



A new species of *Lestica* Billberg (Hymenoptera: Crabronidae) from Turkey

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Abstract

A new solitary wasp species, *Lestica anatolica* Can et Gülmez, is described and illustrated based on a male from Sivas province of Turkey. This species is similar to *L. clypeata* (Schreber, 1759) but distinguished from it by the presence of a transparent spine on the apex of foretrochanter instead of carina and dilatation in all of the first three foretarsomeres (foretarsomeres II and III distinctly narrower than I in *L. clypeata*). Additionally, new locality records are given for two previously known species in Turkey, *L. clypeata* and *L. subterranea* (Fabricius, 1775). An identification key is provided for the species of *Lestica* Billberg, 1820 occurring in Turkey.

Key words: Apoidea, *Lestica anatolica*, taxonomy, Kelkit Valley, identification key

Introduction

Lestica Billberg, 1820 is a diverse genus belonging to the Crabronidae family, widely distributed throughout the world. Members of the genus are medium to large solitary wasps (6–18 mm) with yellow-black body color pattern and often with coarse punctures, especially on the mesopleuron and first abdominal terga. In the female, the pygidium is flat, wide-triangular, or strongly constricted towards the apex, terga in some species are markedly compressed at the base, and the clypeus is flat or conspicuously convex in the middle. In the male, the head of some species is narrowed behind the eyes, the forebasitarsus are often flattened or widened, the forefemur with a ventral spine at the base and the genitalia have uniform appearance. Morphologically, the genus is very similar to *Ectemnius* Dahlbom, 1845 but differs from it by a coarse thoracic sculpture and well-defined orbital foveae (Marshakov, 1975). The coarse and uneven punctuation in front of the ocellar triangle in *Lestica* often distinguishes the two genera (Bohart & Menke 1976).

Since the description of the genus in 1820, its concept has been repeatedly changed. Lepeletier & Brullé (1834) divided the genus *Crabro* Fabricius, 1775 into 11 genera, three of which (*Ceratocolus*, *Solenius*, *Thyreus*) are based on the species currently included in *Lestica*. Ashmead (1899) separated the genus *Hypothyreus*, which is a junior synonym of *Lestica*. Kohl (1915) brought all these genera together again into one large genus *Crabro*, singling out *Ceratocolus* Lepeletier de Saint Fargeau et Brulle, 1835 in it. Pate (1947a), in his work on the genera of Crabroninae of the world, transferred all three genera of Lepeletier & Brullé (1834) into the subgenus *Lestica*, and somewhat later he recognized the subgenus *Ptyx* Pate, 1947 and presented a key to the five subgenera (Pate 1947b).

Currently, *Lestica* includes 46 species and four subspecies worldwide. Most of the species occur in Palearctic, 10 species in the Oriental, six species in the Australian, four species and two subspecies in the Neotropical, and three species each in the Ethiopian and Nearctic regions (Pulawski 2022; Yue *et al.* 2022).

Lestica has not been adequately studied in Turkey compared to other crabronids. The study on the genus started with Schulz (1904) who recorded *L. alata* (Panzer, 1797) from Bursa, then continued with the record of *L. camelus* (Eversmann, 1849) from Ankara by Kohl (1915). The most common species recorded from many regions of Turkey are *L. subterranea* and *L. clypeata* (Fahringer 1922; de Beaumont 1967; Ljubomirov & Yıldırım 2008; Yıldırım *et al.* 2016; Gülmez & Çubuk 2018; Kaplan & Yıldırım 2021). *L. euryypus* (Kohl, 1898) and *L. pluschtschewskyi* (F. Morawitz, 1891) have been recently recorded only from Sivas and Erzurum provinces, respectively (Dollfuss 2004;

Yıldırım & Ljubomirov 2005). Altogether, six species have been recorded in the country. However, considering the habitat diversity of Turkey, it can be estimated that the number of species may be higher.

