

BRAUERIA (Lunz am See, Austria) 27:26-28 (2000)

### New species and subspecies of Trichoptera from Turkey (Hydroptilidae, Philopotamidae, Phryganeidae, Lepidostomatidae)

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**Abstract.** New taxa from Turkey are described and illustrated: *Stactobia seki* sp.n. (Hydroptilidae), *Wormaldia ikizdere* sp.n. (Philopotamidae), *Phryganea grandis serti* ssp.n. (Phryganeidae), *Lasiocephala belkisiae* sp.n. (Lepidostomatidae).

#### *Stactobia seki* sp.n. (Hydroptilidae)

Antennae, palps and legs dark brown; thorax and abdomen dorsal blackish; wings pale yellowish; hairs on the wings and body are dark brown. Length of the anterior wing of male 1.5 mm. Male genitalia (Figs. 1-4): Tergite 9 is short, dorsally dilated on the posterior margin; in lateral view, the ventral margin is prolonged, narrowing towards the tip; lateral prolongations are long. The sides of segment 10 are sclerotized; the membranous part is excised in the middle forming oval lobes on the sides. The superior appendages are small, rounded and close to each other. The inferior appendages are triangular in shape; in ventral view, they are directed on the sides. The Aedeagus is long, cylindrical and slightly narrower in the middle; it has a long spine and a shorter one, which has three thin branches. The female is unknown.

**Holotype male and paratype male:** Turkey, Fethiye, Gelemiş, (Patara), Seki Çayı, 100 m, 22.5.1999, leg. and coll. Sipahiler.

*Stactobia seki* sp.n. belongs to the *furcata*-group and is related to *S. caspersi* ULMER, 1950 (SCHMID, 1959). It is distinguished from *S. caspersi* by the shape of segment 9, which is long in *S. caspersi* and rather short in the new species; in ventral view, the preanal appendages of the related species is triangular and located separately, while they are rounded and closed to each other in *S. seki* sp.n.; the spines of the aedeagus of the new species are composed of a longer thin spine and a shorter one having three branches; in *S. caspersi* the aedeagus is dilated and has a large and concave spine on the subdistal part.

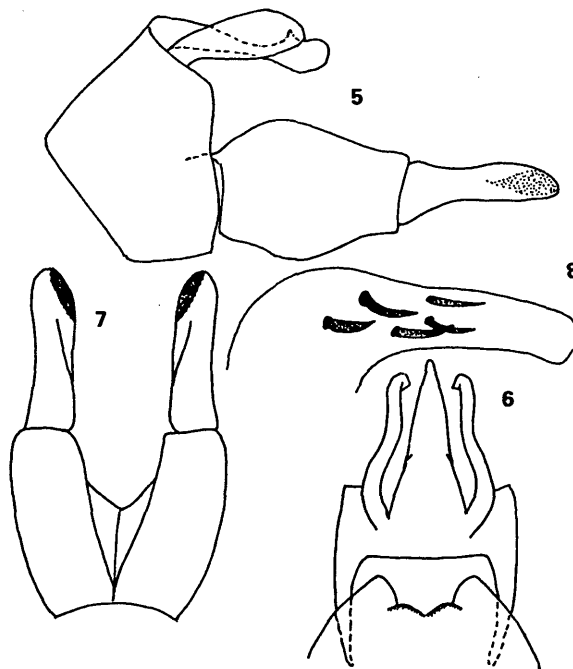


Figs. 1-4: *Stactobia seki* sp.n. male genitalia; 1, lateral; 2, dorsal; 3, ventral; 4, aedeagus dorsal.

#### *Wormaldia ikizdere* sp.n. (Philopotamidae)

Antennae, legs and wings brown. Length of anterior wing of male 5-6 mm. Male genitalia (Figs. 5-8): In dorsal view, the apical margin of tergite 8 is deeply excised in the middle forming two rounded

lobes on each side, of which the median lobes are thickened on the apical margin. Segment 9 expands triangular in shape on the anterior edge. In dorsal view, segment 10 is almost triangular; in lateral view, the apex is dilated ventrally. Preanal appendages long and broadly oval; dorsally sinuate, and apex broadly triangular in shape, curving inwards. In lateral view, the basal segment of the inferior appendages is dilated ventrally and dorsally; the second segment is somewhat narrower near the base and becomes oval through the apex; the apex is obliquely truncated in ventral view. The aedeagus has 5 spines.



