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Studies on the *instabilis* group of the genus *Hydropsyche* in Turkey (Trichoptera, Hydropsychidae)

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Abstract

The males of the *Hydropsyche instabilis* group collected between the years 1979 and 2002 in Turkey are revised. Brief descriptions, figures, variations and distributions are given. The new species, *Hydropsyche kepez* sp. nov., *H. cirali* sp. nov., *H. akseki* sp. nov., *H. mutensis* sp. nov., *H. nadire* sp. nov., *H. yukaritepe* sp. nov., *H. elmali* sp. nov., *H. hadimensis* sp. nov., *H. kazdagensis* sp. nov., *H. yenisar* sp. nov., and *H. sinopensis* sp. nov. are described and illustrated.

Key words: *Hydropsyche instabilis* group, Turkey, new species, taxonomy, distribution.

Zusammenfassung

Die Männchen der *Hydropsyche instabilis*-Gruppe, gesammelt in den Jahren zwischen 1979 und 2002 in der Türkei, werden revidiert. Kurze Beschreibungen, Abbildungen, Variation und Verbreitung werden präsentiert. Die neuen Arten, *Hydropsyche kepez* sp. nov., *H. cirali* sp. nov., *H. akseki* sp. nov., *H. mutensis* sp. nov., *H. nadire* sp. nov., *H. yukaritepe* sp. nov., *H. elmali* sp. nov., *H. hadimensis* sp. nov., *H. kazdagensis* sp. nov., *H. yenisar* sp. nov. und *H. sinopensis* sp. nov. werden beschrieben und illustriert.

Introduction

There are several studies on the *instabilis* group of the genus *Hydropsyche* which make the identification of the species in central Europe possible (BOTOSANEANU & MARIN-

KOVIC 1966; TOBIAS 1972; KUMANSKI 1974). The recent study of MALICKY (2001) on the southeastern Mediterranean species of the group, especially the species of Greece and the Levant, clarifies determination of the species from these countries, but is insufficient to determine the Turkish species.

The species of the *Hydropsyche instabilis* group, characterized by the digitiform appendages of segment 10 of the male genitalia, were recently listed with 17 species for Turkey (SIPAHILER 2003). Among them, a few species from Turkey were described. The first described species from Erzurum province in eastern Turkey was *H. delemarai* JACQUEMART, 1965). Later *H. alaca* MALICKY, 1974 and *H. kebab* MALICKY, 1974 were described from Yozgat and Sertavul. In 1987, 1993 and 1998 three new species, *H. orduensis* SIPAHILER, 1987, *H. cetibeli* MALICKY & SIPAHILER, 1993 and *H. kirikhan* SIPAHILER, 1998, were described. Except for *H. cetibeli*, which was later also discovered in Greece (MALICKY 2001), these species are endemics. The rest of the material, which was collected in several parts of Turkey during the last 20 years, is deposited in my collection in Hacettepe University, Department of Biology Education. In this paper, some of the material is studied and only very distinct species are described. The first two species described from Turkey, *H. delamarai* and *H. alaca*, and the later recorded *H. martynovi* BOTOSANEANU, 1967 are not included in this study. These species are found mostly in the central and northern parts of Turkey and are closely related to each other and to *H. mahrkusha* SCHMID, 1959. I have lots of material from numerous localities closely related to these species which will be studied later. All these species are extremely variable, but characterized by relatively small body size and dark color. Among them, only *H. mahrkusha* is included in this study. *H. siltalai* DÖHLER, 1963, which was formerly recorded from southern Turkey (SIPAHILER & MALICKY 1987), was not found during the field studies. For the same reason, *H. krassimiri* MALICKY, 2001 described from Bulgaria and recorded from Turkey (MALICKY 2001), was not included in this study.

A few species, *H. instabilis* (CURTIS, 1834), *H. kebab* MALICKY, 1974 and *H. lepnevae* BOTOSANEANU, 1967 are widely distributed in Turkey. The other species were either found in a few localities in the same region or only in one locality.

Hydropsyche instabilis (CURTIS, 1834) (Figs 1-3)

Dorsal keel moderately broad; dorsal margin of segment 10 almost smooth; the digitiform appendages are directed somewhat dorsal; harpago short and curved inside; phallus strongly curved at base, the apical portion is rather long, the lateral projections are small.

Turkish specimens of this species are quite variable. In southern populations (Isparta province) the dorsal keel is very variable; its forms range from moderately broad to large in the same population, and the dorsal margin of segment 10 can be smooth or somewhat rounded on posterior part. In northern populations the shape of the dorsal keel is almost constant, but the harpago becomes shorter in some populations.

H. instabilis is a widely distributed species of the *instabilis* group in Turkey.

Material: Turkey, Erzurum, İspir, Köprüköy, 1.8.2001, 6♂♂, leg. BESKOV, coll. SIPAHILER; Kayseri, Yahyalı, Kapuzbaşı Köyü, 25.6.1986, 1♂ 2♀♀; Trabzon, Uzungöl, 25.8.1992, 1100m, 1♂ 3♀♀; Konya, Beyşehir, Kurucuova, Dedegöl Mountains, 1700m, 6.8.1993, 2♂♂; same place, 7 km SW of Kurucuova, 5.8.1993 at light, 120♂♂ 54♀♀; Kuru-

cuova, Genek, 5.8.1993 at light, 122♂♂; same place, 20.8.1999, 12♂♂ 14♀♀; Kastamonu, Pınarbaşı, Varla Mahallesi, Devrekani Kanyonu, 16.7.1994, 1♂ 20♀♀; Ankara, Beypazarı, Kıbrısık, 21.7.1999, 1♂; Konya, Ermenek, Ardıçkaya Köyü, Nadire Değirmeni, 700m, Göksu Nehri, 28.6.2000, 29♂♂ 8♀♀; Hadim, Korualan, Dedemli, 1300m, 28.6.2000, 1♂ 8♀♀; Artvin, Borçka, Camili, Didrele deresi, 4♂♂ 101♀♀; Şavşat, Meydancık, Mısırlı Köyü, İmerhev Vadisi, 1400m, 5.8.1996, 10♂♂ 8♀♀; Şavşat, Karaköy, 1900m, 31.7.1995, 2♂♂ 2♀♀; Şavşat, Çermik Köyü, 1300 m, 5.8.1996; 6♂♂ 27♀♀; Kastamonu, Pınarbaşı, Nalbantoğlu Mahallesi, 21.6.1996, 1♂; Konya, Korualan, Dedemli, 1300m, 28.6.2000, 1♂ 5♀♀; Konya, Ermenek, Nadire Değirmeni, 700m, Göksu Nehri, 29♂♂ 8♀♀; leg. and coll. SİPAHİLER.

Hydropsyche orduensis SİPAHİLER, 1987 (Figs 4-8)

Holotype and paratypes, described from Ordu province and collected at 150m altitude, have pale brown wings. Specimens from Rize and Artvin, collected at high altitude, have dark brown wings. The length of the anterior wing is 10-11 mm in male and 10-12 mm in female.

Male genitalia (Figs 4-8): Dorsal keel long and broadly triangular in shape; cavities 9 and 10 deep, the sides are strongly sclerotized; the dorsolateral stripes of segment 10 are high. Harpago narrow at base and dilated throughout apex. Phallus strongly curved at base; lateral projections very large and triangular in shape; the subdistal part of the phallus is narrow.

Distribution: Northeastern Anatolia.

H. orduensis is related to *H. instabilis* in having a strongly curved phallus. It differs from this species in the shape of the very large lateral projections of the phallus, the dorsal keel, which is large and triangular in shape, and the harpago, which is dilated in subdistal part.

Material: Turkey, Ordu, Yukarıtepe Köyü, 21.-27.8.1982, 150 m, 2♂♂ (types); Rize, Çamlıhemşin, Ayder, 1.8.1989, 1600m, 1♂; Çamlıhemşin, Kale, 19.7.1990, 6♂♂ 6♀♀; Artvin, Şavşat, Çermik Mahallesi, 1700m, 9.8.2000, 1♂; leg. and coll. SİPAHİLER.

Hydropsyche kepez sp. nov. (Figs 9-13)

Antennae, wings and legs pale yellowish; thorax and abdomen dorsally pale brown. Length of anterior wing of male 8-9 mm, of female 9-11 mm.

Male genitalia (Figs 9-13): Dorsal keel of segment 9 moderately broad, narrowing at apex; the breadth of the keel is variable. Dorsal cavity of segment 9 and 10 almost flat. In lateral view the dorsal margin of segment 9 is sinuate; posterior margin almost smooth; the digitiform appendages are short and thin; harpago of inferior appendages thin, the side margins are parallel to each other; apical margin smooth. In lateral view the phallus is curved at base and on subapical part; in ventral view the distal part is narrow and the lateral projections are very large and obtusely triangular in shape.