In this study, a new conspicuous species, *Lestica anatolica* Can et Gülmez, **sp. nov.**, is described from Kelkit Valley in Turkey based on a male specimen. In addition, new locality records are given for previously known species *L. clypeata* and *L. subterranea*. An identification key for Turkish species of *Lestica* is provided.

Materials and methods

The specimens treated in the present study were collected from different localities of Erzincan, Giresun, Gümüşhane and Sivas provinces by insect net and are deposited in the Entomology Research Laboratory, Gaziosmanpaşa University, Tokat, Turkey. The terminology used for the description follows that of Kohl (1915), Marshakov (1975), Bohart & Menke (1976) and Bitsch & Leclercq (1993). The identification key for *Lestica* species in Turkey, including the newly described species, was generated using Marshakov (1975) and Bitsch & Leclercq (1993). Photographs of specimens were taken using a Leica M205C stereomicroscope controlled by the Leica Application Suite 3 software.

Results

Genus *Lestica* Billberg, 1820

Lestica anatolica Can et Gülmez, **sp. nov.**

urn:lsid:zoobank.org:act:1943C562-6B73-4F38-82B0-125761988EE7

(Figs. 1–4)

Diagnosis: *Lestica anatolica* is a member of the subgenus *Solenius*. It is very similar to *L. clypeata* (narrowed head, shield-like foretarsomere I, spine at the base of the forefemur, hindtrochanter with ventral spine, bidentate mandible), but differs from it by the following characters: conspicuous spine present on apex of foretrochanter (carinate in *L. clypeata*) (Figs. 1c, 1f); foretarsomeres II and III as broad as I (foretarsomeres II and III markedly narrower than I in *L. clypeata*) (Figs. 1a, 1d); posterior part of midfemur not keeled, widened towards base, not tooth-like, but rounded (posterior part of midfemur carinate, tooth-like in *L. clypeata*) (Figs. 1b, 1e). Another similar species is *L. wollmanni*, from which *L. anatolica* differs as follows: foretarsomere widened, shield-like; its width greater than length (first foretarsomeres less widened; its width clearly less than length in *L. wollmanni*); posterior trochanter with spine (without spine in *L. wollmanni*) and flagellomere I $1.5 \times$ as long as wide ($2.0\text{--}2.2 \times$ in *L. wollmanni*).

Description: Length 7.5 mm, fore wing 5 mm. Dominant body colour black, with following parts light: scape dorsally, pedicel wholly dark yellow; flagellomeres completely brownish-yellow (darkening gradually from first to last); mandible with dark reddish apex; thorax completely black, tegula translucent pale brown; anterior surface of fore- and hindfemora longitudinally, and midfemur entirely yellow except base of midfemur lower surface; all tibiae yellow except for irregular brownish spots on mid- and hindtibiae. Shield-like foretarsomere completely yellow, apex and lateral edges of foretarsomeres II–IV and entire V light brown. Mid- and hindtarsomeres I yellow basally, turning brown towards ends. Maculae of terga I–VI ivory white, dot-like on each side of tergum I, broadly interrupted on II and III, slightly interrupted mesally on IV, and continuous band on V and VI. All sterna black except yellowish-white spot in middle of sternum II.

Setae on dorsal part of clypeus and half of inner margin of the compound eyes dense, silvery, and appressed, completely covering integument; on frons, vertex, anterior and lateral sides of pronotum, pronotal lobe, upper part of mesopleuron sparse, long, silvery; on epicnemial carina, acetabular carina, lower edge of mesopleuron, posterior surfaces of forefemur and foretibia dense, erect, and silvery; on scutum, propodeum, mesopleuron and terga short, scarce and silvery.

