

BRAUERIA (Lunz am See, Austria) 42:9-12 (2015)

Two new brachypterous species of *Micropterna* STEIN from Turkey (Trichoptera, Limnephilidae, Limnephilinae, Stenophylacini)

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Abstract. Two brachypterous species of the genus *Micropterna* are described and illustrated: *Micropterna ilgazica* sp. n. and *Micropterna taskale* sp. n. Both species are closely related to *Micropterna nycterobia* MCLACHLAN, 1875 and *Micropterna baduka* MEY & MÜLLER, 1979, while *M. ilgazica* sp. n. is closely related to *Chaetopterna satunini* MARTYNOV, 1913. The genus *Chaetopterna* MARTYNOV, 1913 is synonymised with the genus *Micropterna* STEIN.

Key Words: *Micropterna*, brachypterous, new species, *Chaetopterna*, synonym, Turkey.

The genus *Micropterna* STEIN, 1874 has 21 species. Most of them are found in the eastern Mediterranean area, six are found in the Caucasus and Transcaucasia, and two are widely distributed (IVANOV, 2011). Most of the species are large cavernicolous insects with reddish brown wings, living in springs and streams; they emerge in spring, fly to the mountains and stay in caves or in the rocks during the summer, while their springs dry up; in autumn they return for copulation and lay their eggs; this behaviour has been known for a long time. In Turkey 15 species of *Micropterna* occur, including the widely distributed *M. nycterobia* and the two new species described in this paper. The new brachypterous species were discovered from north-western and southern Turkey. *Micropterna ilgazica* sp. n. was collected from Ilgaz Mountain, located in north-western Turkey, in late autumn at an altitude above 2000 m. *Micropterna taskale* sp. n. was found in southern Turkey at 1000 m. Both males and females of these new species have erect hairs on the short forewings and they live in permanent waters.

Currently five species of *Micropterna* are known; they are brachypterous and cannot fly or fly weakly. The first brachypterous *Micropterna* species, *M. baduka* MEY & MÜLLER, 1979, was described from the west Caucasus; it is also an autumn species with erect hairs on the forewings (MEY & MÜLLER, 1979). Later two species, *M. thaleri* MALICKY, 1985 from Morocco and *M. libana* MALICKY & DIA, 1997 from Lebanon, namely from the borders of the distribution area of *M. nycterobia*, were discovered; these species also have shorter wings (MALICKY, 1985; MALICKY & DIA, 1997). *M. taskale* sp. n. resembles *M. nycterobia*, but this new species has different behaviour and does not leave the place where the pupae were also collected at the same time in autumn.

M. ilgazica sp. n. has female genitalia similar to those of *Chaetopterna satunini* MARTYNOV, 1913 and male genitalia similar to those of *Micropterna baduka* and *M. nycterobia*.

MARTYNOV (1913) created a new genus, *Chaetopterna*, based on a female collected in late September from Azerbaijan. This female has erect hairs on the forewings, which are 7 mm long, and the spur formula is 0.2.2. Although the genitalia resemble those of *Micropterna* and *Stenophylax* he considered that the brachypterous female with erect hairs on the forewings and the spur formula indicated that the species was close to the genus *Chaetopteryx*. The type species *Chaetopterna satunini* MARTYNOV, 1913 remained a unique example for over a hundred years; the male was never

discovered. Although the erect hairs on the wings is one of the main features of the tribe Chaetopterygini, this feature is seen in both new species discovered in Turkey, and erect hairs on the forewing are also found in the subfamily Drusinae (SIPAHILER, 2002).

The reduced spur formula 0.2.2 is found in *Micropterna sipahilerae* KUMANSKI & MALICKY, 1997 (KUMANSKI & MALICKY, 1997). The males of these *Micropterna* species and the new species have a typical protarsus with a short first segment, the length of which is only half of the length of the second segment, the most significant feature of the genus *Micropterna* (SCHMID, 1953). Therefore, *Chaetopterna* MARTYNOV, 1913 = *Micropterna* STEIN, 1874 nov. syn.

Micropterna ilgazica sp. n. (Figures 1-12)

Material: Holotype male and paratype female (copulated pair): Turkey, Kastamonu, Ilgaz Mountains, Hacet, 2183 m, 41° 06' N/ 33° 51' E, 13.11.2014, leg. and coll. Sipahiler.

