 ex., 10 km NE Ashkhabad, 13.IX.1976, leg. Hieke (MNHUB); 3 exs, Imambaba [36°45′ N, 62°28′ E] (NHMW, cAss); 3 exs, Repetek, V.1900, leg. Hauser (NHMW).

Kazakhstan: 5 exs, Karagach, Ile river, 23.VIII.1982, leg. Kastcheev (MNHUB, cAss); 9 exs, Ile river, Karagach, 6.VII.1981, leg. Kastcheev (cAss, cKas); 1 ex., Chardara, Syrdaria river, 11.V.1979, leg. Kastcheev (MNHUB); 1 ex., Aral Sea region, Kambash lk., 1.X.1991, leg. Kastcheev (MNHUB); 3 exs, Dzhambul, Sarybarak, 25.VII.1989, leg. Kastcheev (MNHUB); 1 ex., Kapchagai, Ile river, 19.IX.1981, leg. Kastcheev (MNHUB); 7 exs, Kapchagai, Ile river, Pristan Nauka, 21.IX.1981, leg. Kastcheev (MNHUB); 3 exs, Aidarly, Ile river, 25.IV.1988, leg. Kastcheev (MNHUB); 3 exs, Syrdaria, Cellinoe, 18.VI.1985, leg. Kastcheev (cAss); 1 ex., Kyrbaltabal, Turgen river, 22.IV.1989, leg. Kastcheev (MNHUB); 3 exs, Syrdarja region, Dzhuvek ["Dshulek"; 44°17′N, 66°26′E] env., Dzhuven mt. ["Dshuven-tjube"] (NHMW, cAss); 1 ex., Ile river, splav, 9B6, 30.VIII.1982, leg. Kastcheev (cAss); 2 exs, Syrdaria river, Shaulder, 28.V.1985, leg. Kastcheev (cAss).

Uzbekistan: 2 exs, NW Nukus, 15.IV.1979, leg. Kastcheev (MNHUB). **Tajikistan:** 1 ex., "Saramsakli" (NHMW).

Afghanistan: 1 ex., Kabul env. (NHMW); 1 ex., Kabul, 1740 m, 21.VI.1953, leg. Klapperich (NHMW); 1 ex., Kandahar-Kuna, 950 m, 2.II.1953, leg. Klapperich (cAss).

Locality not specified or not identified: 8 exs, "Transcasp.", leg. Aris (MNHUB, cSch); 1 ex., "Kaukasus" (MNHUB); 1 ex., "Caucase, Geox-Tapa, L. Mesmin" (MHNG).

Comment. The original description of *Scopaeus infirmus* is based on an unspecified number of syntypes of both sexes – the male and female secondary sexual characters are described – from "Agypto, Dom. Prof. Ehrenberg" (Erichson 1840). The species was first transferred to *Luzea* by Jarrige (1960), which was ignored or not accepted by Coiffait (1984). A lectotype was designated by Frisch (1999), who again moved the species to *Luzea*.

Medon caucasicus was described from several syntypes ("die Typen") from "Kaukasus (Näheres unbekannt)" (Luze 1912). The lectotype designation of *Medon caucasicus* by Assing (2008b) is invalid; the specimen was already designated as the lectotype by Gusarov (1995). A comparison of the type material and additional specimens previously identified as *L. caucasica* with material of *L. infirma* revealed that they are all conspecific. The coloration is evidently highly variable, but the male primary and secondary sexual characters are identical. *Medon caucasicus* had been moved to *Scopaeus* Erichson 1839 and synonymised with *Scopaeus infirmus* by Scheerpeltz (1933). Based on an examination of non-type material from Egypt of what he interpreted as *S. infirmus*, Coiffait (1960, 1961b) revalidated *Medon caucasicus* and referred it to *Luzea*, stating that *Scopaeus infirmus* and *Luzea caucasica* were neither conspecific nor congeneric. It was not until Frisch (1999) examined the type material of *S. infirmus* that it was discovered that Coiffait's interpretation of the species was erroneous and that *S. infirmus* in fact referred to *Luzea*.

Koch (1938) described *Medon vulpinus* from an unspecified number of syntypes, quite possibly a single specimen, collected in "Algerien, Biskra, leg. Schatzmayr", stating that it was distinguished from *M. caucasicus* by smaller size, the denser punctation and pubescence of the forebody, the more slender head, the larger eyes, the differently shaped pronotum, the more finely sulcate pronotal midline, and by the more slender and shorter elytra. An examination of a male syntype located in the Frey collection at the NHMB revealed that it is indeed slightly smaller than average specimens of *L. infirma*, but all other characters are well within the range of intraspecific variation of this species, and no differences were found in the morphology of the male sternite VIII and the aedeagus (Figs 29, 33, 40). These observations suggest that the type specimen does not represent a distinct species, so that *Luzea vulpina* is placed in synonymy with *L. infirma*. The examined male syntype from the Frey collection is designated as the lectotype.

Luzea deserticola was originally described from Syria ("El Hijane, à l'Est de Damas") (Coiffait 1984) and subsequently synonymised with *L. caucasica* by Gusarov (1995), who also designated a lectotype of *L. deserticola*.