Head in dorsal view conspicuously narrowed behind eye (Fig. 2a). OOD (ocellocular distance): POD (postocellar distance): OCD (ocelloccipital distance) = 4:3.2:8. Ocellar triangle with width to length approximately 8:5.5 (Fig. 2a). Orbital fovea prominent, linear, and short (Fig. 2b). Clypeus not protruding, slightly carinate medially (Fig. 2c). Mandible bidentate at apex, without tooth on inner margin (Fig. 2d). Flagellomere I $1.6 \times$ as long as wide, apical flagellomere slightly curved (Fig. 2e). Collare elongate and narrowed in front; rounded laterally. Foretarsomeres

I-III dilated as almost quadrangular shield (Fig. 1a). Forefemur (Fig. 2f) and foretrochanter with transparent spine (Fig. 1c), partly concealed by long setae on femur. Mid tibia slightly curved, slender and long. Midtarsomere I obliquely cut at apex (Fig. 2g). Midfemur enlarged, without clear basal tooth (Fig. 1b). Hindtrochanter with ventral spine (Fig. 2h). Tergum VII with median longitudinal groove.

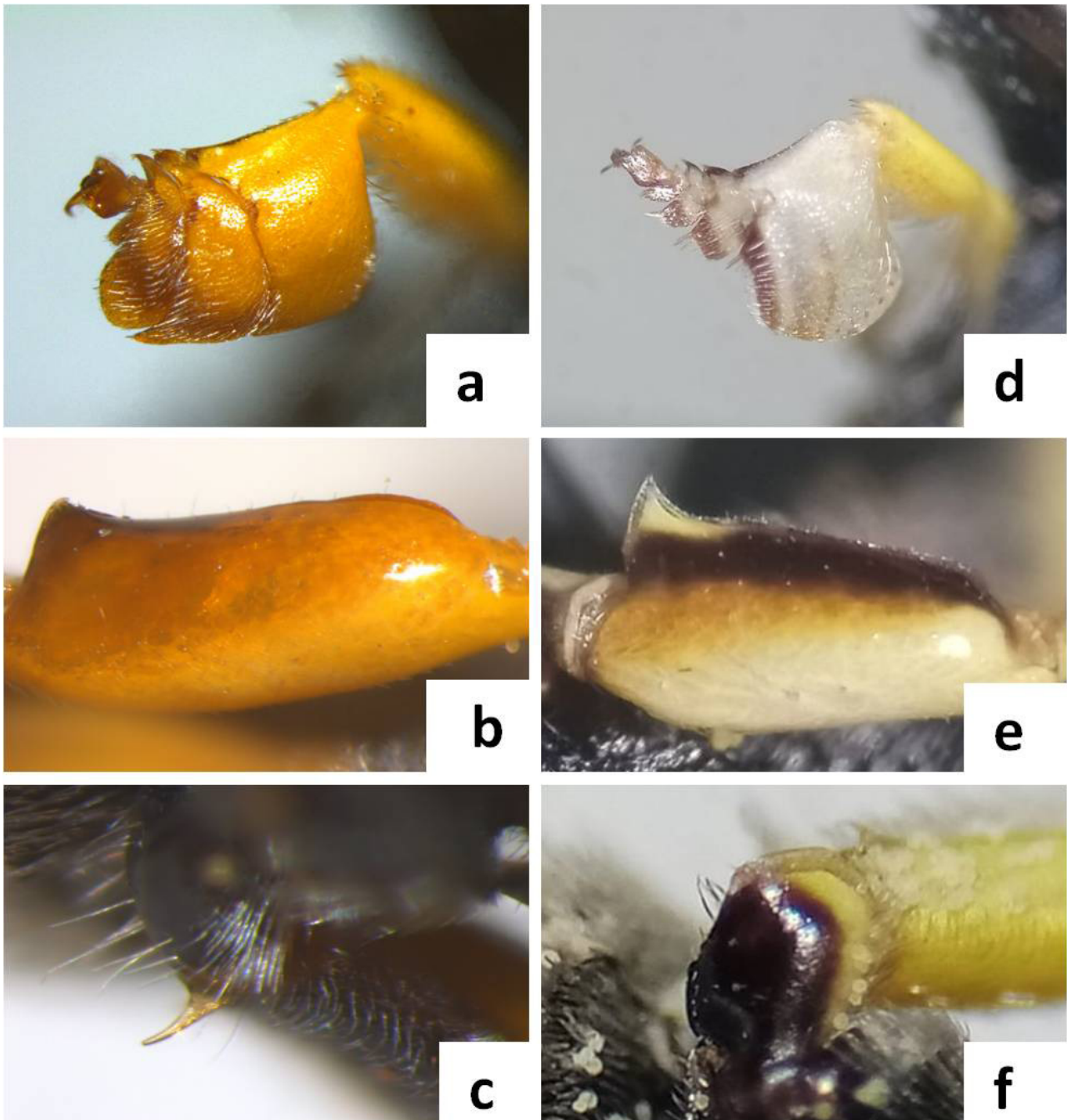


FIGURE 1. *Lestica anatolica* sp. nov. (a, b, c) and *L. clypeata* (d, e, f). a, d) Foretarsomeres; b, e) Midtibiae; c, f) Foretrochanters.

Upper part of head finely reticulate-punctate, punctures on ocellar area finer and closer, upper frons coarsely punctate with shiny interspaces. Gena very thin, sparsely punctate; interspaces shiny. Scutal punctures large, closer anteriorly and laterally, sparser medially and posteriorly. Scutellum finely and closely punctate. Mesopleuron coarsely and sparsely punctate; punctures less than one diameter apart, with shiny interspaces (Fig. 2i). Mesosternum with rough appearance, punctuation fine and irregular. Metapleuron shiny and longitudinally ridged. Dorsal surface of propodeum markedly reticulate, lateral surface longitudinally ridged. Terga shiny, punctuation of terga becoming gradually smaller and closer starting from first tergum, large on first three terga. Punctuation of sterna small, distributed regularly throughout surface.