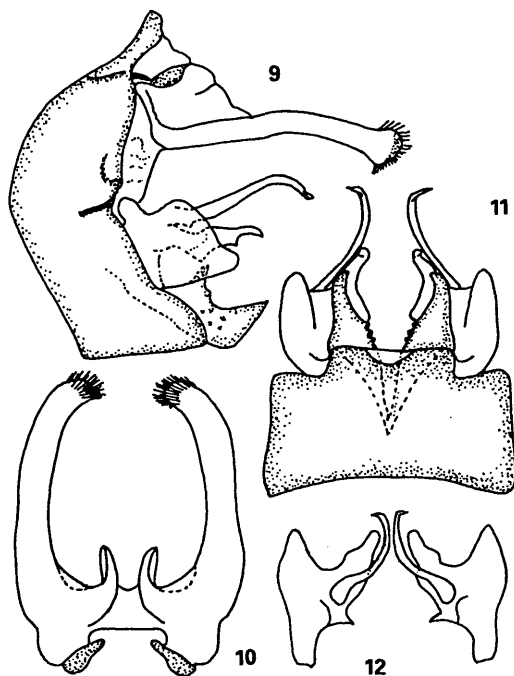
Figs. 5-8: *Wormaldia ikizdere* sp.n. male genitalia; 5, lateral; 6, dorsal; 7, ventral; 8, aedeagus lateral.

**Holotype male:** Turkey, İkizdere, direction Cimil, 900 m, (40° 46' N, 41° 10' E), 22.7.1984; paratypes 8 males: Turkey, Gümüşhane, Torul, Özkürtün, Örtümcek Ormanı, 800 m, Küçükdene deresi, (40° 47' N, 39° 04' E) 13.9.1999, leg. and coll. Sipahiler.

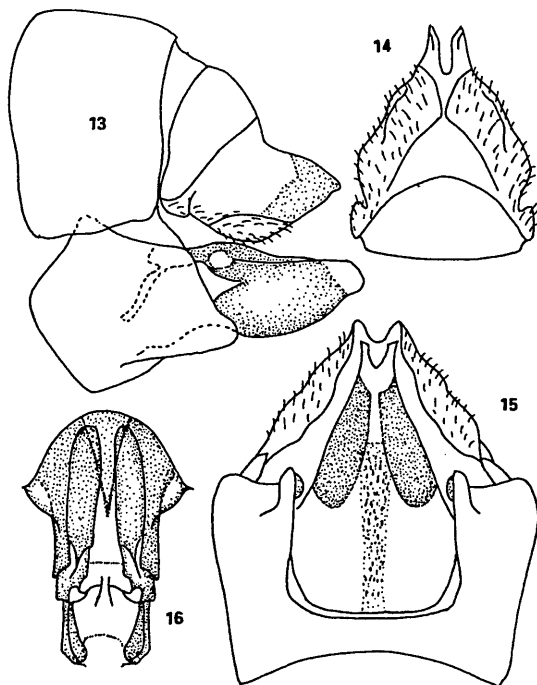
*Wormaldia ikizdere* sp.n. is related to *W. triangulifera* McLACHLAN, 1878 (MALICKY, 1983), differing from this species and the other species of genus *Wormaldia* by the following features: the shape of tergite 8, which is deeply and roundly excised and has a notch in the middle of the side margins; the base of the excision is sclerotized. The preanal appendages are large and long. In lateral view, the second segment of the inferior appendages is narrower near the base both dorsally and ventrally and becomes oval towards the tips.