Diagnosis. Highly variable species. In general appearance similar to *L. lutrella*, but more slender and on avarage smaller. Body length 2.6–3.7 mm. Coloration highly variable: body almost uniformly yellowish to dark brown, usually with the pronotum and elytra slightly paler than head and pronotum; legs and antennae yellowish to reddish.

Head distinctly oblong, approximately 1.10–1.15 times as long as wide, approximately as wide as pronotum or slightly narrower; punctation extremely fine and extremely dense; microsculpture more or less distinct, integument almost matt. Eyes more or less distinctly convex and protruding from lateral contours of head, 0.5–0.7 times as long as postocular region in dorsal view. Pronotum approximately 1.1 times as long as wide; punctation similar to that of head, but slightly more distinct; surface with slightly more shine than that of head; midline with or without very fine shiny line in posterior half. Elytra long, 1.10–1.15 times as long as pronotum; punctation finely granulose and extremely dense.

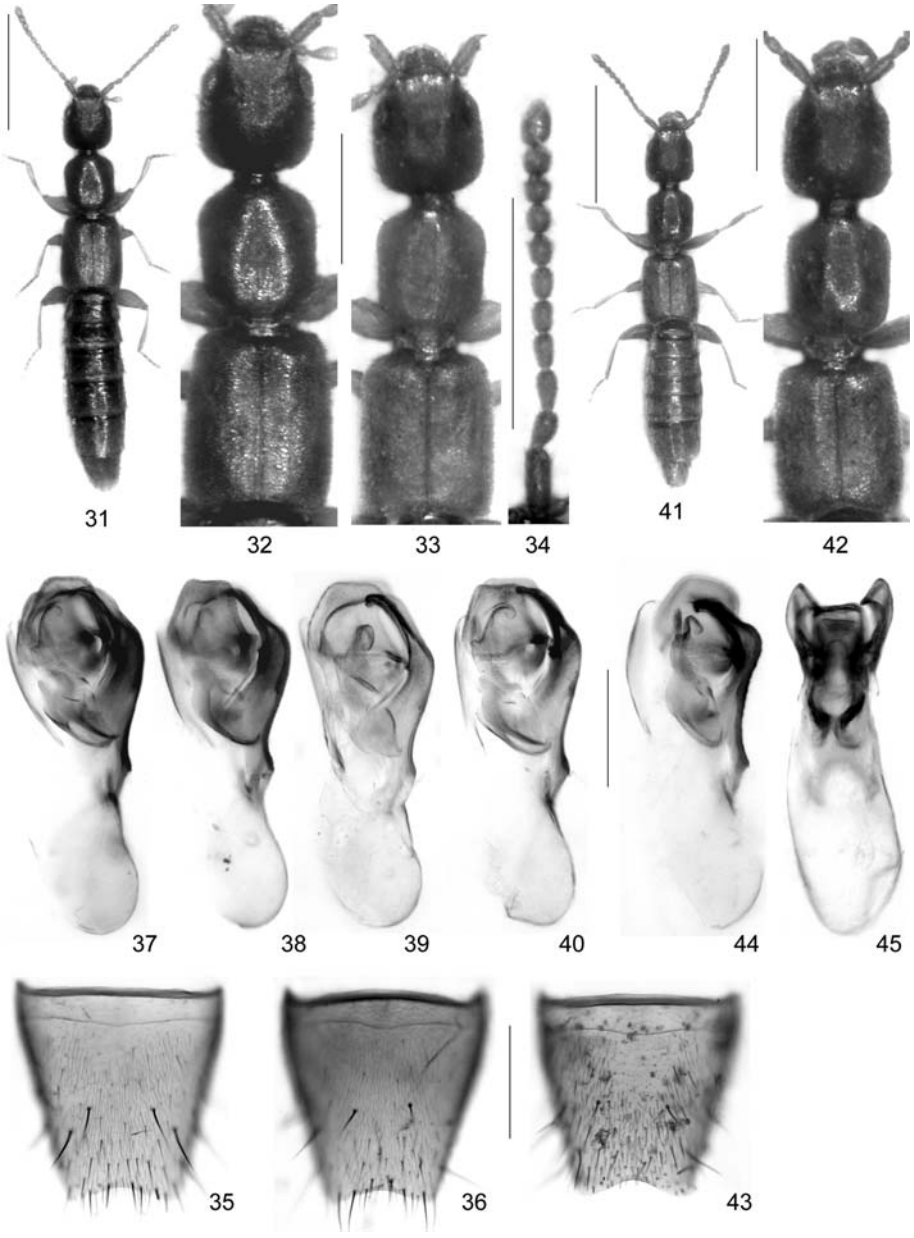
♂: sternite VIII approximately as long as wide, with broadly concave posterior margin, and with very dense and fine pubescence; ventral process of aedeagus almost angled and apically very slender in lateral view.

Intraspecific variation. Coloration, size, head shape, eye size, punctation of the forebody, and the length of the elytra are subject to pronounced intraspecific variation.