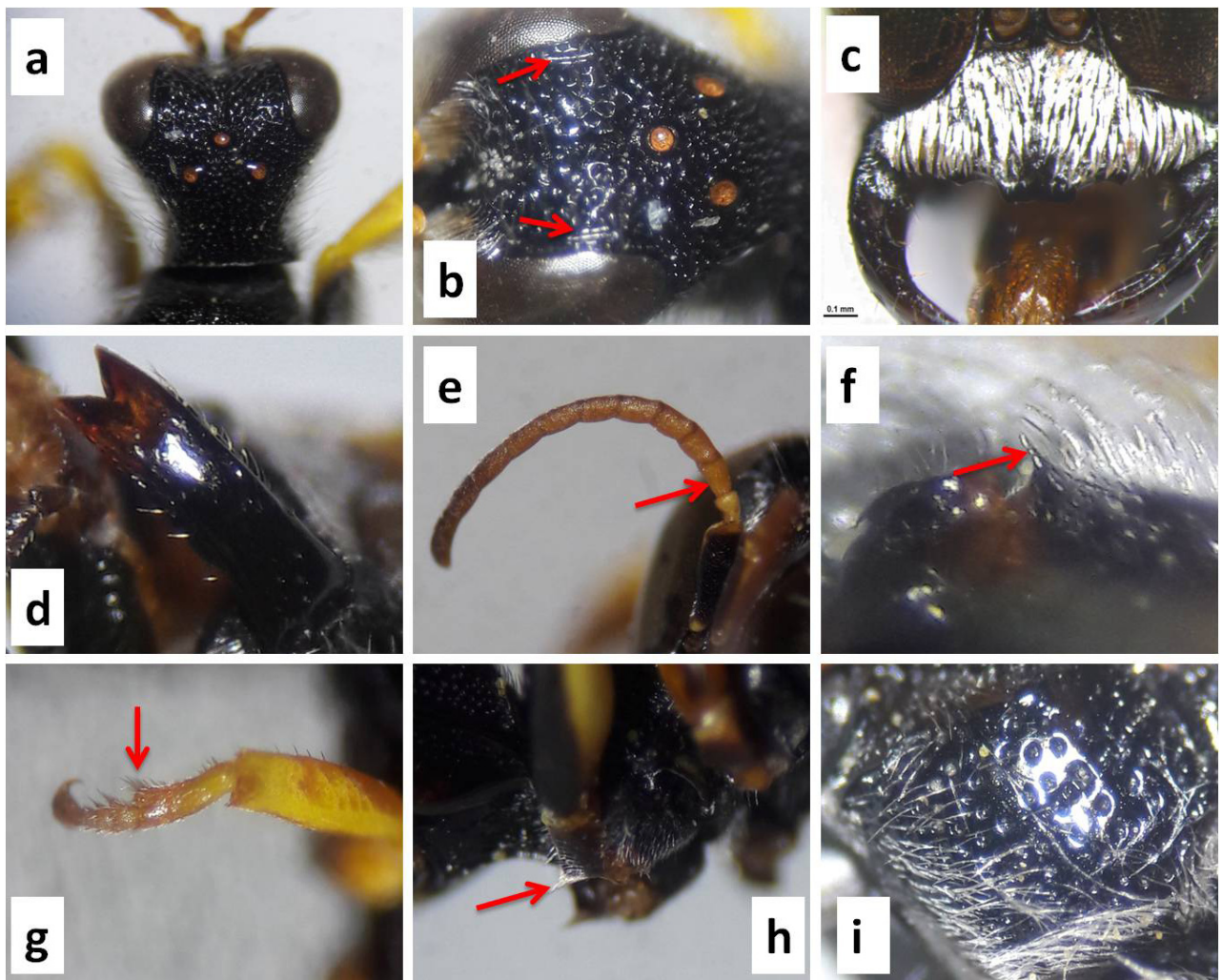


FIGURE 2. *Lestica anatolica* sp. nov. ♂: a) Dorsal view of head; b) Orbital foveae; c) Clypeus; d) Mandibule; e) Antennae; f) Spine of forefemur; g) Midbasitarsomer; h) Spine of trochanter III; i) Punctuation of mesopleuron.



FIGURE 3. *Lestica anatolica* sp. nov. a) Lateral; b) Dorsal; c) Front view of head.

Type material (Fig. 3). Holotype: ♂; Turkey: Sivas, İmranlı, Aşağıçulha village, 39.905°N 38.130°E, 1830 m, 9.VIII.2016, 1 ♂ leg. İ. Can (Fig. 4).

Female unknown.

Etymology: This species is named after the Anatolian region, where the type specimen was collected.



FIGURE 4. Collecting site of *L. anatolica* sp. nov.

***Lestica alata* (Panzer, 1797)**

Distribution in world: Palaearctic region (Pulawski 2022).

Distribution in Turkey: Bursa (Schulz 1904).

***Lestica camelus* (Eversmann, 1849)**

Distribution in world: Central and Eastern Palaearctic region (Pulawski 2022).

Distribution in Turkey: Ankara (Kohl 1915).

***Lestica clypeata clypeata* (Schreber, 1759)**

(Fig. 5)