Holotype ♂: Turkey, Antalya, Kepez, Kepezbaşı, 280m, 36°55'N/30°40'E, 14.5.1982; leg. and coll. SİPAHİLER. Paratypes: Same data as holotype, 5♂♂ 3♀♀; Isparta, Sütçüler, Aksu Çayı, 350m, Gökbüvet, 40 km south of Eğirdir, 23.4.1991, 1♂; Sütçüler, Yazılı

Kanyon, tributary of Aksu Çayı, 30.5.1993, 1♂ 16♀♀; Antalya, Manavgat, Beşkonak, Köprüçay, 26.3.1993, 2♂♂ 1♀ and 20.5.2003, 6♂♂; leg. and coll. SIPAHILER.

Hydropsyche kepez sp. nov. was formerly identified as *H. jordanensis* TJEDER, 1946 (SIPAHILER 1987), but it differs from this and the other known species in the basally curved phallus, which has very large and obtuse lateral projections. The apical part of the phallus is rather long and narrowing towards apex.

***Hydropsyche jordanensis* TJEDER, 1946 (Figs 14-20)**

A pale species, its antennae, palps, legs and wings are pale brown-yellowish. Head (Figs 19, 20) in lateral view dilated in posterior half. Length of anterior wing of male 7 - 9.5 mm.

Male genitalia (Figs 14-18): Dorsal keel of segment 9 rather long and moderately broad, the apex is rounded. Cavity 9 deep; cavity 10 smooth. In lateral view, the dorsal margin of segment 10 is directed dorsal; harpago of inferior appendages rather short and almost equal in breadth; the apex is rounded and pointed on ventral edge. Phallus curved at base; in ventral view the apical part is rather long; the lateral projections are triangular in shape; apex pointed or rounded in some specimens.

The specimens collected from in Antakya province are slightly variable in size of the lateral projections of the phallus, which can be larger and obtuse at apex, and in the shape of the head, especially the swollen dorsal and lateral dilatations behind the eyes (Figs 19, 20), resembling the head of the recently described Levantine species *H. yahfufah* MALICKY, 2001. However, the similarities with the Levantine species (TJEDER 1946; BOTOSANEANU 1992; MALICKY 2001) in genitalia, color and size are evident.

Material: Turkey, Antakya, Harbiye, 24.5.1993, 10♂♂, leg. and coll. SIPAHILER.

***Hydropsyche cirali* sp. nov. (Figs 21-25)**

Antennae, palps and legs yellowish; wings pale brown and slightly brown spotted. The length of anterior wing of male is 9.5 - 10 mm.

Male genitalia (Figs 21-25): Dorsal keel of segment 9 variable, broad or rather narrow; the dorsal cavity of segment 9 slightly concave; in lateral view the posterior margin of segment 10 is almost smooth, the dorsal margin sinuate; the digitiform appendages are directed somewhat ventral. Phallus in lateral view strongly curved at base, the dorsal margin is slightly concave almost in the middle, while the ventral margin is dilated; subdistal part strongly swollen ventrally; in ventral view the lateral projections are large; the lateral margins between lateral projections and apex are smooth. Harpago of inferior appendages thin, slightly narrowing towards smooth apex.

Holotype ♂: Turkey, Antalya, Kemer, Çıralı, 21.5.1999, 36°22'N/30°29'E, leg. and coll. SIPAHILER.

Paratypes: Same data as holotype, 3♂♂; leg and coll. SIPAHILER.

Hydropsyche cirali sp. nov. is characterized by the basally curved phallus and the ventrally dilated apical portion. The narrow harpago, which is smooth apically, also distinguishes this species.

***Hydropsyche cetibeli* MALICKY & SIPAHILER, 1993 (Figs 26-31)**

A large and pale species; wings and legs pale brown; length of anterior wing of male 10.5 - 14 mm and 12-15 mm of female. Head dorsally large; the eyes are large, almost covering the entire sides (Fig. 31).

Male genitalia (Figs 26-30): Dorsal keel moderately broad; dorsal area between lateral stripes of segment 10 oval; apical margin deeply excised medially; in dorsal view the digitiform appendages are directed lateral. Phallus curved at base; the lateral projections are broad and rounded. Harpago of inferior appendages are almost equal in breadth and narrowing at apex.

Material examined: Turkey, Muğla, Marmaris, Çetibeli, 150m, 27.5.1992 (paratypes); Antalya, Finike, Alakır Barajı, 40 km NE of Finike, 15.5.1982, 1♂ pupa; Antalya, Gündoğmuş, Güneycik, Alara Çayı, 11.8.1993 at light, 15♂♂ 9♀♀; Antalya, Murtiçi, Karpuzçay, 13.8.1993, 3♂♂ 2♀♀; Antalya, Akseki, İbradı, Manavgat Çayı, 8.8.1993, 34♂♂ 58♀♀; Antalya, Manavgat, Beşkonak, Köprülü Kanyon Milli Parkı, 20.5.2003 at light, 6♂♂ 3♀♀; leg. and coll. SIPAHILER.

***Hydropsyche akseki* sp. nov. (Figs 32-36)**

Antennae, palps and legs pale brown-yellowish; wings pale brown and brown spotted. Length of anterior wing of male 8.5 - 11 mm.

Male genitalia (Figs 32-36): Dorsal keel of segment 9 moderately broad, narrowing at tip; cavity 9 deep; cavity 10 deeper; in lateral view the dorsal margin of segment 10 is sinuate; digitiform appendages thin and rather long. Harpago of inferior appendages somewhat curved inside and almost equal in breadth; apex rounded, pointed at ventral corner. In lateral view the phallus is curved at base; apical part broad subdistally and curved ventrally; in ventral view the apical part narrows towards tip; the lateral projections large and triangular in shape.

Holotype ♂: Turkey, Antalya; Akseki, Ürünü Köyü, 500m, 36°59'N/31°35'E, 29.11.1991; leg. and coll. SIPAHILER.

Paratypes: Same data as holotype, 2♂♂; Konya, Ermenek, Nadire Değirmeni, 700m, 36°33'N/32°41'E, 28.6.2000, 1♂ 4♀♀; leg. and coll. SIPAHILER.

Hydropsyche akseki sp. nov. is characterized by the shape of the phallus, which is narrow at base, becoming very broad on preapical portion and dilating dorsally. Harpago of inferior appendages rather thin and long.

***Hydropsyche mutensis* sp. nov. (Figs 37-41)**

Antennae, palps and legs pale brown; wings brown and slightly spotted. Length of anterior wing of male 9.5 - 11 mm and 11 - 11.5 mm in female.

Male genitalia (Figs 37-41): Dorsal keel high and broad; in dorsal view it is triangular in shape on apical part, narrowing near base and broad at base; cavities 9 and 10 deep; digitiform appendages rather short and thin; harpago of inferior appendages long, curved inside and pointed at apex; harpago : coxopodite = 1 : 1.9; phallus somewhat curved at base and on subdistal part; lateral projections are large and triangular in shape.

Holotype ♂: Turkey, Mersin, 10 km NE of Mut, Topluca Köyü, 36°41'N/33°30'E, 23.5. 1993; leg. and coll. SIPAHILER.

Paratypes: Same data as holotype, 2♂♂ 2♀♀; leg. and coll. SIPAHILER.

Hydropsyche mutensis sp. nov. is characterized by the shape of the dorsal keel and the thin and long harpago.

Hydropsyche nadire sp. nov. (Figs 42-46)

Antennae, palps, legs and wings brown; forewings dark brown spotted. Length of anterior wing of male 12 - 12.5 mm, of females 12-15 mm.

Male genitalia (Figs 42-46): Dorsal keel of segment 9 long; moderately broad and rounded at apex. Cavity 9 deep. In lateral view the dorsal margin of segment 10 is sinuate, directed dorsal on posterior end and with a small lobe at base; the digitiform appendages thin and long. In lateral view phallus slightly curved at base and on subdistal part; in ventral view the distal part is broad and rounded at apex; the lateral projections are rounded and large. Harpago of inferior appendages thin, gradually narrowing towards the rounded apex and strongly bent inwards.

Holotype ♂: Turkey, Konya, Ermenek, Nadire, Nadire Değirmeni, 36°33'N/32°41'E, 700m, 28.6.2000, leg. and coll. SIPAHILER. Paratypes: Same data as holotype, 6♂♂ 4♀♀; leg. and coll. SIPAHILER.

Hydropsyche nadire sp. nov. differs from the other species especially in the shape of the dorsolateral lobes of segment 10, which are large and rounded and directed dorsally, the shape of the apical part of the phallus, which is broader than the rounded lateral projections and the thin and long digitiform appendages.

Hydropsyche mahrkusha SCHMID, 1959 (Figs 47-54)

Antennae dark brown; maxillary palps and legs brown; head and thorax dorsally blackish; tergites and sternites of abdomen and wings dark brown; the anterior wings of male are slightly spotted on apical margins, in female they are more spotted; the eyes of males are rather small, the head narrows behind the eyes (Fig. 52). Length of anterior wings of male 8 - 8.5 mm, of female 9.5 - 10.5 mm.