Comparative notes. Luzea infirma is readily distinguished from the similar *L. lutrella* particularly by the paler coloration, the more slender head and pronotum, the less distinctly microsculptured and less matt head, the larger and more convex eyes, the absence of a fine line in the anterior half of the pronotum, the more finely and somewhat granulosely punctured elytra, as well as by the smaller, paler, and differently shaped aedeagus. In Middle Asia, *L. infirma* has been collected together with externally similar species of *Pseudomedon* (*P. kazakhstanicus* Assing 2008, *P. afghanicus* Assing 2008), from which it is best distinguished by the longer elytra, the much more oblong tergite and sternite VIII, and by the completely different morphology of the aedeagus.

Distribution and bionomics. Luzea infirma is extremely widespread, its distribution ranging from North Africa (Algeria, Egypt) and the Middle East (Israel, Syria) to Armenia, Iraq, Iran, Afghanistan, and Middle Asia (Turkmenistan, Kazakhstan, Uzbekistan, Tajikistan). Jarrige (1960) reports the species from several localities in southern Morocco and Algeria.

Coiffait (1982) indicates a female-based record (as *L. deserticola*, at that time a nomen nudum) from southwestern Saudi Arabia. However, the geographically closest record of a *Luzea* species in this region is the type locality of *L. schuelkei*, so it would seem likely that the Saudi Arabian record of *L. deserticola* in fact refers to *L. schuelkei* rather than to *L. infirma*. The records from Mauretania (Coiffait 1984) and the Afrotropical region (Smetana 2004), as well as all other records based on the misinterpretation of Coiffait (1960, 1984) are erroneous and refer to a species of *Scopaeus*.



Figures 31–45. *Luzea infirma* (31–40; 33, 40. Lectotype of *Medon vulpinus*; 31–32, 34, 36–38. Male from Israel; 35, 39. Male from Turkmenistan) and *L. schuelkei* (41–45). **31–41.** Habitus; **32–33, 42.** Forebody; **35–36, 43.** Male sternite VIII; **37–40, 44.** Aedeagus in lateral view; **45.** Aedeagus in ventral view. Scale bars: 31, 41: 1.0 mm; 32–34, 42: 0.5 mm; 35–36, 43: 0.2 mm; 37–40, 44–45: 0.1 mm.

The above specimens from Israel, Iraq, Iran, and Uzbekistan represent new country records. The localities listed above suggest that *L. infirma* is widespread in semi-arid regions.

Luzea lutrella (Fauvel, 1900)

Figures 21–25, 57

Medon lutrellus Fauvel, 1900: 227.
Medon dilutior J. Sahlberg, 1913: 61; unavailable name.
Luzea lutrellus [sic]: Bordoni (1980).

Type material examined. Lectotype ♂: "Syrie, Jaffa / lutrella Fvl. / Ex-Typis / R.I.Sc.N.B. 17.479, Medon, Coll. et det. A. Fauvel / Lectotypus ♂ *Medon lutrellus* Fauvel, rev. V. Assing 2009 / Luzea lutrella (Fauvel), det. V. Assing 2009" (IRSNB). Paralectotypes: 1 ♂, 1 ♀: same data as lectotype (IRSNB).

Additional material examined. **Israel:** 3 exs, Tel Aviv env. (NHMW, cAss); 1 ♀, Upper Galilee, Ziv'on, 33°01′ N, 35°25′ E, 29.IV.2005, leg. Aßmann (cFel); 1 ♀, ca. 5 km SW Hadera, Ha-Sharon park, 27.XII.2007, leg. Aßmann (cAss).

*Comment.*The original description of *Medon lutrellus* is based on several syntypes ("plusieurs exemplaires") from "Syrie: Jaffa" (Fauvel 1900). Three of them, two males and a female, were located in the Fauvel collection at the IRSNB.

Based on an examination of a male syntype, Bordoni (1980) moved *Medon lutrellus* to *Luzea*. According to Article 74.5 of the Code (ICZN 1999), his use of the term "lectotipo" for this specimen constitutes a valid lectotype designation, although it is not clear which of the two male syntypes he referred to.

Medon dilutior was originally described as a variety of *L. lutrella*, based on material from "in ripa Jordanis prope oppidum Hierichuntem PAL". Sahlberg (1913) referred the name to pale-coloured specimens of *L. lutrella* with a brown pronotum and brown elytra, stating that this morph was "in societate cum forma normali captus" and consequently an infrasubspecific entity. *Medon dilutior* has been regarded as an aberration (Scheerpeltz 1933), a variety (Coiffait 1984), and a synonym of *L. lutrella* (Smetana 2004), but never as a valid species or subspecies. Therefore, according to Article 45.6.4 of the Code (ICZN 1999), *M. dilutior* represents an unavailable name.

Diagnosis. Size and habitus similar to those of *L. nigritula* and *L. infirma*. Habitus as in Figure 21. Body length: 2.8–3.7 mm. Coloration somewhat variable: body uniformly blackish to brown, with the elytra dark reddish; legs and antennae pale-brown to blackish-brown.

Head weakly oblong, usually approximately 1.02–1.06 times as long as wide and approximately as wide as pronotum; punctation extremely fine and extremely dense, barely visible in the pronounced microsculpture, integument matt (Fig. 22). Eyes approximately 0.4–0.5 times as long as postocular region in dorsal view. Pronotum 1.05–1.10 times as long as wide; punctation similar to that of head, also extremely fine and extremely dense, but somewhat more distinct, due to the absence of distinct microsculpture; midline more ore less distinctly impunctate (i.e., somewhat shiny) (Fig. 22). Elytra long, almost 1.1 times as long as pronotum (Fig. 22).