Material examined: Giresun: Alucra, Mesudiye village, 40.319° N, 38.669° E, 1440 m, 2.VIII.2018, ♂; Alucra, Gürbulak village, 40.290° N, 38.805° E, 1600 m, 7.VIII.2017, 1 ♀; 11.VI.2018, 1 ♀; Çamoluk, Hacıören village, 40.183° N, 38.821° E, 1410 m, 7.VIII.2017, 1 ♀; Şebinkarahisar, Central district, 40.320° N, 38.435° E, 1200 m, 7.VIII.2017, 1 ♂; 2.VII.2018, 1 ♀; Gümüşhane: Şiran, Güreşkøy village, 40.112° N, 38.950° E, 1190 m, 11.VIII.2016, 3 ♀, 2 ♂; 26.VII.2017, 2 ♂; Kelkit, Çilhoroz pass, 40.159° N, 39.290° E, 1550 m, 26.VII.2017, 1 ♀; Sivas: Akıncılar, Şenbağlar village, 40.060° N, 38.396° E, 1140 m, 18.VII.2016, 1 ♀; 5.VI.2017, 2 ♂; 1.VIII.2017, 2 ♂; 2.VI.2018, 2 ♀; Gölova, Çobanlı village, 40.015° N, 38.585° E, 1290 m, 18.VII.2016, ♂; 24.VII.2016, 1 ♀; 30.VIII.2016, 1 ♀, 3 ♂; 23.VI.2017, 1 ♂; 2.VII.2017, 1 ♀; 12.VIII.2017, 11 ♀, 2 ♂; Suşehri, Aşağısarıca village, 40.155° N, 38.147° E, 930 m, 2.VI.2018, 3 ♀ ♀; Suşehri, Geminbeli pass, 39.990° N, 37.986° E, 2010 m, 18.VII.2017, 2 ♂, 17.VII.2018, ♂.

Host plant: *Euphorbia palustris* L.

Distribution in world: Western and Central Palaearctic region (Pulawski 2022).

Distribution in Turkey: Adana, Amasya, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bilecik, Bingöl, Bolu, Bursa, Çanakkale, Elazığ, Erzincan, Erzurum, Giresun, Hatay, Iğdır, İçel, İstanbul, Kahramanmaraş, Kars, Kastamonu, Konya, Kütahya, Malatya, Samsun, Şanlıurfa, Sivas, Tekirdağ, Tokat, Tunceli, Van (Ljubomirov & Yıldırım 2008; Yıldırım *et al.* 2016; Gülmez & Çubuk 2018; Kaplan & Yıldırım 2021).

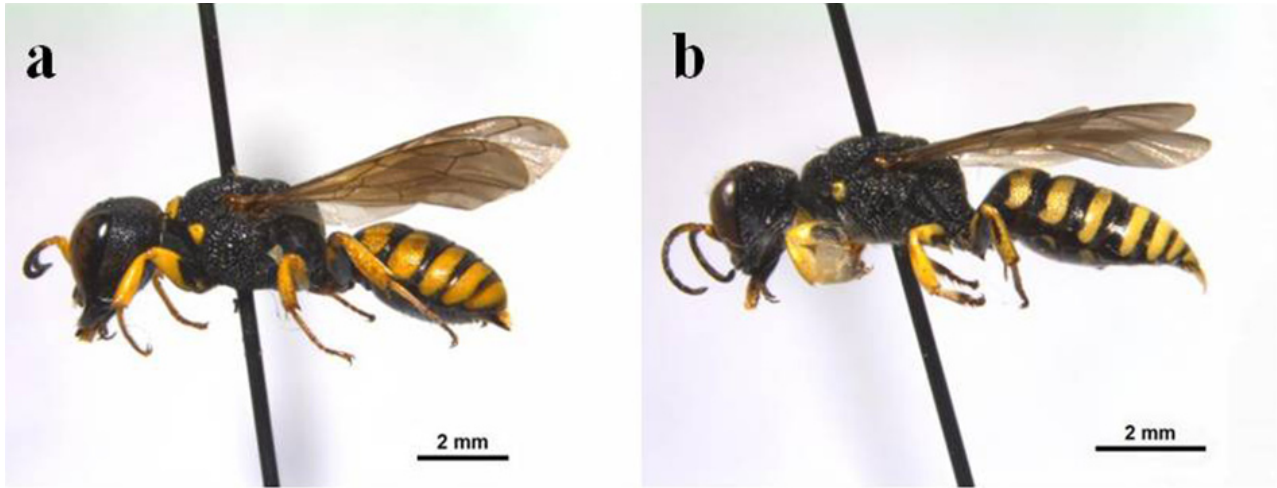


FIGURE 5. Lateral view of *Lestica clypeata*. a) Female; b) Male.