Antennae and maxillary palps brown; the coxa of the legs dark brown, femur and tibia brown; tarsal segments darker; first segment of the protarsus of the male is short, second segment two times longer than the first (Figure 1). Spur formula of male 0.3.3, of female 0.3.4. Wings are brown; brachypterous, forewing of male as long as the abdomen, of female somewhat shorter than the abdomen; forewing of male (Figure 2) with pale and large spots; the veins are thick and darker; dark brown erect long hairs on the veins and membrane arising from blackish dots (Figure 3); there are short hairs especially on the membrane; these features are less evident on the female forewing; the length of the forewing of male is 7 mm, of female 8.5 mm. The abdominal tergites are dark brown, the sternites are brown.

Male genitalia (Figures 4-9): Segment VIII is dark brown, partly blackish near the spinulose zone; the spinulose zone is large and long covering almost the whole of the tergite, covered densely with black tubercles; only a narrow band in the middle without tubercles; in lateral view, strongly convex in the middle. Segment IX broadly expands on the sides; the dorsal part is somewhat broad. The preanal appendages sclerotized, blackish; in lateral view, long and narrow, the sides are parallel on the basal portion, subdistally curved towards the dorsal. The dorsal part of the intermediate appendages laterally as broad as the preanal appendage, strongly sclerotized, the apex curved towards the dorsal; ventral part broadly dilated on the posterior edge; in caudal and dorsal view the dorsal parts are broad, the apex are strongly curved on the sides; in dorsal view, the ventral parts of the intermediate appendages are longer than the preanal appendages. The inferior appendage laterally narrow and long, the apex is pointed. The phallic apparatus is very large and long; in lateral view, very broad at the base, medially strongly curved towards the dorsal narrowing at the tip; in ventral view, the apex is excised medially; the parameres are strongly sclerotized, long; in lateral view, narrower subdistally; in ventral view, crosswise on the subdistal portion.

Female genitalia (Figures 10-12): In dorsal view, the sides of tergite IX prolonged forming narrow lobes, which possess long hairs on the outer and ventral surface; the anterior margin with a strongly sclerotized stripe, the posterior margin with a small excision in the middle; lateral lobes are rounded. The dorsomedian part of segment X is a flat plate located between the lateral lobes of segment X, which are strongly sclerotized, narrow, longer than the side prolongations of tergite IX. The supragenital plate laterally slightly longer than the lateral lobe of tergite IX and strongly sclerotized; in

caudal view with a triangular projection on each side of the dorsal edge. The vulvar scale is large, the side lobes are as long the median lobe, the apex is rounded.

Habitat: *Micropterna ilgazica* sp. n. lives in a permanent spring at high altitude above 2000 m in the mountain.

Remarks: *Micropterna ilgazica* sp. n. differs from all known species of the genus *Micropterna* by the male's very large and long phallic apparatus and the convex spinulose zone of tergite VIII. It is closely related to *Chaetopterna satunini* MARTYNOV, 1913 (MARTYNOV, 1913); the females of both species have short wings and possess erect hairs on the forewings. The female of the new species resembles that of *C. satunini*, having narrower prolongations of tergite IX and segment X; in lateral view, the lateral prolongation of tergite IX of *C. satunini* is gradually narrower towards the tip and the median part of tergite IX is thin, whereas in *M. ilgazica* sp. n. it is broader and the median part is also broader with a small excision in the middle. The males of *Micropterna baduka* and *M. nycterobia* somewhat resemble the male of the new species; both species have a narrow preanal appendage, but the preanal appendage of the new species is thinner, curving towards the dorsal, and the other parts of the genitalia separate them.

***Micropterna taskale* sp. n.** (Figures 13-20)

Material: Holotype male and paratypes 1 male, 1 female: Turkey, Karaman, Taşkale, 9 km south of Taşkale, Büyük Koraş Köyü, İbrala Stream, (light), 1000 m, 37° 07' N/33° 42' E, 20.9.2006; same place, İncesu Stream, a tributary of İbrala Stream, 21.9.2006, 13 male pupae, 4 female pupae, 2 prepupae; leg. and coll. Sipahiler.

Antennae, maxillary palps, legs, and wings are pale brown; the first segment of the protarsus of males is short, second segment two times longer than the first (Figure 13). Spur formula of males 0.3.4, of female 1.3.4. Wings are brown, brachypterous, forewings of both males and female slightly shorter than the abdomen; forewing with erect hairs on the veins and on the membrane, shorter hairs are also found; the length of the forewing of males 11-11.5 mm, of female 12 mm.