Male genitalia (Figs 47-51): Median keel moderately broad; dorsal cavity of segment 9 deep, or moderately deep in some specimens; in lateral view the ventral margin of segment 10 is longer than the dorsal margin; dorsal margin sinuate; the basal lobe possesses long hairs; the finger-shaped appendages long and thin; distal part of the phallus long and rather narrow; lateral projections large and triangular in shape, or small in some specimens; in ventral view harpago of inferior appendages rounded at tip, which is dorsally truncated at the end, narrowing throughout apex; it is equal in breadth at base and apex or somewhat broader on subdistal part.

Hydropsyche mahrkusha, described from Iran, is characterized especially by the rather long end of the phallus and its triangular lateral projections. It is one of the dominant species found in large numbers in northeastern Anatolia. It is a variable species. The variations in male genitalia in one and the same population as well as in different populations (Figs 53: Trabzon, Uzungöl; Fig. 54: Gümüşhane, Bayburt) are remarkable.

H. mahrkusha differs from *H. cetibeli* MALICKY & SIPAHILER, 1993 by the shape of several parts of the genitalia, especially the shape of segment 10 in *cetibeli*, of which the ventral margin is either as long as or shorter than the dorsal part; in *H. mahrkusha* the ventral margin is clearly longer than the dorsal margin. *H. cetibeli* is a pale brown and large insect; length of forewing of male is 13-14 mm; the smallest one has 10.5 mm. *H. mahrkusha* is a dark brown, blackish colored and smaller insect, of which the length of forewing is 8 - 8.5 mm. The shape of the head in *H. cetibeli* differs also from *H. mahrkusha*: The eyes of *H. cetibeli* are large, covering the entire sides (Fig. 31).

Material: Turkey, Rize, İkizdere, Anzer, 19.7.1984, 2000m, 22♂♂ 15♀♀ and 2400m, 8♂♂; İkizdere, Yerelma Köyü, 10.7.1984, 1♂ 1♀; Rize, Çamlıhemşin, Ayder, 1100m, 2.9.1988, 1♂ and 1400-1600m, 1.8.1989, 1♂; Bayburt, Yoncalı, 24.7.1981, 33♂♂ 26♀♀, leg. KAZANCI and 30.7.1981, 16♂♂ 7♀♀; Artvin, Şavşat, Yavuzköy, 23.7.1981, 1♂ 1♀, leg. KAZANCI; Rize, Cimil, 1500-2000m, 3♂♂ 2♀♀; Rize, Çamlıhemşin, Verçenik Yaylası, 2700m, 9♂♂ 4♀♀; Rize, Haldizan Yaylası, 1850m, 24.5.1992, 2♂♂ 3♀♀; Borçka, Camili, Didrele, 1000m, 5.8.1995, 2♂♂; same place, Uğurköy, 7.8.1995, 17♂♂ 29♀♀; Camili, 450m, 8.8.1995, 8♂♂ 8♀♀ and 11.7.1997, 14♂♂ 22♀♀; Artvin, Şavşat, Meydancık, Mısırlı, İmerhev Vadisi, 1400m, 5.8.1996, 6♂♂ 10♀♀; same place, Çermik Mahallesi, 1300m, 5.8.1996, 62♂♂ 70♀♀; same place, direction Lekoban, 1700m, 9.8.2000, 1♂; leg. and coll. SIPAHILER.

Hydropsyche yukaritepe sp. nov. (Figs 55-59)

Antennae, palps and legs pale brown-yellowish; wings pale brown; head and thorax brown; tergites of abdomen with black spots, which are dense on posterior edges. Length of anterior wing of male 7-8 mm, of female 8 mm.

Male genitalia (Figs 55-59): Dorsal keel of segment 9 long and rather broad; lateral edges parallel to each other; apex rounded. Cavity 9 and cavity 10 deep. Segment 10 short and broad; the digitiform appendages are rather long. Harpago of inferior appendages broad and narrowed towards tip. In lateral view the phallus is somewhat curved at base; dorsal edge dilated in middle; in ventral view the apical part is long and narrow; the lateral projections are broadly rounded.

Holotype ♂: Turkey, Ordu, Yukaritepe Köyü, 40°57'N/37°50'E, 21.-27.8.1982, leg. and coll. SIPAHILER. Paratypes: Same data as holotype, 1♂ 1♀, leg. and coll. SIPAHILER.

Hydropsyche yukaritepe sp. nov. is related to *H. mahrkusha*, but differs from this species in the shape of the phallus, which has rounded lateral projections; the dorsal keel is large and long, and it has a short segment 10.

Hydropsyche salihli sp. nov. (Figs 60-64)

Antennae, palps and legs pale brown-yellowish; wings brown; length of anterior wing of male 11 mm.

Male genitalia (Figs 60-64): Dorsal keel oval, long and moderately broad; apex excised in middle; cavity 9 is slightly deep; cavity 10 is deep; in lateral view the dorsal margin of segment 10 is sinuate; posterior margin almost smooth; inferior appendages slender; harpago long, rather narrow; apex obtuse, pointed on ventral corner. Phallus slender; in

lateral view dilated on dorsal edge; basal and apical portions are rather thin; in ventral view the apical part is long; lateral edges straight; the lateral projections are very small and pointed at tips.

Holotype ♂: Turkey, Salihli, direction Birgi, 5 km south of Salihli, Bozdağlar, 38°27'N/28°07'E, 29.5.1988, leg. and coll. SIPAHILER. Paratype: Same place as holotype, 22 km north of Ödemiş, 800m, 38°19'N/28°03'E, 22.5.1992, 1♂, leg. and coll. SIPAHILER.

Hydropsyche salihli sp. nov. differs from the other species of the group by the shape of the phallus, of which the lateral projections are very small and pointed at apex.

***Hydropsyche valkanovi* KUMANSKI, 1974 (Figs 65-69)**

Antennae, palps, legs and wings pale brown; head and thorax dorsal brown. Length of anterior wing of male and females 7.5 - 8.5 mm.

Male genitalia (Figs 65-69): Dorsal keel of segment 9 moderately broad, directed somewhat dorsal; apex rounded or slightly excised in middle; the dorsal edge of segment 10 has a small lobe at base; the rest is rather smooth. Harpago of inferior appendages curved inwards; broad at base and narrowing throughout the apex. In lateral view the phallus is dilated on dorsal edge; apical part broad; the lateral projections are large and obtuse at tips.

Material: Turkey, Salihli, direction Birgi, 25. km, 22.5.1992, 3♂♂ 3♀♀; same place, 22. km, 3♂♂; Gökceada, Şahinler Köyü, 3 km east, 6.6.1992, 3♂♂ 2♀♀; Bergama, direction Kozak, 15. km, 31.5.1992, 1♂; Konya, direction Beyşehir, 35. km, 19.5.2003, 1♂; leg. and coll. SIPAHILER.

***Hydropsyche djabai* SCHMID, 1959 (Figs 70-76)**

A small species with uniform pale brown wings; antennae, palps, head and thorax dorsal brown; femur and tibia of legs pale brown; tarsi brown. Length of anterior wing of male 6.5 - 7.5 mm, of female 7-8 mm.

Male genitalia (Figs 70-76): Dorsal keel of segment 9 moderately broad, rounded or somewhat narrowed at apex; in lateral view the posterior margin of segment 10 is deeply excised, forming a V-shape in middle; the finger-shaped appendages are thin and directed ventral. Phallus broad on apical part; the lateral projections are large and rounded apically. Harpago of inferior appendages narrow or broad at base, gradually narrowing towards the pointed apex.

Material: Turkey, Ardahan, Ölçek Suyu, 24.7.1981, 3♂♂ 8♀♀, leg. KAZANCI, coll. SIPAHILER; Ardahan, 25 km southeast of Ardahan, Taşlıdere Köyü, 1950m, 21.7.1988, 21♂♂ 20♀♀, leg. and coll. SIPAHILER.

***Hydropsyche acuta* MARTYNOV, 1909 (Figs 77-81)**

Antennae, palps legs and wings pale brown; anterior wings brown spotted. Length of anterior wing of male 7.5 - 9 mm, of female 9-10 mm.

Male genitalia (Figs 77-81): Segment 9 short; dorsal keel rather broad; cavity 9 and 10 deep; the hairy area is small; digitiform appendages thin and long; phallus with broad

apical portion and with large lateral projections; harpago broad, distal part very thin.

Material examined: Turkey, Ankara, 18 km E of Ayaş, 16.7.1980, 1♂; Ardahan, Değirmenköy, 23.7.1981, 12♂♂ 3♀♀; Kars, Çıldır, Karaçay, 24.7.1981, 12♂♂ 1♀; Van, 35 km NE of Van, Muradiye yolu, 22.7.1995, 1♂ 1♀; Ankara, Kızılcahamam, Işık Dağı, Sofular Deresi, 1550m, 16.6.1996, 1♂; leg. and coll. SIPAHILER.

***Hydropsyche elmali* sp. nov. (Figs 82-86)**

Antennae, palps and legs pale brown-yellowish; wings testaceous. Length of anterior wing of male 9.5 - 10 mm, of female 11.5 mm.