#### *Phryganea grandis serti* ssp.n. (Phryganeidae)

Antennae brown, with dark brown bands; legs and wings brown; the apical part pale brown spotted; fore wings with short setae on the veins. Length of the anterior wing of males 19-21 mm; of females 25-27 mm. Male genitalia (Figs. 9-12): Segment 9 is narrow on the dorsal part; the ventromedian lobe of segment 9 is broad, almost quadrangular in shape. In dorsal view, the lateral processes of segment 10 are almost straight, rather broad, slightly curving inwards apically. In lateral view, the apex is enlarged; in dorsal and ventral view it is seen almost equal in width; the apex is covered with stout setae; in ventral view, the ventral surface is slightly concave or at least smooth on the distal part. The lateral lobe of the inferior appendages is short and broad; the mesal projection is rather long; the terminal segment arising from the dorsal surface is long; the apex is curved on the sides. In ventral view, the lower lobes of the inferior appendages are almost triangular in shape, bearing small teeth on the inner surface, rather narrow at the base and pointed at the apex; the apex is curved



Figs.9-12: *Phryganea grandis serti* ssp.n. male genitalia; 9, lateral; 10, dorsal; 11, ventral; 12, lateral lobe of the inferior appendages, dorsal;



Figs.13-16: *Phryganea grandis serti* ssp.n. female genitalia; 13, lateral; 14, dorsal; 15, ventral; 16, internal structure, ventral.

inwards. The basal sclerites of the aedeagus are thin and closed to each other in ventral view. Female genitalia (Figs. 13-16): In dorsal view, dorsal part of segment 10 narrow at the base and forms small projections on the sides; apical margin V-shaped excised in the middle forming two lobes; In lateral view, subgenital plate is slightly longer than segment 10; in ventral view, it gradually narrows through the apex; the apex is V-shaped excised, the apical projections are somewhat diverged.

Holotype male and paratypes (4 males and 2 females): Beyşehir, Beyşehir Lake, 15 km south of Beyşehir, 1000 m, 11.6.1998; other paratypes (4 males, 1 female): same place, Gedikli, 50.5.1998, leg. Sert, all in coll. Sipahiler.

Remarks: The *Phryganea grandis* complex is widespread in Europe and western Asia and consists of the following allopatric taxa

(which would better merit to be considered subspecies than species (MALICKY, 1996): *P. grandis* LINNAEUS 1758, described from Sweden and possibly widespread in northern and central Europe; *P. rotundata* ULMER 1925, described from Siberia and extending to the Caucasus and northeastern Turkey (SIPAHILER & MALICKY, 1987) and possibly northern Europe; *P. ochrida* MALICKY 1975, described from Makedonia and living also in Bulgaria, Rumania, northern Greece and northwestern Turkey; and *P. nattereri* BRAUER 1873, said to be found in southern Spain due to mislabelling of the type series, but actually living in northern Italy and southern Switzerland. *P. grandis serti* which is described below, from southern Anatolia, is in this concept probably a distant offspring of *P. rotundata*. However, the areas of distribution and their possible contact zones are insufficiently known and would merit a careful study of much material from localities of the whole area, which was unfortunately not made by WIGGINS (1997) in his revision of the family.

All the species of the *grandis*-group differ from each other mainly by the shape of the preanal appendages (MALICKY, 1983). Because of the allopathic distribution of the species of the *grandis*-group with small differences in the genitalia, the new member of the group is considered as a subspecies of *P. grandis* LINNAEUS, 1878. *P. grandis serti* ssp.n. is distinguished by the shape of the preanal appendages and the ventral lobe of inferior appendages. Among the related species it is similar to *P. rotundata* ULMER, 1905 (according to figure 123 of WIGGINS, 1997, but this author did not indicate the origin of the figured specimens). The new subspecies, found in southern Anatolia, differs from *P. rotundata* mainly by the shape of the lateral process of segment 10, which is stout and almost equal in breadth and ventrally concave on the apical portion, while in *P. rotundata* the lateral process of segment 10 is cylindrical, enlarging on the apical part; in *P. g. serti* ssp.n the ventral lobe of inferior appendages is narrow, curving inwards at the apex; in *P. rotundata* they are diverged triangular. The terminal segment of the inferior appendages of *P. g. serti* ssp.n. is long and curved on the sides on the distal part; while they are shorter and directed inwards in *P. rotundata*. The differences between female genitalia are also evident from figure 124 of WIGGINS (1997).