♂: sternite VIII approximately as long as wide, with weakly concave posterior margin, and with very dense pubescence (Fig. 23); ventral process of aedeagus strongly bent and stout in lateral view (Figs 24–25).

Comparative notes. In general appearance, *L. lutrella* is similar to *L. infirma*, but distinguished by the less slender head and pronotum, the distinctly microsculptured and completely matt head, the presence of a shiny midline also in the anterior half of the pronotum, even denser punctation of the head, the less finely and not granulosely punctured elytra, as well as by the male primary and secondary sexual characters, particularly the completely different shape of the ventral process of the aedeagus.

Distribution. The species has become known only from Israel (Fauvel 1900, Sahlberg 1913, material examined) (Fig. 57). Smetana (2004) reports the species also from Jordan, but this record is apparently based on a misunderstanding of the data provided by Sahlberg (1913). Bionomic data are not available.

Luzea schuelkei sp. n.

Figures 30, 41–46

Type material. Holotype ♂: "Süd-Jemen, Sh. Othman b. Aden, VI.1986, lux, leg. B. Materlik / Holotypus ♂ *Luzea schuelkei* sp. n., det. V. Assing 2009" (cAss).

Etymology. The species is dedicated to my friend and colleague Michael Schülke, distinguished expert of Staphylinidae, also in gratitude for the generous gift of the holotype.

Diagnosis. Size and habitus similar to those of *L. infirma* (Fig. 41). Body length: 3.2 mm. Coloration: body reddish brown with dark-yellowish elytra; legs reddish-yellow; antennae reddish.

Head oblong, 1.12 times as long as wide and indistinctly wider than pronotum, weakly dilated posteriad (Fig. 42); punctation extremely fine and dense, barely visible in the pronounced microsculpture, integument almost matt. Eyes large (Fig. 30), approximately 0.6–0.7 times as long as postocular region in dorsal view. Pronotum oblong, approximately 1.15 times as long as wide; punctation very dense and fine, but more pronounced than that of head; microsculpture absent; without distinct impunctate midline (Fig. 42). Elytra approximately as long as pronotum (Fig. 42); punctation very dense and weakly granulose. Hind wings fully developed.

♂: sternite VIII weakly transverse, with weakly concave posterior margin, and with rather dense pubescence (Fig. 43); ventral process of aedeagus strongly bent and stout in lateral view (Figs 44–45).

Comparative notes. Luzea schuelkei is highly similar to *L. infirma* in external characters (habitus, coloration, punctation and microsculpture of head and abdomen), but distinguished by slightly less dense punctation of

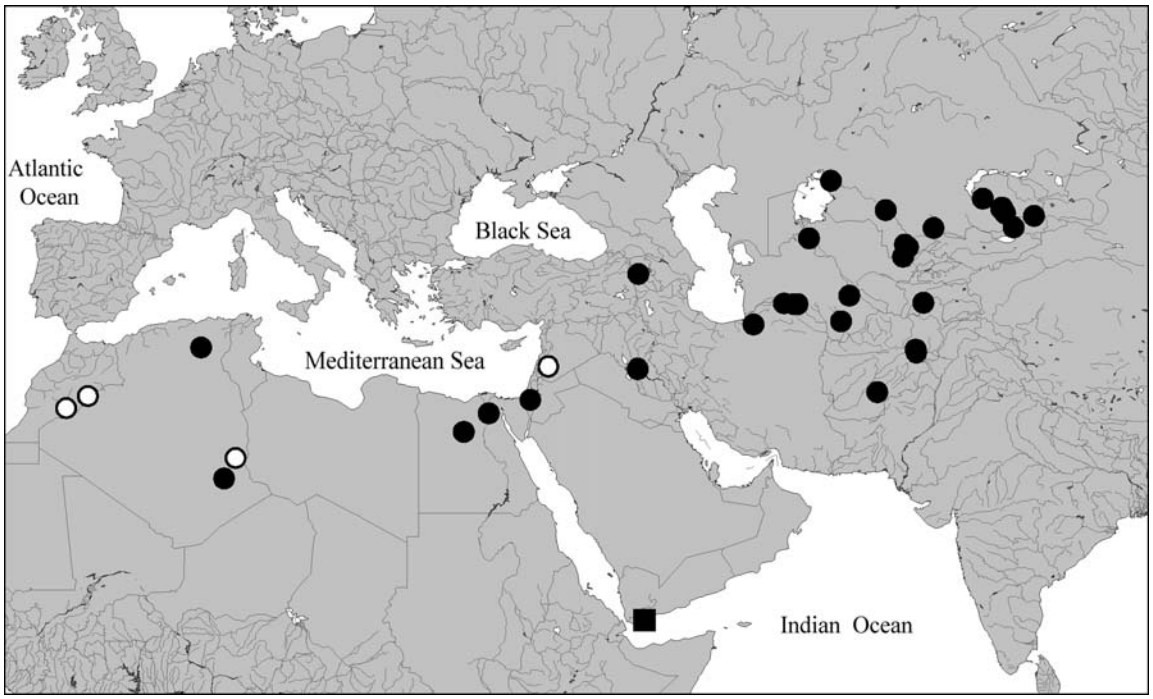


Figure 46. Distributions of *Luzea infirma* (filled circles: examined records, open circles: selected literature records) and *L. schuelkei* (square).

the pronotum and the elytra, by the shorter elytra, the less oblong and less densely pubescent male abdominal sternite VIII, as well as by the shape of the ventral process of the aedeagus (more strongly angled, basal half more slender in lateral view) and the shape of the internal structures of the aedeagus.