Male genitalia (Figs 82-86): Dorsal keel rather narrow and getting narrower at subdistal portion; apex slightly excised in middle. Cavity 9 and 10 are deep; in dorsal view the area between the lateral stripes are almost quadrangular and rather narrow; the apical margin is slightly excised medially, forming two small lateral lobes; in lateral view the posterior edge of segment 10 is sinuate; digitiform appendages rather long. Harpago of inferior appendages conspicuously thin and long, almost half length of coxopodite; apex pointed. In lateral view phallus slightly curved at base; the apical part is narrow and long; the lateral projections are very small.

Holotype ♂: Turkey, Antalya, Elmalı, Gömbe, 1200-1600m, 36°31'N/29°49'E, 22.6.1988, leg. and coll. SIPAHILER. Paratypes: Same data as holotype, 1♂ 1♀; leg. and coll. SIPAHILER.

Hydropsyche elmali sp. nov. is related to *H. peristerica* and differs from it in the following features: Dorsal keel of segment 9 narrow; area between lateral stripes of segment 10 narrow and quadrangular in shape, with small lobes apically; harpago conspicuously thin and long; apical part of phallus narrow and long; the lateral projections are small.

***Hydropsyche peristerica* BOTOSANEANU & MARINKOVIC, 1966 (Figs 87-91)**

Diagnosis: Antennae, palps and legs yellowish; wings pale brown; length of anterior wing of male 9.5 - 11 mm, of female 10-11 mm.

Male genitalia (Figs 87-91): Dorsal keel moderately broad, apex rounded; area between lateral stripes of segment 10 broader than the dorsal keel; in lateral view the posterior margin of segment 10 is almost straight. Harpago short and curved inwards; apex rounded and pointed at ventral corner. In lateral view phallus long and somewhat curved at base; the lateral projections are small.

The specimens collected in the Strantsha Mountains 15 km before Bulgarian border, differs from Balkan populations in the pale color of wings, but genitalia are similar to this species (MALICKY 2001).

Material examined: Turkey, Kırklareli, Vize, direction to Demirköy, Strantsha Mountains, 470m, 3.8.1994, 3♂♂ 8♀♀, leg. and coll. SIPAHILER

***Hydropsyche hadimensis* sp. nov. (Figs 92-96)**

Antennae, palps and legs pale brown; wings dark brown with dark brown-blackish

spots; head, thorax and abdomen dark brown-blackish. Length of anterior wing of male 10-11 mm, of female 13.5 mm.

Male genitalia (Figs 92-96): Dorsal keel of segment 9 large; apex excised in middle, the sides are rounded lobes; the edges are narrowed at basal portion, forming sclerotized stripes, which surround cavity 9 on each side; cavity 9 and 10 deep; in lateral view the dorsal margin of segment 10 is sinuate, directed ventral; basal lobe of dorsal margin large and rounded; the posterior margin protrudes near to the hairy area and the digitiform appendages; in dorsal view the area between dorsolateral stripes of segment 10 as broad as dorsal keel; apical edge of segment 10 with two projections on each side. Coxopodite of inferior appendages smooth and rather narrow; harpago pointed at tip; in dorsal aspect the dorsal surface is flat. Phallus slightly bent at base and smooth; the lateral projections are very small and rounded.

Holotype ♂: Turkey, Konya, Hadim, Korualan, Borini, 36°57'N/32°24'E, 26.6.2000, leg. and coll. SIPAHILER. Paratypes: Same data as holotype, 5♂♂ 1♀, leg. and coll. SIPAHILER.

Hydropsyche hadimensis sp. nov. is a large, dark species, distinguished by the shape of the large dorsal keel, small lateral projections of the phallus and the shape of segment 10.

Hydropsyche kazdagensis sp. nov. (Figs 97-101)

Antennae, palps and legs yellowish; wings pale brown; anterior wings brown spotted, brown especially on margins. Length of anterior wing of male 9-10 mm.

Male genitalia (Figs 97-101): Dorsal keel moderately broad; in dorsal view the basal half with parallel margins, roundly dilated towards apex; in lateral view it is rounded; cavity 9 deep. In lateral view the dorsal margin of segment 10 is straight, directed ventral. Digitiform appendages thin and long. Harpago equal in breadth at base and at tips; the apex is rounded; coxopodite rather thin. Phallus in lateral view moderately curved on ventral edge; the lateral projections are rather large and pointed.

Holotype ♂: Turkey, Balıkesir, Edremit, Evciler, Kazdağları, Ayazma, 39°42'N/26°51'E, 6.8.1994; leg. and coll. SIPAHILER. Paratype: Same data as holotype; 1♂, leg. and coll. Sipahiler.

H. kazdagensis sp. nov. is a pale colored species. It differs in the shape of its dorsal keel, which is dilated subdistally, and segment 10, where the dorsal margin is directed ventral.

Hydropsyche yenisar sp. nov. (Figs 102-106)

A pale species, all parts of the body pale brown-yellowish. Length of anterior wing of male 9 mm, of female 10 - 11.5 mm.

Male genitalia (Figs 102-106): Dorsal keel broad; in dorsal view the apex rounded; dorsal margin of segment 10 with large basal lobe; digitiform appendages long and narrow. Coxopodite of inferior appendages slender; harpago equal in width at base and apex gradually curved inside. Phallus slender and rather smooth, in lateral view subdistally bent ventral; in ventral view apical part very long, reaching 1/3 of total phallus length; the lateral projections are small and pointed.

Holotype ♂: Turkey, Isparta, Beyşehir, Yenişarbademli, 37°41'N/31°21'E, 1.6.1993 leg.

and coll. SIPAHILER. Paratypes: Same data as holotype, 3♀♀, leg. and coll. Sipahiler.

H. yenisar sp. nov. differs from the other species of the group in the shape of the apical part of phallus, which is very long, and in segment 10, which has big basal lobes at base of the dorsal stripes.

***Hydropsyche kebab* MALICKY, 1974 (Figs 107-111)**

Antennae, palps, legs and wings brown; Length of anterior wing of male 9-10 mm, of female 12 - 12.5 mm.

Male genitalia (Figs 107-111): Dorsal keel broad and short, directed dorsally; segment 10 long; dorsal margin in lateral view straight; digitiform appendages stout and, moderately long; harpago somewhat dilated subdistally; phallus roundly curved before middle; in lateral view dorsal and ventral edges smooth; in ventral view, apical part rather broad and long; apex also broad; the lateral projections are small.

H. kebab is a variable species. Variations are seen especially in the length of segment 10 and the lateral projections of the phallus.

Distribution: Largely distributed in Turkey, occupying springs and rivers.

Material: Turkey, Gümüşhane, Bayburt, Yoncalı, 30.7.1981, 17♂♂ 8♀♀, leg. KAZANCI, coll. SIPAHILER; Tunceli, Ovacık, 15 km NE of Ovacık, 21.7.1983, 1♂, same place, 24 km SE, 24.7.1983, 4♂♂; Rize, İkizdere, Yerelma Köyü, 10.7.1984, 3♂♂ pupa; Kayseri Yahyalı, Kapuzbaşı, 25.6.1986, 3♂♂ 2♀♀; Muğla, Fethiye, Kemer, Eşen Çayı, Yuva deresi, 7.7.1989, 1♂; Adana, Saimbeyli, Pağnık Köyü, 4.7.1990, 7♂♂; Niğde, Demirkazık Köyü, 26.8.1990, 2♂♂; Akşehir, Saray, Yalvaç, 1500m, 12.6.1994, 57♂♂ 31♀♀; same place, 12.6.1994, 1800m, 2♂♂ 1♀; Isparta, Sütçüler, Yazılı Kanyon, 23.5.1993, 2♂♂ 5♀♀; Zonguldak, Safranbolu, Mencilis, 28.8.1993, 1♂ 5♀♀; Konya, Hadim, Yerköprü, Göksu Nehri, 850m, 12.5.1995, 248♂♂ 20♀♀; Bolu, Yedigöller, 21.6.1997, 6♂♂ 19♀♀; Bolu, Abant, 25.6.1995, 1♂; Beyşehir, Kurucuova, Genek, 20.8.1999, 1♂; Hadim, Taşkent, Ermenek yolu, 26. km, 1700m, 28.6.2000, 1♂ 1♀; leg. and coll. SIPAHILER.

***Hydropsyche sinopensis* sp. nov. (Figs 112-116)**

Antennae, palps and legs pale brown-yellowish; legs yellowish; forewing pale brown and dark brown spotted; the spots are dense on apical part of wing; area between A1 and A4 dark brown; cubitus with a few larger spots. Length of anterior wing of male 13 mm.

Male genitalia (Figs 112-116): Dorsal keel of segment 9 rather broad, slightly excised at apex; dorsal cavity 9 deep; dorsal cavity 10 deeper; in lateral view dorsal margin of segment 10 roundly excised medially, forming a quadrangular lobe at base, which possesses long hairs; in dorsal view the area between the dorsolateral stripes large; sides are sclerotized; posterior margin of segment 10 with V-shaped excision in middle; the ventral margin is roundly dilated towards ventral. In ventral view coxopodite of inferior appendages rather thin; inner edge somewhat curved; harpago short and broad and bent inside; the apex is pointed. In lateral view phallus strongly and roundly curved in middle; in ventral view lateral projections very large and rounded, narrowing throughout tip.