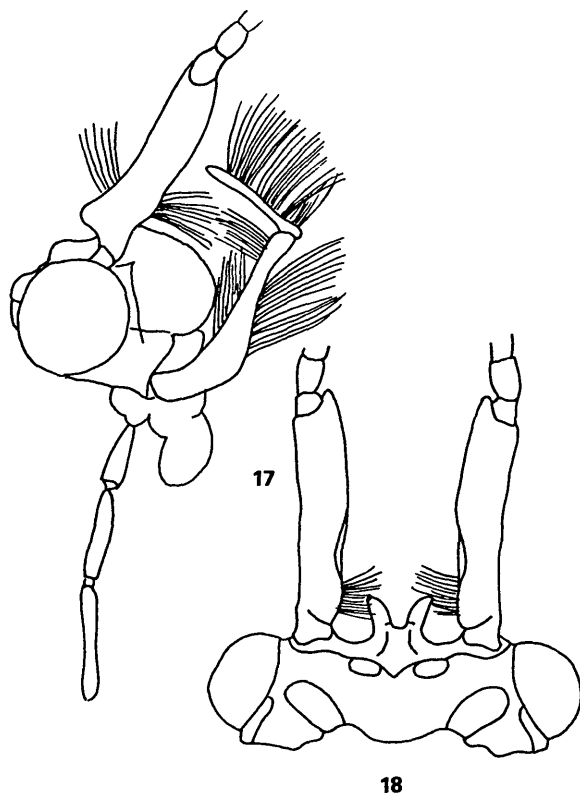
*Phryganea grandis serti* ssp.n. is dedicated to Dr. Osman Sert (Hacettepe University, Ankara), who collected this new subspecies

#### *Lasiocephala belkisiae* sp.n. (Lepidostomatidae)

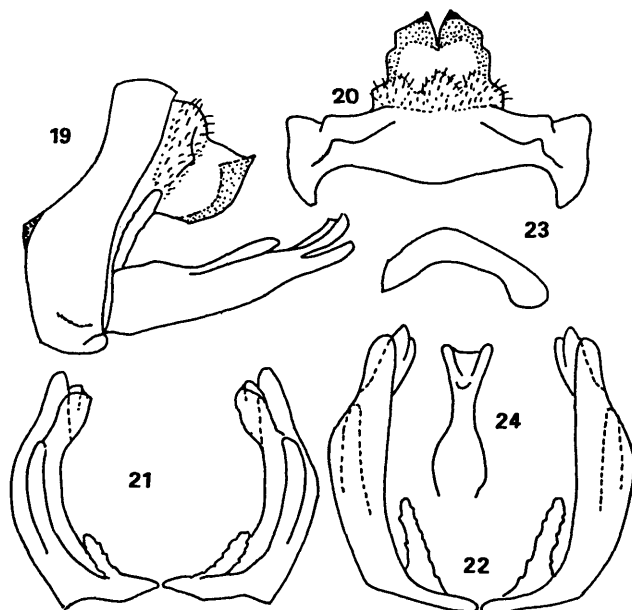
Maxillary palpi, wings, legs brown; antennae, thorax and head dorsal dark brown; scapus of male dark brown, rather long but shorter and stouter than the female scapus; the inner surface is smooth having a pale yellowish oval area at the base (Figs.17, 18); The scapus of the female is pale brown, with a dark brown band at the base. In lateral view, there is a tubercle dorsally at the base of the scapus of male. Maxillary palpi and scapi are covered with long, pale hairs. In dorsal view, the horn-shaped projections, which are found between the scapi, are directed laterad. Maxillary palpi similar to that of *L. holzschuhi* MALICKY, 1977 (MALICKY, 1977). Length of anterior wings of males 6.5-7 mm, of females 6.5-7.5 mm. Male genitalia (Figs. 19-24): In lateral view segment 9 is sinuate on the anterior margin. Segment 10 with a large hairy area at the base, which covers basal part of segment entirely, forming triangular lobes in dorsal aspect. In dorsal view, the apical part of segment 10 is sclerotized; the side margins are pointed subdistally. In lateral view, inferior appendages with a long basal projection, which is longer than the width of the basal part of the inferior appendage; the second projection arises from the basal one-third part of the inferior appendage and is rather long; the third one is rather thick and medially somewhat excised on the apical portion. In dorsal view, the apex of the aedeagus is as large as the basal part; in lateral view, it is almost gradually rounded on the ventral margin. Female genitalia as in the figures 25-27.