Male genitalia (Figures 13-17): The spinulose zone of tergite VIII is long and large; in dorsal view is composed of two nearly triangular plates, of which the anterior edges obliquely truncated. Segment IX is moderately developed, the dorsal part of the edge with a sclerotized stripe. In lateral view, the preanal appendage somewhat broadly oval, rather short, the subdistal part curved towards the dorsal; in dorsal view, the apical part roundly dilated, with a triangular projection on the inner side. In lateral view, segment X is directed towards the posterior, dorsal portion is triangular, the basal part broad, strongly developed. The posterior edge of the inferior appendage laterally has a small dilatation on the subdistal part. The phallic apparatus basally broad, curved in the middle towards the dorsal, in ventral view the apex slightly excised in the middle; the parameres are strongly sclerotized, shorter than the phallus.

Female genitalia (Figures 18-20): In dorsal view, the sides of tergite IX prolonged forming narrow lobes, which are long, reaching half of the length of lateral lobes of segment X; the anterior margin with a strongly sclerotized stripe; the dorsomedian part of segment X is an oval plate located between the lateral lobes of segment X; the lateral lobes of segment X are large, almost rounded on the posterior portion. The supragenital plate laterally short and somewhat curved towards the ventral; in caudal view, the supragenital plate is slightly dilated both sides of the middle. The vulvar scale is

large; the median lobe is larger than the side lobes and apically rounded.

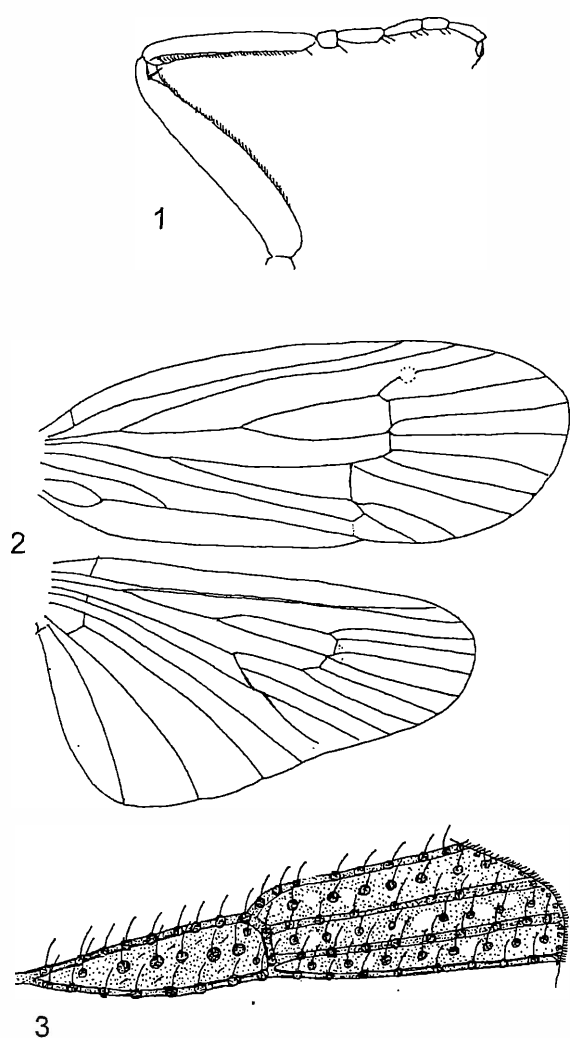
Remarks: *Micropterna taskale* sp. n. is closely related to *M. nycterobia*, but differs from this species by the following features: the spinulose zone of the new species is large, anterior edge of each plate obliquely truncated, whereas in *M. nycterobia* the spinulose zone is narrower and the anterior edge is parallel to the anterior edge of tergite VIII (Schmid, 1957). The preanal appendage of *M. taskale* sp. n. is shorter and thicker than that of the related species. The basal parts of the intermediate appendages of *M. taskale* sp. n. are very large, larger than those of the related species and the dorsal parts are directed towards the posterior, while in *M. nycterobia* the dorsal parts of the intermediate appendages are directed towards the dorsal. The differences in the female genitalia are as follows: the lateral prolongations of tergite IX are longer than those of *M. nycterobia*, and the supragenital plate of the related species has triangular lobes in caudal view, whereas these lobes are narrow and oval in the new species. The median lobe of the vulvar scale of *M. taskale* sp. n. is larger than that of *M. nycterobia* and rounded.