Holotype ♂: Turkey, Sinop, 10 km south of Ayancık, Ayancık deresi, 41°52N/34°33E, 3.6.2002, leg. and coll. Sipahiler.

Hydropsyche sinopensis sp. nov. differs from the other known species in the shape of several parts of the male genitalia, especially the shape of the phallus, which is strongly and largely curved in middle and possesses very large and rounded lateral projections. In addition, the shape of segment 10, of which the posterior margin is V-shaped excised, also distinguishes the new species from the others. A close relationship is not evident. *H. sinopensis* sp. nov. inhabits rivers wider than 10 meters.

***Hydropsyche lepnevae* BOTOSANEANU, 1967**

Antennae, legs and wings pale brown-yellowish. Length of anterior wing of male 9 - 9.5 mm. The genitalia have very consistent characteristics. Dorsal keel oval at tip; apical margin of segment 10 smooth on dorsal portion; ventral margin straight; the digitiform appendages are near the ventral margin; lateral projections of phallus small, broad and pointed at apex.

Distribution: This species was described from the Caucasus and is largely distributed in Turkey from east to north-western and southern Anatolia.

Material examined: Turkey, Bolu, Gerede Çayı, 4.7.1980, 1♂; Bolu, Çatakören Köyü, 4.7.1980, 1♂; Artvin, Şavşat, Karaköy, 1900m, 31.7.1995, 1♂; Erzurum, İspir, Köprüköy, 1.8.2001, 6♂♂, leg BESKOV; Şavşat, Çermik Köy, 1300m, 5.8.1995, 2♂♂ 11♀♀; Konya, Hadim, Yerköprü, Göksu nehri, 7.6.1998, 1♂; leg. and coll. SIPAHILER.

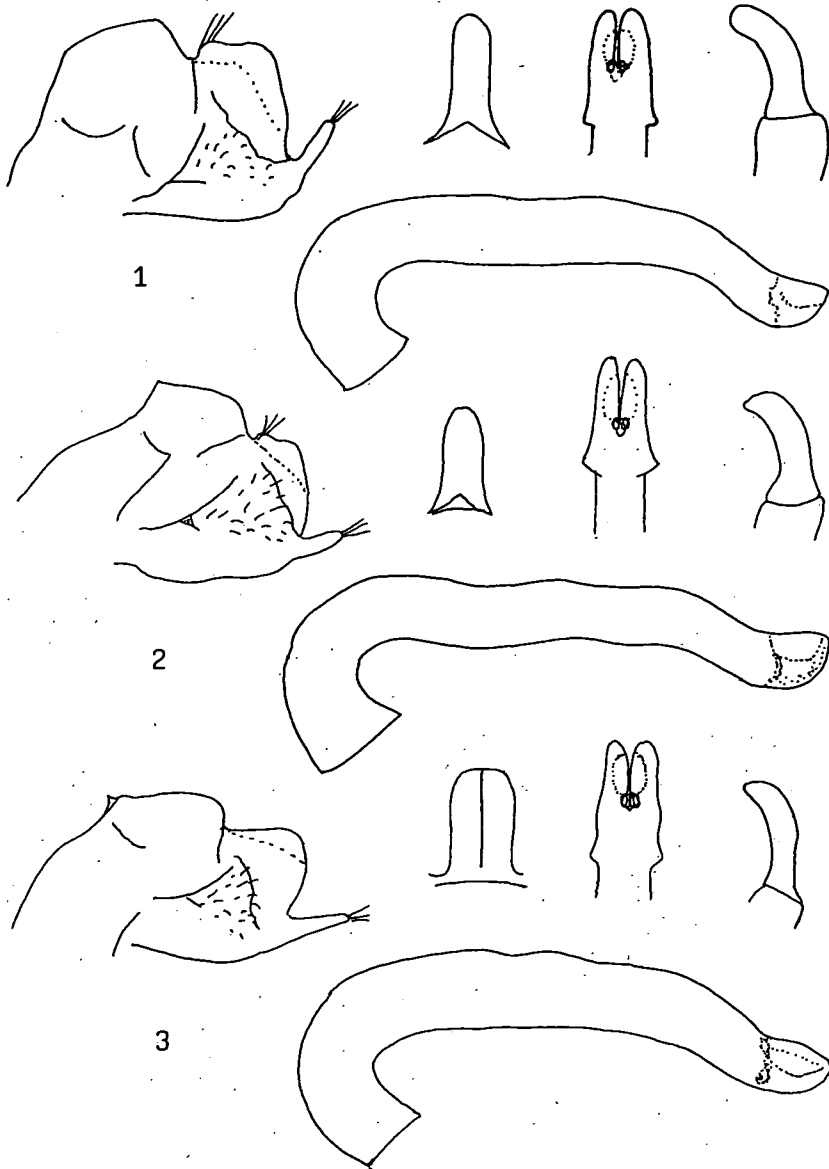
***Hydropsyche kirikhan* SIPAHILER, 1998**

A pale species, its wings, legs and body are pale brown; Length of anterior wing of male 8.5 mm.

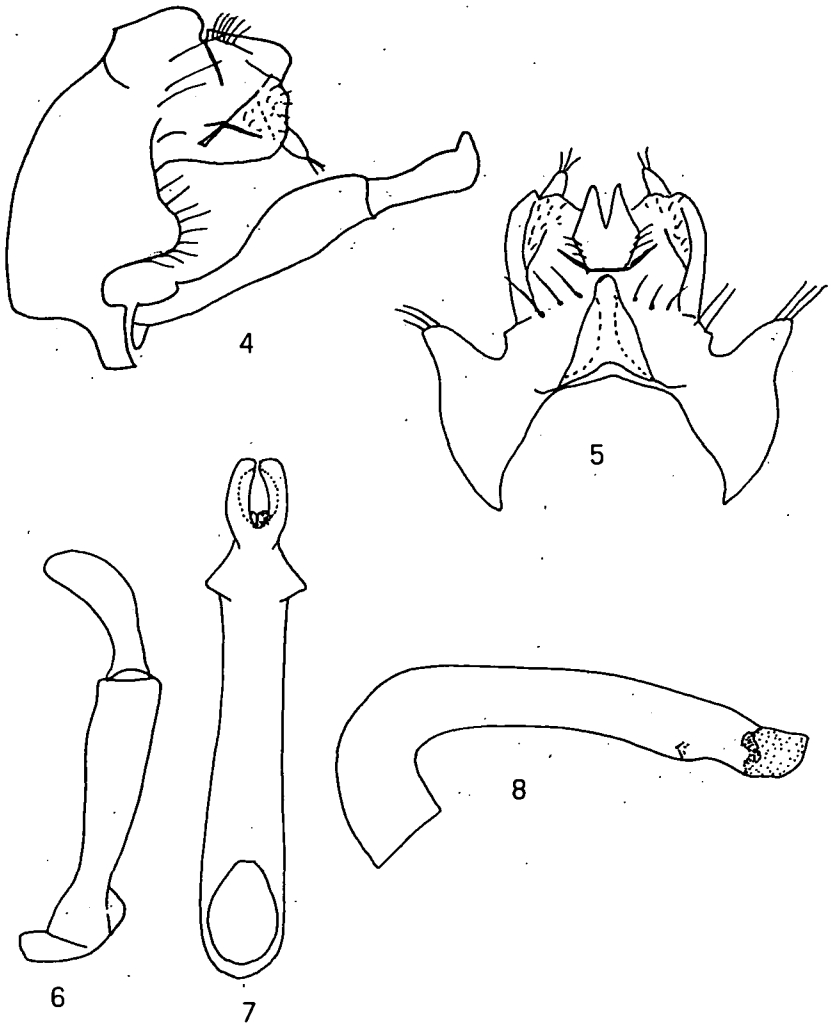
Male genitalia: Dorsal carina long, bifurcate at apex; median part of segment 10 quadrangular in shape; apical margin of segment 10 slightly excised three times and forms rounded lobes; digitiform appendages long and thin; harpago pointed at apex; the lateral projections of the phallus are very large, curved dorsal.