Distribution and bionomics. The type locality is situated near Aden, southwestern Yemen (Fig. 46). The holotype was collected at a light source.

Luzea cephalica (Eppelsheim, 1889)

Figures 46–51, 57

Medon cephalicus Eppelsheim, 1889: 177f.
Medon nigritulus var. cephalicus: Eppelsheim (1894), Bernhauer & Schubert (1912).
Luzea nigritula var. cephalicus [sic]: Coiffait (1984).
Luzea cephalica: Gusarov (1995).

Type material examined. Holotype [dissected prior to present study]: "♂ / cephalica mihi, Feodosia, Retowski / c. Epplsh. Steind. d. / cephalicus Epp., Deutsch. Ent. Zeit. 1889, p. 177 / Typus / Holotypus Medon cephalicus Eppelsheim, V. Gusarov des. [sic] 1992 / Luzea cephalica (Epp.) ♂, Gusarov det. 1992 / Luzea cephalica (Eppelsheim), det. V. Assing 2009" (NHMW).

Additional material examined. **Ukraine:** 3♂♂, Khuryalnik Liman, 24.VI.2002, leg. Gontarenko (cAss).

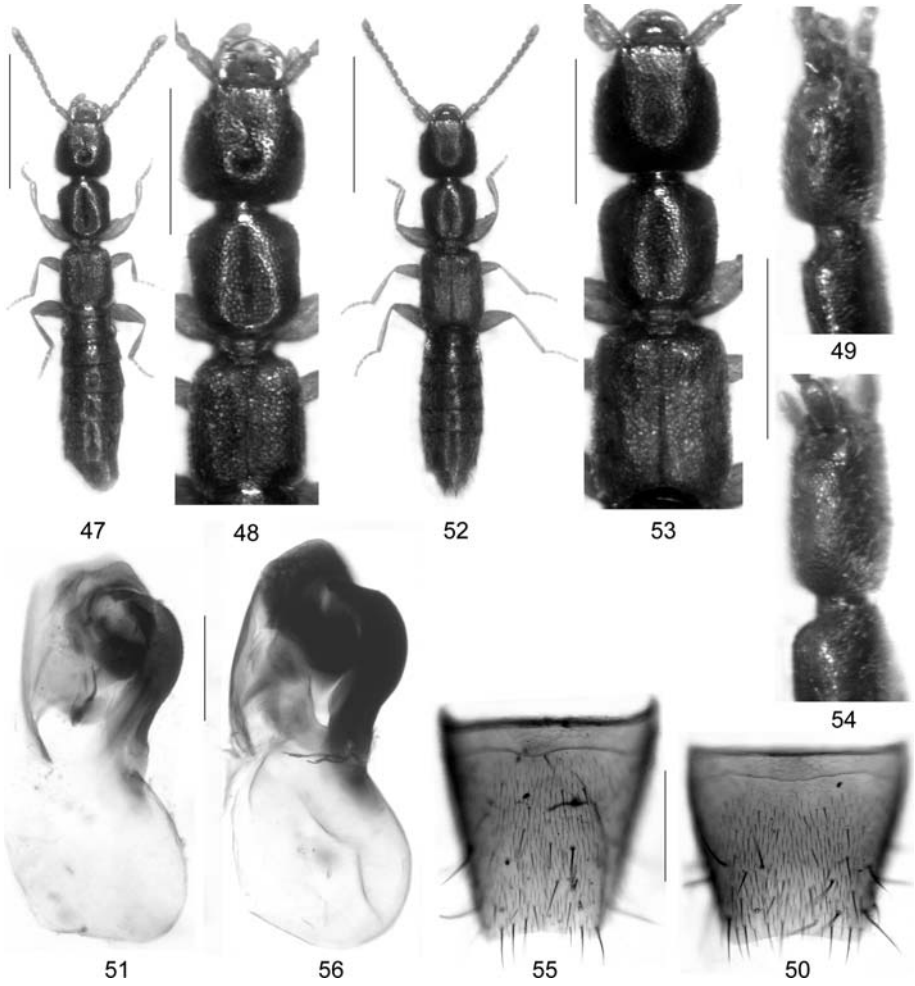
Comment. The original description is based on a single male from "Feodosia" collected by "Retowski" (Eppelsheim 1889). The holotype was located in the Eppelsheim collection at the NHMW. Since 1894, *L. cephalica* had been considered a variety of *L. nigritula* (see above), until Gusarov (1995) validated the species.