Habitat: *M. taskale* sp. n. lives in a permanent stream with stony bottom, which is found on the northern slopes of the Taurus Mountains.

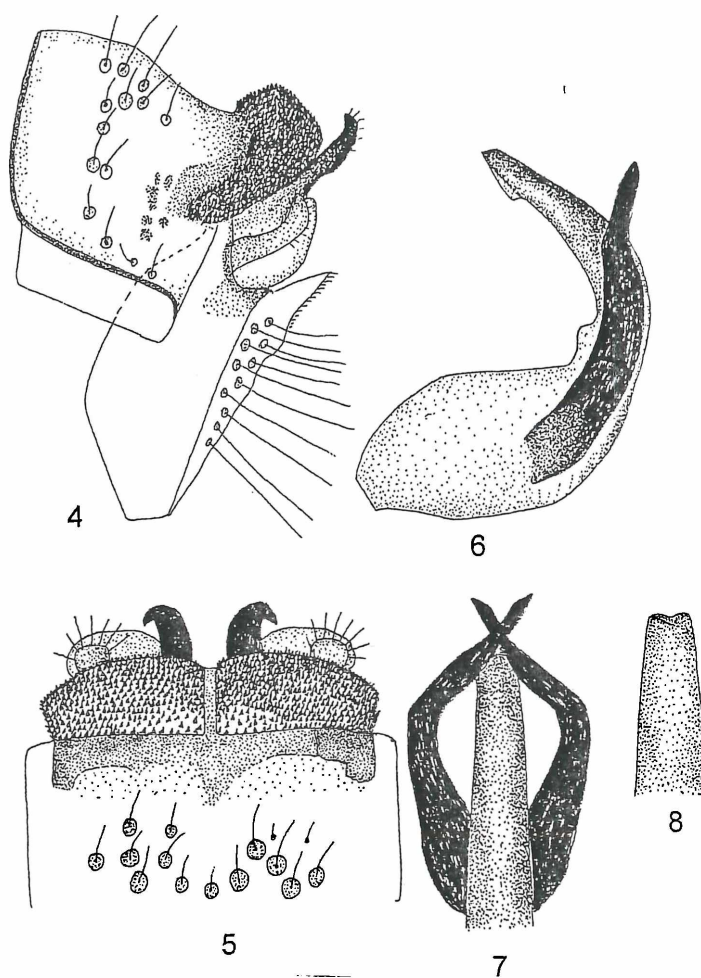
Acknowledgement. I thank my friend Prof. Dr. Füsün Erk'akan for her kind help during the field study.