Acknowledgement

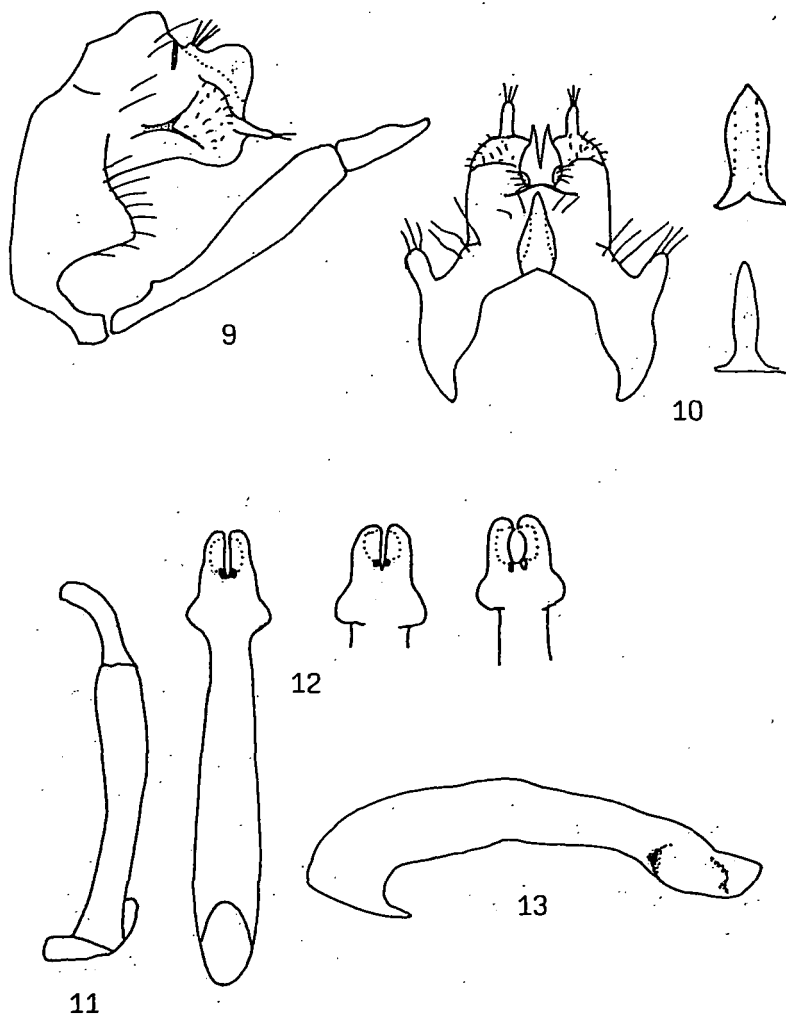
I am grateful to Mr. Jason J. NASH (Scientific Research Council of Turkey, Ankara), for editing the English text.



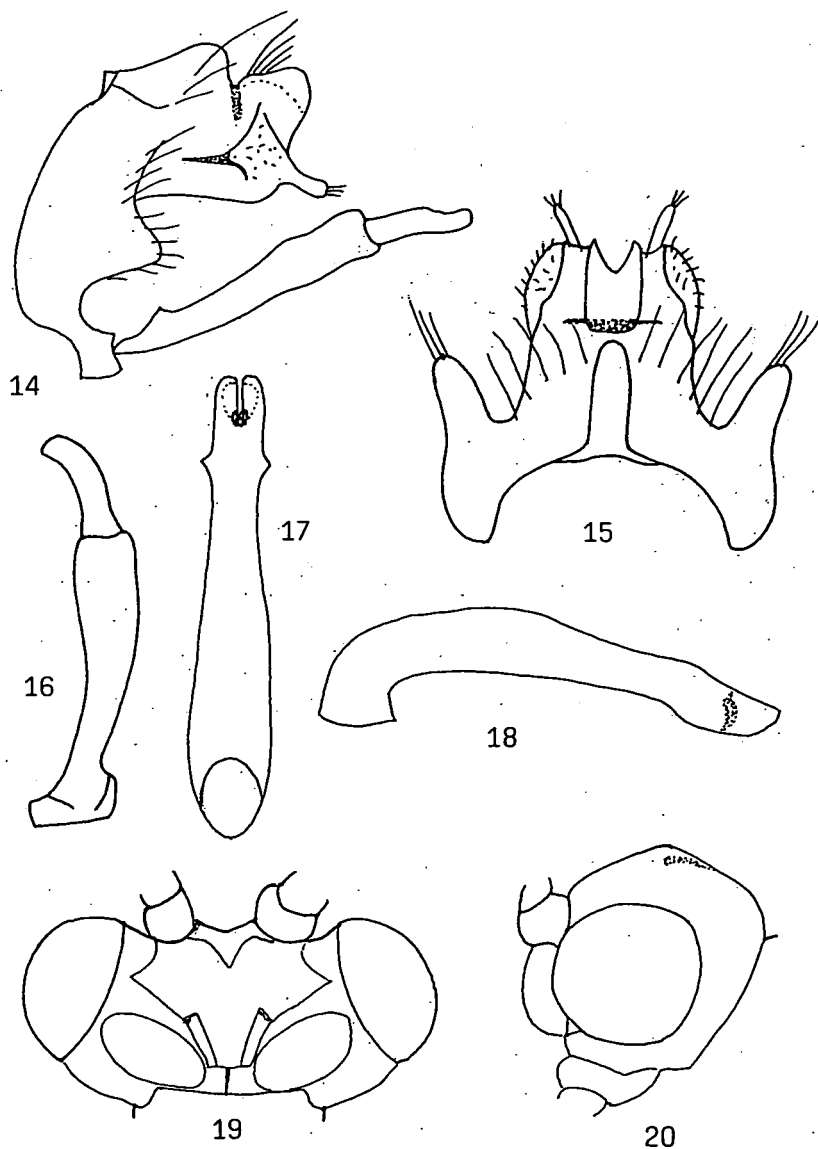
Figs 1-3 *Hydropsyche instabilis* (CURTIS), male genitalia: 1 Kastamonu, Azdavay (NW-Turkey); 2 Kayseri, Yahyalı (S-Turkey); 3 Isparta, Kurucuova (S-Turkey). Left to right: segment 9 and 10 lateral; dorsal keel dorsal; phallus ventral; inferior appendage ventral; below: phallus lateral.



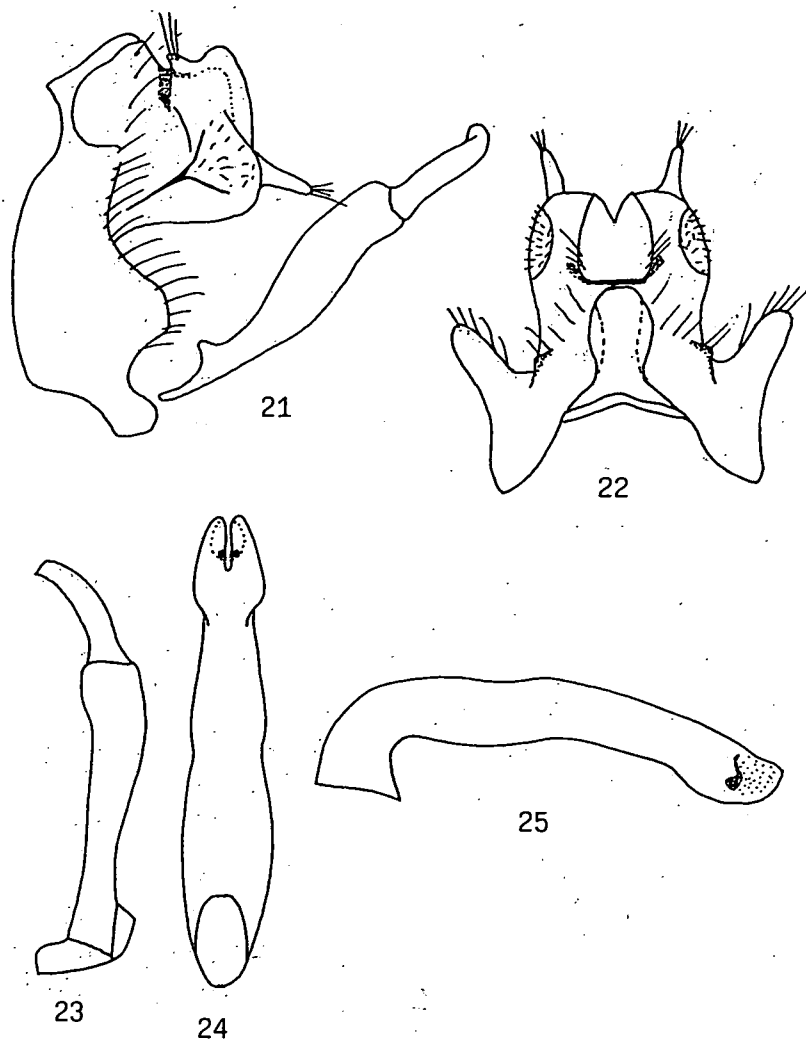
Figs 4-8 *Hydropsyche orduensis* SIPAHILER, male genitalia (Rize): 4 lateral; 5 dorsal; 6 inferior appendage ventral; 7 phallus ventral; 8 phallus lateral.