Holotype male and paratypes (5 males and 2 females): Turkey, Fethiye, Gelemiş, (Patara), 55 km north of Gelemiş, Saklıkent, 100 m, 22.5.1999, leg. and coll. Sipahiler.

*Lasiocephala belkisiae* sp.n. is closely related to *L. holzschuhi* MALICKY, 1977 (MALICKY, 1977) found in eastern Anatolia. It differs from this species by the following features: The scapus of *L. belkisiae* sp.n. has no projections on the inner surface; in

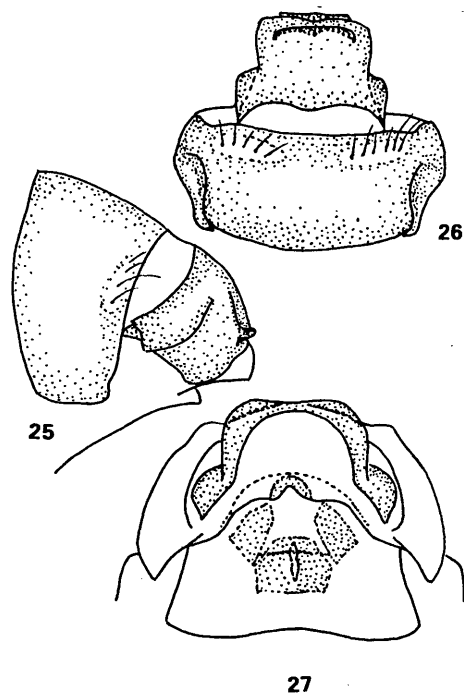


Figs. 17, 18: *Lasiocephala belkisiae* sp.n. male head; 17, lateral; 18, dorsal.



Figs. 19-24: *Lasiocephala belkisiae* sp.n. male genitalia; 19, lateral; 20, dorsal; 21, inferior appendages, dorsal; 22, inferior appendages, ventral; 23, aedeagus, lateral; 24, aedeagus, dorsal.

*L. holzschuhi* MALICKY there are two horn-like projections. In lateral view, anterior margin of segment 9 in the new species is roundly dilated on the ventral half, in *L. holzschuhi* it is roundly excised; in *L. belkisiae* sp.n. the hairy area, located at the base of segment 10 covers the segment entirely and there is a pointed projection on the sides; in *L. holzschuhi* the hairy area is found dorsolaterally and this part of segment is smooth; in *L. belkisiae* sp.n., the basal lobe and the median lobe of the inferior appendages are long, while they are short in *L. holzschuhi*. In addition to these differences, *L. belkisiae* sp.n. is a small insect with 6.5-7.5 mm length of the anterior wings, while *L. holzschuhi* is a larger one and the length of the anterior wings is 10-11 mm.



Figs. 25-27: *Lasiocephala belkisiae* sp.n. female genitalia; 25, lateral; 26, dorsal; 27, caudal.

This new species is dedicated to my friend Prof. Dr. Belkis Erbaş (Hacettepe University, Faculty of Medicine), for the memory of our collecting trip to Patara.

#### Acknowledgements

I wish to express my thanks to Doz. Dr. Yücel Çağlar, the head of RAREF (The Research Association Rural Environment and Forestry) for supporting the travel costs to the north eastern Anatolia and Mr. Ayhan Cevahir, (Department of National Parks) for his kind help for collecting in Örtümcek Forest in Özkürtün, Gümüşhane. My sincere thanks to Dr. Osman Sert, who has given me the valuable material collected from Beyşehir Lake.

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