***Lestica eurypus* (Kohl, 1898)**

Distribution in world: Armenia, Turkey (Pulawski 2022).

Distribution in Turkey: Sivas (Dollfuss 2004).

***Lestica pluschtschevskyi* (F. Morawitz, 1891)**

Distribution in world: Europe (only Spain) to Central Asia (Pulawski 2022).

Distribution in Turkey: Erzurum (Yıldırım & Ljubomirov 2005).

***Lestica subterranea subterranea* (Fabricius, 1775)**

(Fig. 6)

Material examined: Erzincan: Refahiye, Sakaltutan pass, 39.870° N, 39.092° E, 1970 m, 11.VII.2018, 1 ♀; Giresun: Alucra, Mesudiye village, 40.319° N, 38.669° E, 1440 m, 2.VII.2018, ♀; Alucra, Gürbulak village, 40.290° N, 38.805° E, 1600 m, 13.VII.2016, 1 ♀; Gümüşhane: Şiran, Fındıkbeli pass, 40.266° N, 38.946° E, 1675 m, 11.VI.2018, 1 ♀, 1 ♂; Şiran, Seydibaba village, 40.096° N, 39.055° E, 1450 m, 3.VII.2018, 1 ♀; Kelkit, Ahmediye pass, 39.892° N, 39.372° E, 2090 m, 29.VI.2017, 1 ♂.

Host plant: *Reseda lutea* L.

Distribution in world: Europe to Central Asia (Pulawski 2022).

Distribution in Turkey: Antalya, Bayburt, Bingöl, Burdur, Diyarbakır, Erzurum, Giresun, Kars, Kayseri, Konya, Samsun, Sivas (Ljubomirov & Yıldırım 2008; Yıldırım *et al.* 2016; Kaplan & Yıldırım 2021).

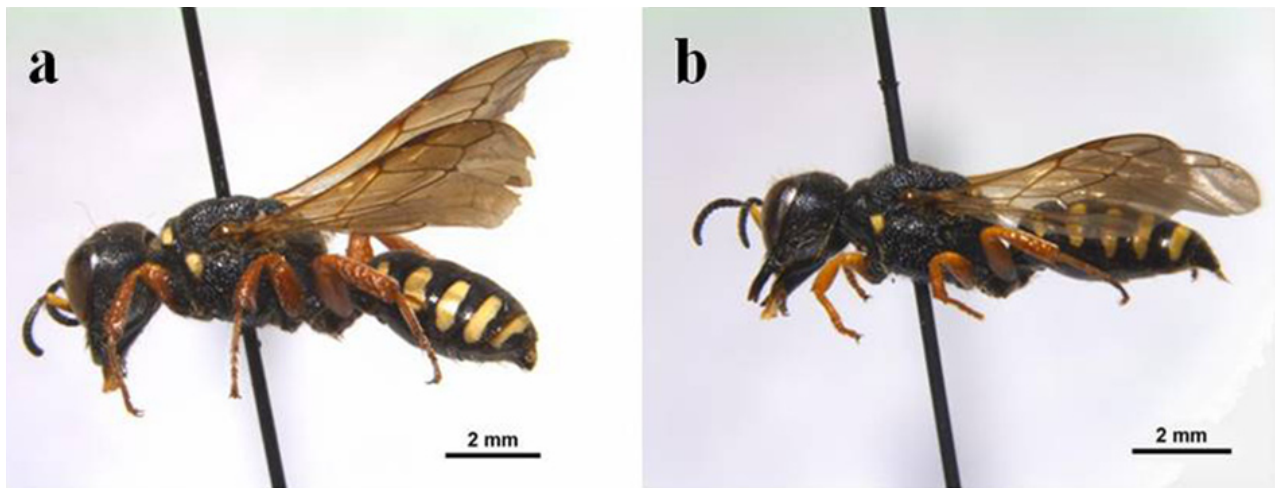


FIGURE 6. Lateral view of *Lestica subterranea*. a) Female; b) Male.