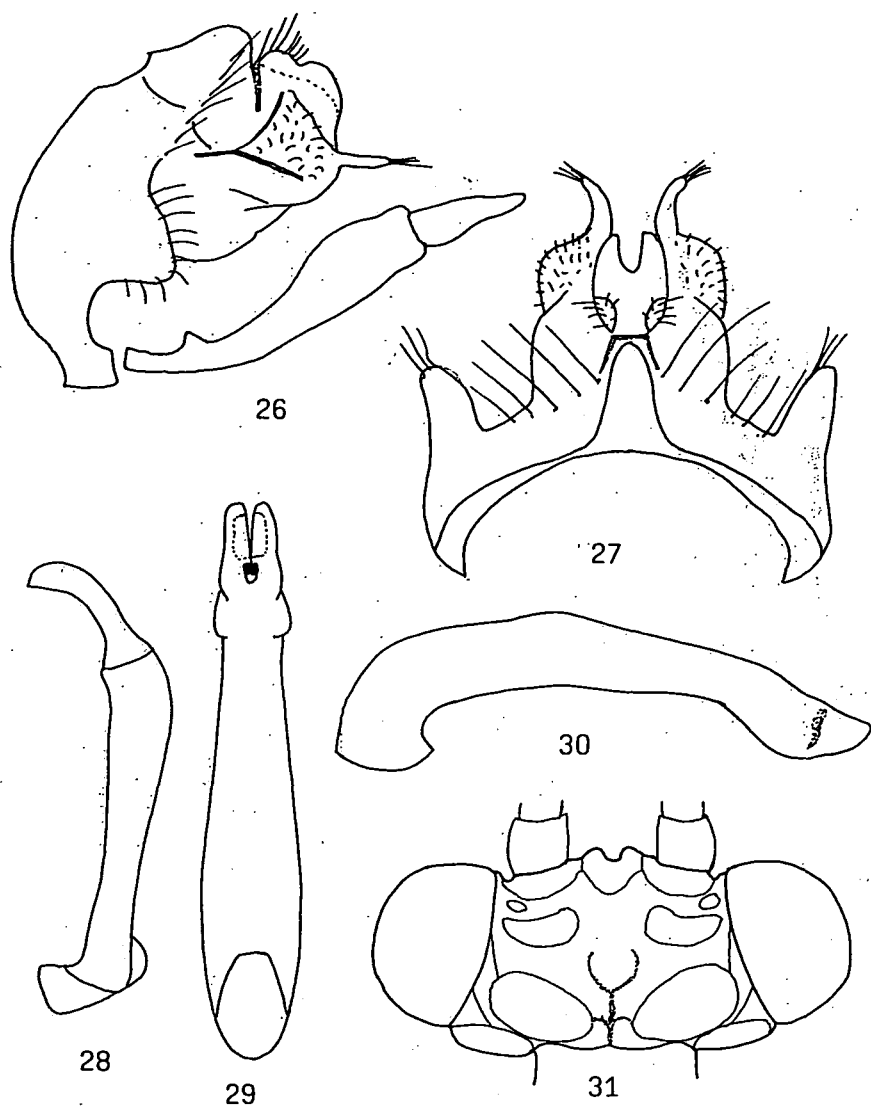
Figs 9-13 *Hydropsyche kepez* sp. nov., male genitalia: 9 lateral; 10 dorsal and dorsal keel; 11 inferior appendage ventral; 12 phallus ventral with variations; 13 phallus lateral.



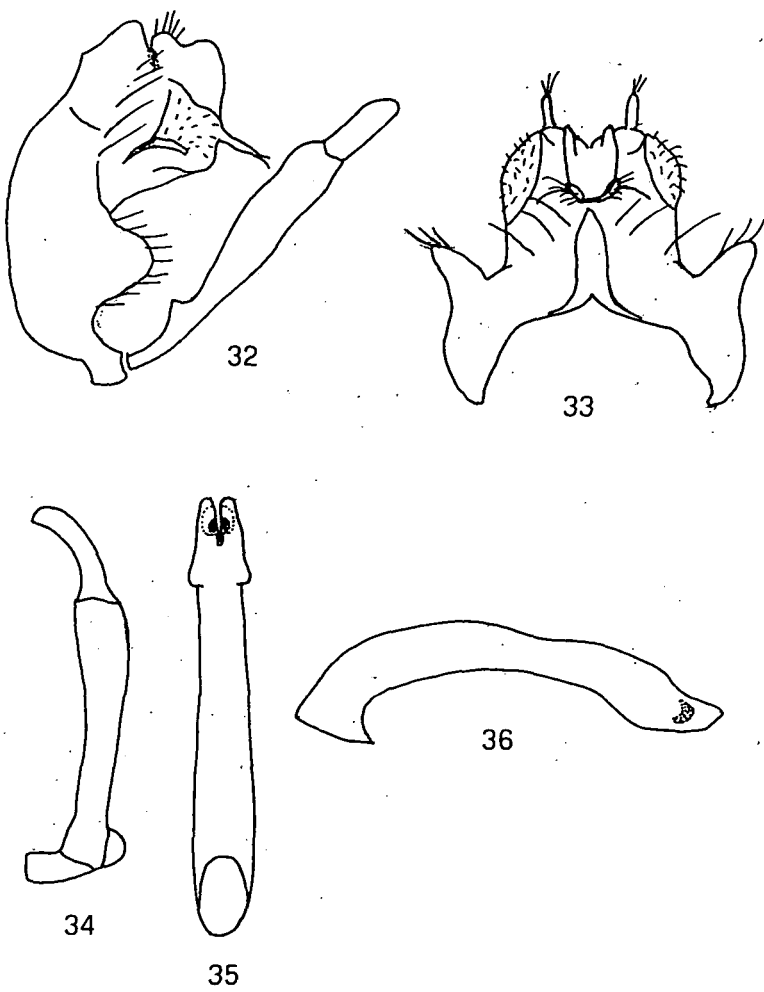
Figs 14-20 *Hydropsyche jordanensis* TJEDER, male genitalia (Antakya): 14 lateral; 15 dorsal; 16 inferior appendage ventral; 17 phallus ventral; 18 phallus lateral; 19 head dorsal; 20 head lateral.



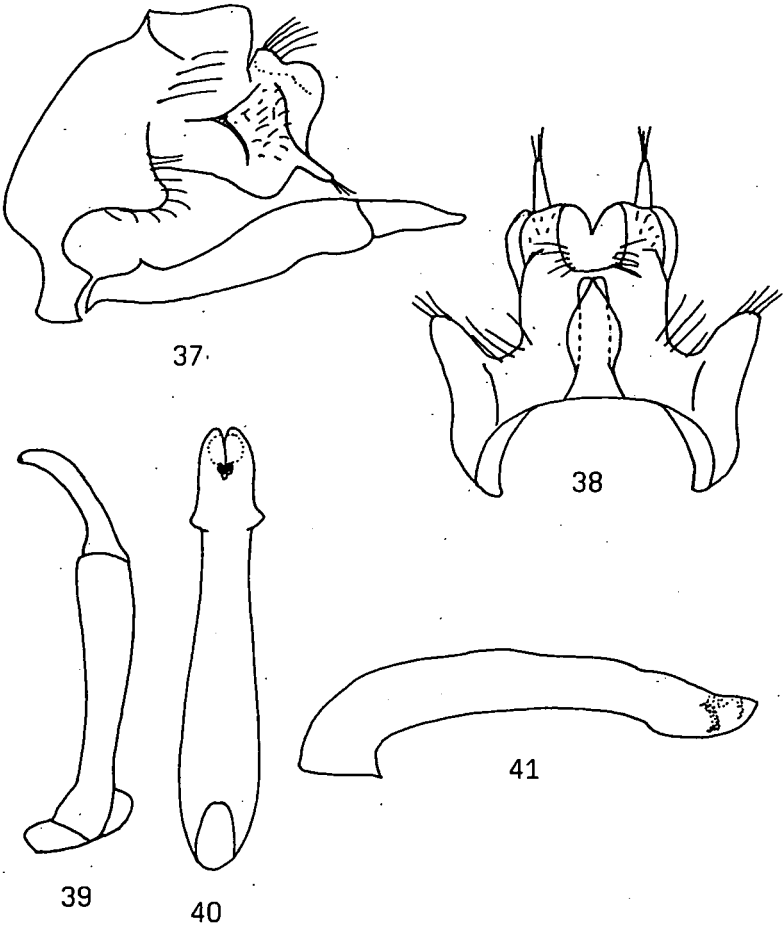
Figs 21-25 *Hydropsyche cirali* sp. nov., male genitalia: 21 lateral; 22 dorsal; 23 inferior appendage ventral; 24 phallus ventral; 25 phallus lateral.