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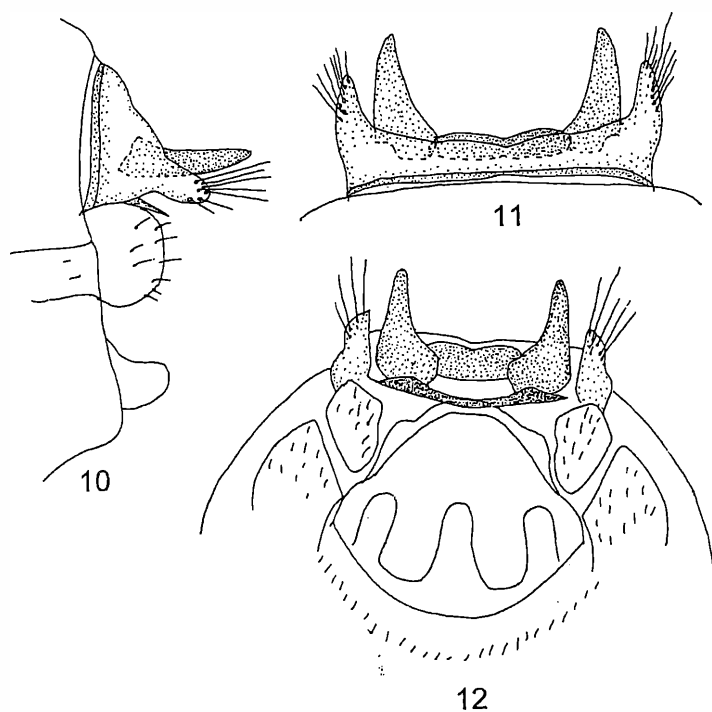
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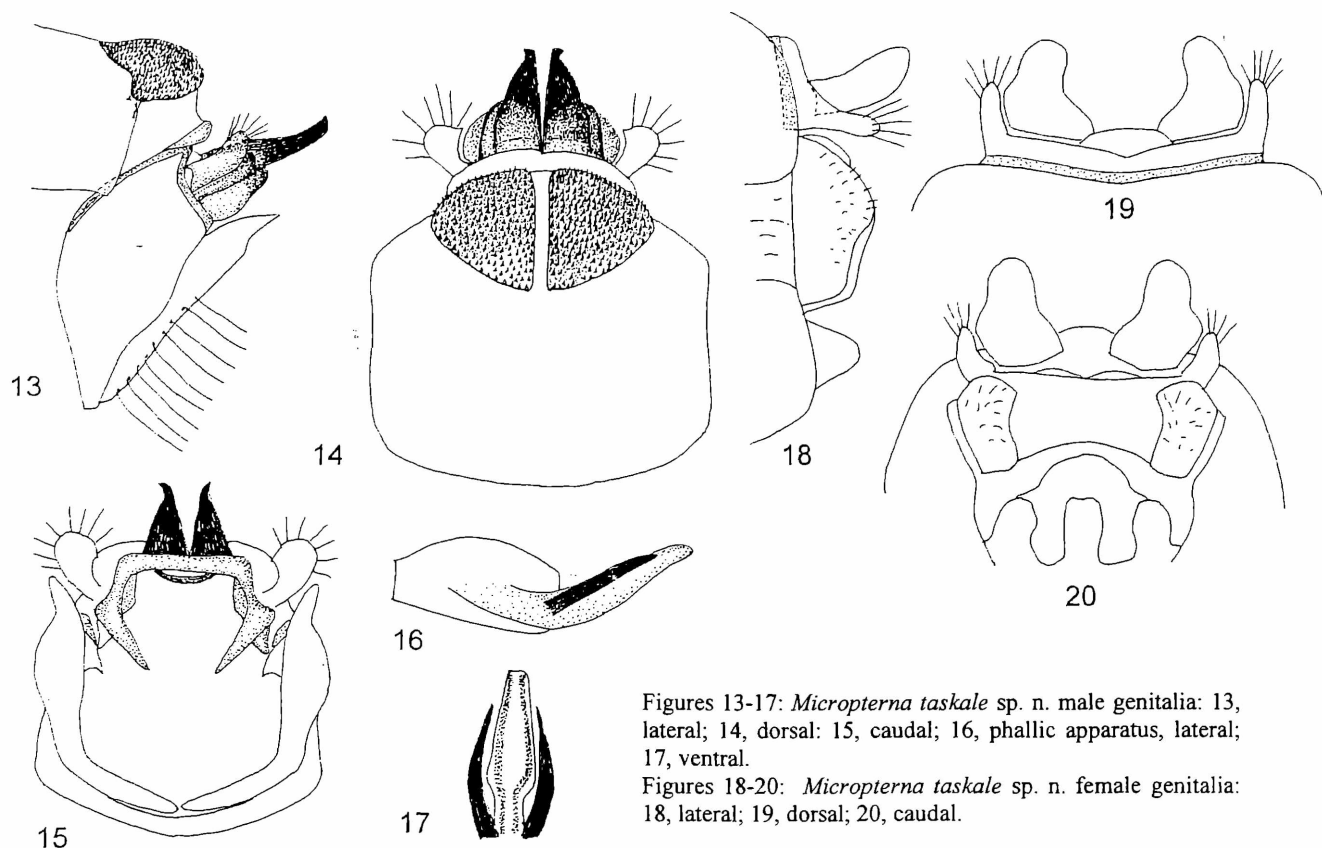
Figures 1-3: *Micropterna ilgazica* sp. n. 1, male foreleg, lateral, 2, male wings; 3, part of male forewing, detailed;



Figures 4-9: *Micropterna ilgazica* sp. n. male genitalia: 4, lateral; 5, dorsal; 6, phallic apparatus, lateral; 7, ventral; 8, distal part of phallus, ventral; 9, male genitalia, caudal.



Figures 10-12: *Micropterna ilgazica* sp. n. female genitalia: 10, lateral; 11, dorsal; 12, caudal.



Type site of *Micropterna ilgazica*, Ilgaz Mountains.

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Zeitschrift/Journal: [Braueria](#)

Jahr/Year: 2015

Band/Volume: [42](#)

Autor(en)/Author(s): Sipahiler Füsün

Artikel/Article: [Two new brachypterous species of Micropterna STEIN from Turkey \(Trichoptera, Limnephilidae, Limnephilinae, Stenophylacini\) 9-12](#)