Diagnosis. Small species. Body length: 2.5–3.2 mm. Habitus as in Figure 47. Coloration: body dark-brown, with the pronotum, the elytra, and the abdominal apex slightly paler brown; legs and antennae yellowish to yellowish-brown.

Head (Fig. 48) not oblong, 0.95–1.05 times as wide as long; punctation fine, but distinct and well-defined; interstices in median dorsal area without distinct microsculpture, shiny, lateral and posterior dorsal areas with shallow microsculpture; frons with distinct microsculpture. Eyes small (Fig. 49) and weakly convex, approximately 0.3–0.4 times as long as postocular region in dorsal view. Pronotum oblong, 1.10–1.15 times as long as wide, widest at anterior angles; punctation similar to that of head; interstices without microsculpture; whole midline shiny and impunctate (Fig. 48). Elytra short, 0.75–0.85 times as long, and approximately as wide as pronotum; punctation very dense, moderately fine, and weakly defined; interstices shiny (Fig. 48). Abdomen approximately 1.15 times as wide as elytra, widest at segment VI; punctation very fine and dense; posterior margin of tergite VII with very fine palisade fringe.

♂: sternite VIII weakly transverse, posterior margin very weakly concave, pubescence dense (Fig. 50); aedeagus shaped as in Figure 51.

Comparative notes. From all its congeners, *L. cephalica* is distinguished by the following character combination: small body size; head not distinctly oblong; eyes small and weakly convex; head and pronotum with distinct, but fine punctation; pronotum with broadly impunctate and shiny midline; elytra distinctly shorter than prono-



Figures 47–56. *Luzea cephalica* (47–51) and *L. rossica* (52–56). **47, 52.** Habitus; **48, 53.** Forebody; **49, 54.** Head in lateral view; **50, 55.** Male sternite VIII; **51, 56.** Aedeagus in lateral view. Scale bars: 47, 52: 1.0 mm; 48–49, 53–54: 0.5 mm; 50, 55: 0.2 mm; 51, 56: 0.1 mm.

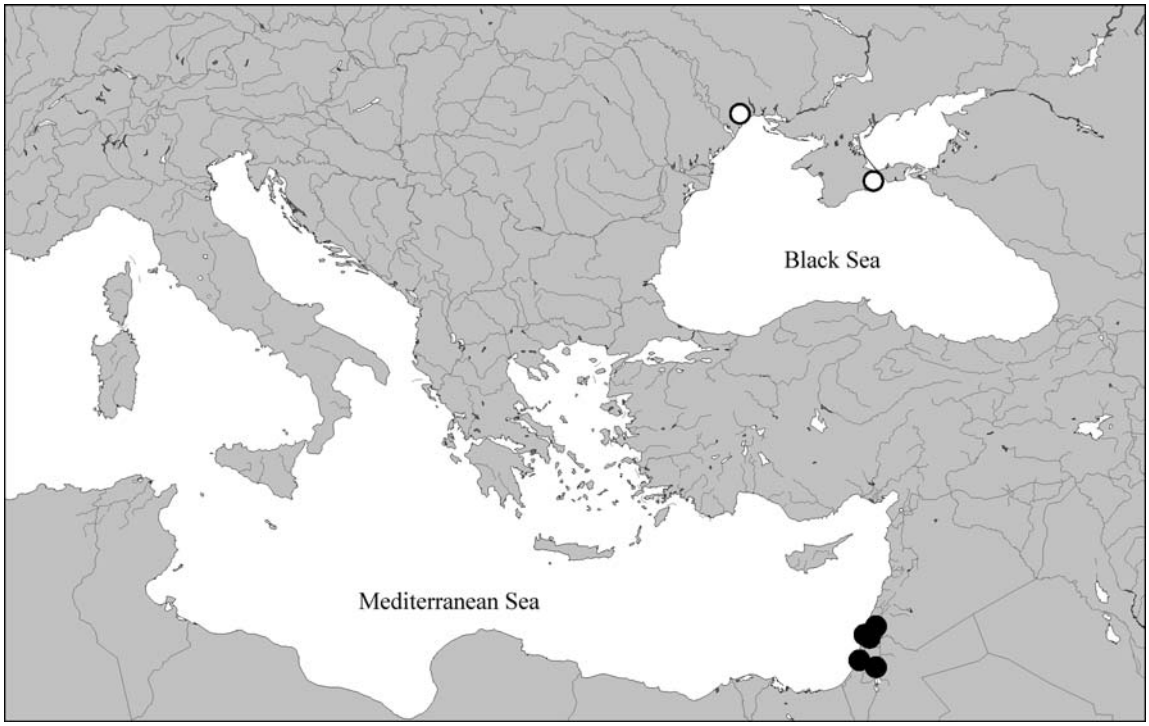


Figure 57. Distributions of *Luzea lutrella* (filled circles) and *L. cephalica* (open circles), based on examined records.

tum; male sternite VIII weakly transverse (not oblong); aedeagus with ventral process of distinctive shape.