A key to the Turkish species of *Lestica* Bilberg 1820

Male

- | | | |
|---|---|---|
| 1 | Head narrowed behind eye | 2 |
| - | Head not narrowed behind eye | 5 |
| 2 | Flagellomere I 3.0–3.5 × as long as wide | <i>L. pluschtshevskyi</i> (F. Morawitz) |
| - | Flagellomere I 1.5–2.0 × as long as wide | 3 |
| 3 | Hindtrochanter without spine | <i>L. camelus</i> (Eversmann) |
| - | Hindtrochanter with obvious spine | 4 |
| 4 | Foretarsomere I shield-like, wider than long, foretarsomeres II and III distinctly narrower than I; trochanter III with thick, conspicuous spine; midfemur with basal tooth; apex of foretrochanter with carina | <i>L. clypeata</i> (Schreber) |
| - | Foretarsomeres I–III shield-like, wider than long, foretarsomeres II and III as wide as I; trochanter III with fine spine; midfemur rounded and enlarged basally; apex of foretrochanter with conspicuous spine | <i>L. anatolica</i> sp. nov. |
| 5 | Foretarsomere I with narrow shield-like extension | <i>L. eurypus</i> (Kohl) |
| - | Foretarsomere I without shield-like extension, parallel-sided, narrow | 6 |
| 6 | Mesopleuron with very coarse and dense punctures, intervals between punctures almost invisible; forebasitarsus dilated into translucent blade, longer than wide | <i>L. alata</i> (Panzer) |
| - | Mesopleuron with more or less coarse punctures, with shiny interspaces; forebasitarsus not dilated. | <i>L. subterranea</i> (Fabricius) |

Female (unknown in *L. anatolica* Can et Gülmez, sp. n., and *L. eurypus*)

- | | | |
|---|---|---|
| 1 | Pygidial plate markedly compressed from sides and elongated into narrow strip, on apex impressed longitudinally, on each side with thick long setae | 2 |
| - | Pygidial plate flat, broadly triangular, slightly compressed, setae on each side shorter and less dense | 3 |
| 2 | Pronotum with conspicuous sharp spine laterally; minimum distance between eye margins equal to 2/3 of scape length; underside of thorax with coarse and dense large punctures; free margin of clypeal lobe with clear notch; tibiae all yellow | <i>L. clypeata</i> (Schreber) |
| - | Pronotum laterally without spine, at most with very small denticle; minimum distance between eye margins equal to 1/2 of scape length; underside of thorax with sparse, small punctures; free margin of clypeal lobe with barely noticeable notch; tibiae largely dark. | <i>L. camelus</i> (Eversmann) |
| 3 | Mesopleuron coarsely and densely punctate, interspaces hardly visible; flagellomere I 2.0 × as long as wide | <i>L. alata</i> (Panzer) |
| - | Mesopleuron with sparse distinct punctures more than one diameter apart, interspaces smooth and shiny; flagellomere I 1.8–2.0 × as long as wide. | 4 |
| 4 | Flagellomere I at least 2.5 × as long as wide, II clearly longer than III. | <i>L. pluschtshevskyi</i> (F. Morawitz) |
| - | Flagellomere I 1.5 × as long as wide, II not longer than III. | <i>L. subterranea</i> (Fabricius) |

Acknowledgements

This study was a part of the PhD thesis of the first author and supported by Tokat Gaziosmanpasa University,

Scientific Research Unit, Grant Project No: 2017/44. We thank Dr. Wojciech J. Pulawski (California Academy of Sciences, San Francisco) and Dr. Toshko Ljubomirov (Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences) for helpful suggestions on the first version of the manuscript.

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