Distribution and bionomics. All the examined specimens were collected in Ukraine (Fig. 57); for additional records see Gontarenko (2003). Smetana (2004) reports the species also from Azerbaijan, Armenia, and the Russian South European territory. However, at present, all these records must be considered as doubtful, since they probably refer to *L. rossica*, with which *L. cephalica* was previously confounded. I have seen an old specimen labelled "Saloniki" (= Thessaloniki in Greece) deposited in the collections of the BMNH, but the species has never been reported from Greece or Bulgaria, so that this record should be considered doubtful, too.

According to Gontarenko (pers. comm.), his material of *L. cephalica* was collected under stones and sifted from detritus.

Luzea rossica (Bernhauer, 1908), revalidated

Figures 11, 52–56

Medon rossicus Bernhauer, 1908: 322f.

Type material examined. Lectotype ♀: "Aresch (Caucasus), ex Schelkownikow / infirmus Er., Caucasus, Dr. Rodt / rossicus Brh., Typus. / Chicago NHMus, M.Bernhauer Collection / Lectotypus ♀ Medon rossicus Bernhauer, des. V. Gusarov 1993 / Luzea cephalica (Epp.) ♀, V.I. Gusarov det. 1993 / Luzea rossica (Bernhauer), det. V. Assing 2009" (FMNH).

Additional material examined. **Ukraine:** 1 ♂, Odessa oblast, Berezovka district, Raukhovka [47°10′N, 30°50′ E], UV-light source, 17.VIII.1908, leg. Gontarenko (cAss); 6 ♀♀, Odessa, Sverdlovo, light source, 24.VIII.2008, leg. Gontarenko (cGon, cAss); 20 exs, Crimea, Evpatoria region, 10.–20.VII.1999 (cSch, cAss).

Comment. The original description is based on two syntypes, one from "Aresch, Caucasus" in the Bernhauer collection and one from "Sarepta" in the collection of "Herr Jakowlew" (Bernhauer 1908). Gusarov (1995) designated the syntype in the Bernhauer collection, a female, as the lectotype and placed *Medon rossicus* in synonymy with *Luzea cephalica*. An examination of the lectotype confirmed that it is conspecific with the additional material listed above and readily distinguished from *L. cephalica* by various characters, particularly the presence of distinct microsculpture on the head, the much finer punctation of the head, the distinctly longer elytra, and the shape of the aedeagus. Therefore, *L. rossica* undoubtedly represents a distinct species and a valid name.

Diagnosis. Small species. Body length: 2.5–3.4 mm. Habitus as in Figure 52. Coloration: body dark-brown, with the pronotum reddish to brown, the elytra usually reddish-yellow, and the abdominal apex reddish; legs and antennae yellowish to yellowish-brown.

Head very weakly oblong, 1.02–1.05 times as long as wide; punctation extremely fine, barely noticeable in the pronounced microsculpture (Fig. 53). Eyes moderately large (Fig. 54), 0.5–0.6 times as long as postocular region. Pronotum approximately 1.1 times as long as wide, widest at anterior angles; punctation dense, moderately fine, and well-defined, much more pronounced than that of head; interstices without microsculpture; midline usually narrowly shiny and impunctate (Fig. 53). Elytra moderately long, 1.0–1.1 times as long and approximately 1.2 times as wide as pronotum; punctation very fine and dense (Fig. 53). Abdomen slightly narrower than elytra, widest at segment VI; punctation very fine and dense; posterior margin of tergite VII with palisade fringe.

♂: sternite VIII approximately as long as wide, posterior margin very weakly concave, pubescence dense (Fig. 55); aedeagus shaped as in Figure 56.

Comparative notes. Luzea rossica is distinguished from the similar *L. cephalica* by numerous characters, particularly the pronounced microsculpture and extremely fine punctation of the head, the distinctly larger eyes, the much longer and broader elytra, the shape of the male sternite VIII, and the different morphology of the aedeagus.

Distribution and bionomics. Material from Ukraine and from the type locality in Armenia was examined (Fig. 11). The paralectotype was collected in the Russian South European territory (Bernhauer 1908). Since the species was previously confounded with *L. cephalica*, the distribution requires clarification. Gontarenko (pers. comm.) collected his material of *L. rossica* at light sources.

Key to the species of *Luzea*

1. Head with interstices in median dorsal area shiny, without distinct microsculpture; punctation of dorsal surface fine to moderately coarse and moderately sparse to moderately dense, punctures well-defined (Figs 4–5, 14–15, 26, 48). 2
– Head with median dorsal area matt or nearly so, due to distinct microsculpture or extremely dense punctation; dorsal surface mostly with extremely fine and very dense punctation; punctures usually barely noticeable and visible only at higher magnification (Figs 22, 32–33, 42, 53). 5
2. Small species; length of forebody from anterior margin of clypeus to posterior margin of elytra < 1.5 mm (Fig. 47). Eyes small (Figs 48–49), approximately 1/3 as long as postocular region in dorsal view. Head approximately as wide as long (Fig. 48). Elytra shorter than pronotum (Figs 47–48). Male sternite VIII transverse, posterior margin very weakly concave (Fig. 50). Aedeagus as in Figure 51. Ukraine (Fig. 57). . . . . *L. cephalica* (Eppelsheim)
– Larger species; length of forebody from anterior margin of clypeus to posterior margin of elytra > 1.5 mm. Eyes approximately 1/2 as long as postocular region (or nearly so) in dorsal view. 3

3. Colour of body reddish. Head approximately as wide as long (Fig. 26). Elytra slightly shorter than pronotum (Fig. 26). Posterior margin of male sternite VIII broadly and very weakly concave (Fig. 27). Aedeagus as in Figure 28. Iran (Fig. 20). . . . . ***L. shavrini*** **sp. n.**
– Colour of body usually darker, dark brown to blackish, with the elytra often slightly paler. Head oblong, mostly 1.10–1.15 times as long as wide. Wing-dimorphic species; elytra usually longer than pronotum (similarly short only in brachypterous morph). Aedeagus of different morphology. 4
4. Head on average with denser punctation (Figs 4–5). Male sternite VIII with distinctly concave posterior margin (Fig. 6). Aedeagus with stout and apically very acute ventral process (Figs 7–10). Western Mediterranean, from the Canary Islands and NW-Africa to France, Italy, and Switzerland (Fig. 11). . . . . ***L. nigritula*** **(Erichson)**
– Head on average with sparser punctation (Figs 14–15). Posterior margin of male sternite VIII shallowly concave (Fig. 16); aedeagus with more slender and apically less acute ventral process (Figs 17–19). Eastern Mediterranean, from Iran, the Middle East, Turkey, Armenia across the Balkans to Hungary (Fig. 20). . . . . ***L. graeca*** **(Kraatz)**
5. Head as wide as long or weakly oblong, 1.00–1.06 times as long as wide. Pronotum with moderately fine punctation and with narrow shiny midline extending from posterior margin into anterior half of pronotum. Ventral process of aedeagus curved in lateral view. 6
– Head distinctly oblong, at least 1.10 times as long as wide. Pronotum without, or only in posterior half with extremely fine, shiny midline. Ventral process of aedeagus more or less angled in lateral view. 7
6. Head with pronounced microsculpture, completely matt (Fig. 22). Pronotum with extremely dense punctation, almost matt (except for shiny midline) (Fig. 22). Elytra distinctly longer than pronotum (Figs 21–22). Aedeagus as in Figs 24–25. Israel (Fig. 57). . . . . ***L. lutrella*** **(Fauvel)**
– Head with microsculpture, but less matt (Fig. 52). Pronotum with rather dense punctation, but punctures separated by shiny interstices, interstices on average aproximately half as wide as diameter of punctures (Fig. 53). Elytra usually as long as, or only slightly longer than pronotum (Figs 52–53). Aedeagus as in Figure 56. Ukraine, Southwest Russia, Armenia (Fig. 20). . . . . ***L. rossica*** **(Bernhauer)**
7. Elytra approximately as long as pronotum (Figs 41–42). Male abdominal sternite VIII weakly transverse and with less dense pubescence (Fig. 43). Aedeagus with ventral process more strongly angled and with more slender basal portion in lateral view (Fig. 44). Yemen (Fig. 46). . . . . ***L. schuelkei*** **sp. n.**
– Elytra distinctly longer than pronotum (Figs 31–33). Male abdominal sternite VIII approximately as long as wide and with very dense fine pubescence (Figs 35–36). Aedeagus with ventral process less strongly angled and with stout basal portion in lateral view (Figs 37–40). Widespread, semi-arid regions from North Africa eastwards to Middle Asia and Afghanistan (Fig. 46). . ***L. infirma*** **(Erichson)**

Catalogue

The valid names are given in alphabetical order; the synonyms are sorted by publication year. The distributions are based exclusively on confirmed records and on reliable primary literature records.

Species	Distribution
cephalica **(Eppelsheim, 1889)**	Ukraine
graeca **(Kraatz, 1857)** = *praecursor* Iablokoff-Khnzorian, 1961	Hungary, Romania, Croatia, Bosnia-Herzegovina, Yugoslavia (Montenegro), Macedonia, Bulgaria, Albania, Greece, Cyprus, Turkey, Armenia, Israel, Lebanon, Iran
infirma **(Erichson, 1840)** = *caucasica* (Luze, 1912); syn. n. = *vulpina* (Koch, 1938); syn. n. = *deserticola* Coiffait, 1984; syn. n.	Morocco, Algeria, Egypt, Israel, Syria, Armenia, Iraq, Iran, Turkmenistan, Kazakhstan, Uzbekistan, Tajikistan, Afghanistan
lutrella **(Fauvel, 1900)** = *dilutior* J. Sahlberg, 1913; unavailable name)	Israel
nigritula **(Erichson, 1840)** = *minuta* (Lucas, 1846) = *castanoptera* (Kraatz, 1857) = *sicula* (Kraatz, 1857) = *maura* (Wollaston, 1864) = *macropepla* (Kraatz, 1889) = *puncticeps* (Coiffait, 1971) = *marocana* Coiffait, 1985; syn. n.	Morocco, Algeria, Tunisia, Libya, Spain (including Canary Islands and Mallorca), Portugal, Malta, France (including Corsica), Italy (including Sardinia and Sicily), Switzerland
rossica **(Bernauer, 1908)**	Ukraine, Armenia, SW-Russia
schuelkei **sp. n.**	Yemen
shavrini **sp. n.**	Iran

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