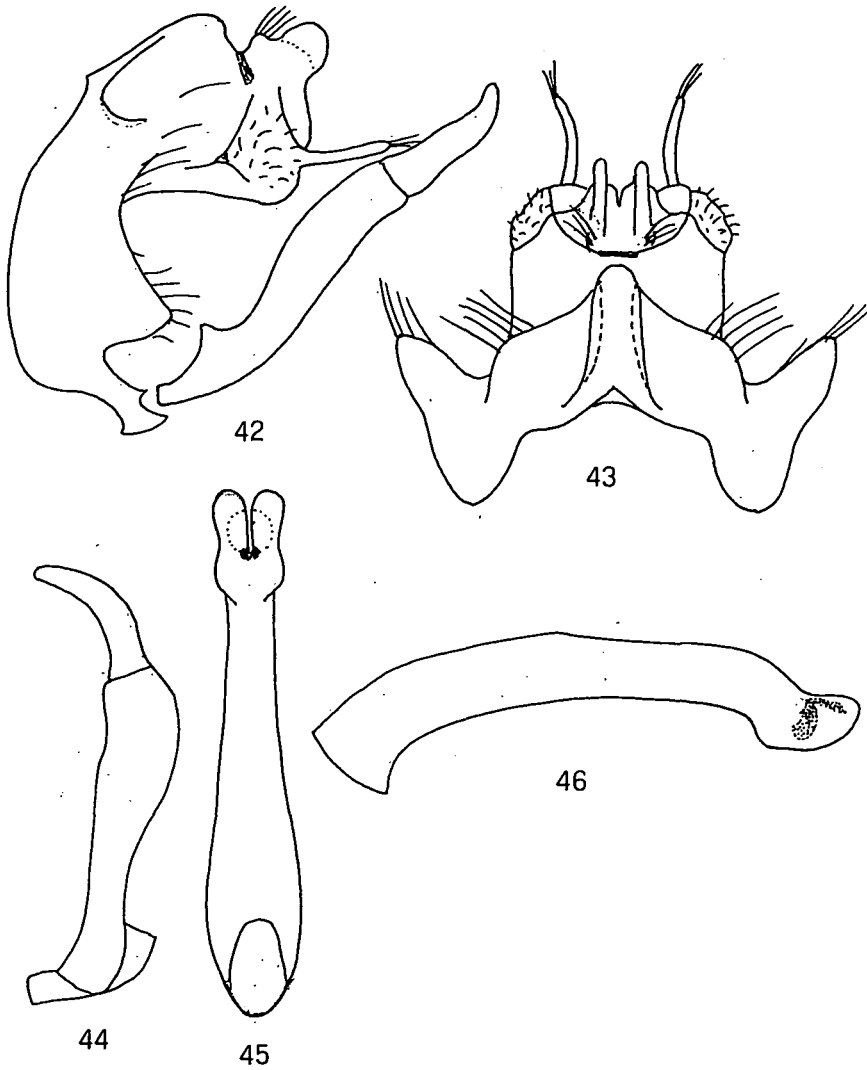
Figs 26-31 *Hydropsyche cetibeli* MALICKY & SIPAHILER, male genitalia: 26 lateral; 27 dorsal; 28 inferior appendage ventral; 29 phallus ventral; 30 phallus lateral; 31 head dorsal.



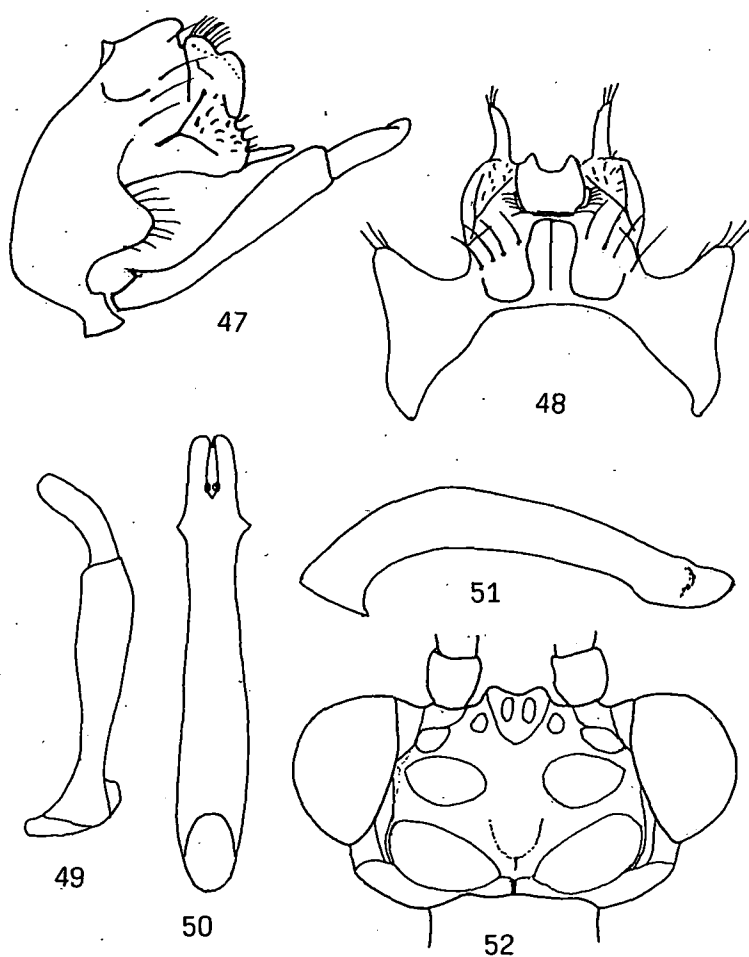
Figs 32-36 *Hydropsyche akseki* sp. nov., male genitalia: 32 lateral; 33 dorsal; 34 inferior appendage ventral; 35 phallus ventral; 36 phallus lateral.



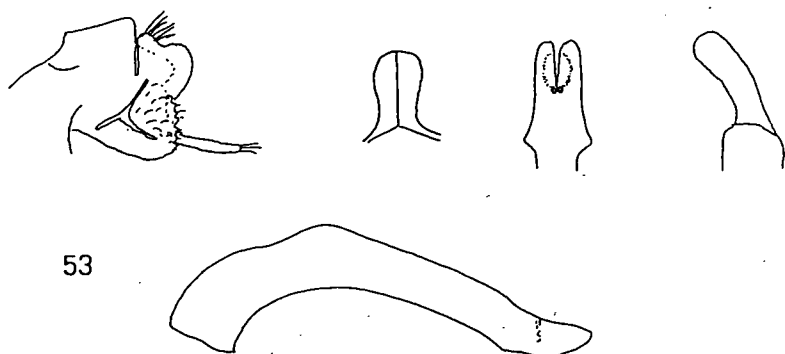
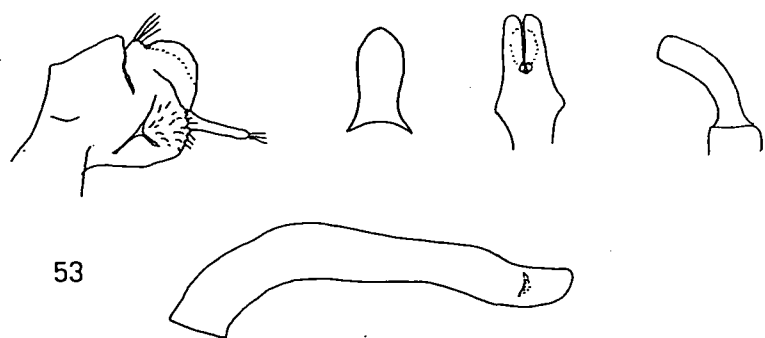
Figs 37-41: *Hydropsyche mutensis* sp. nov., male genitalia: 37 lateral; 38 dorsal; 39 inferior appendage ventral; 40 phallus ventral; 41 phallus lateral.



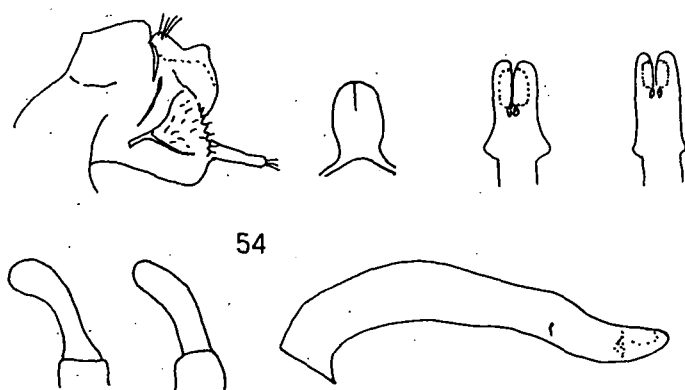
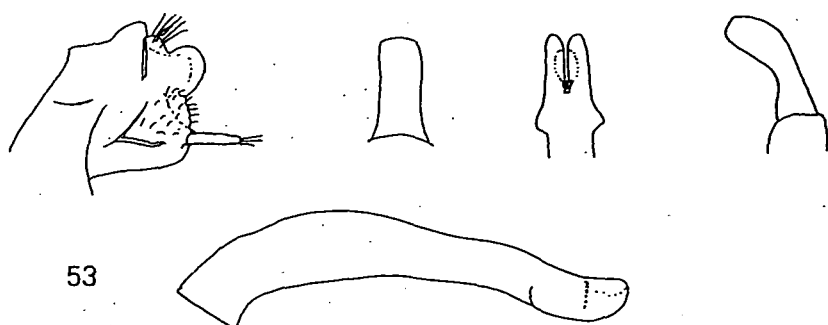
Figs 42-46 *Hydropsyche nadire* sp.nov., male genitalia: 42 lateral; 43 dorsal; 44 inferior appendage ventral; 45 phallus ventral; 46 phallus lateral.



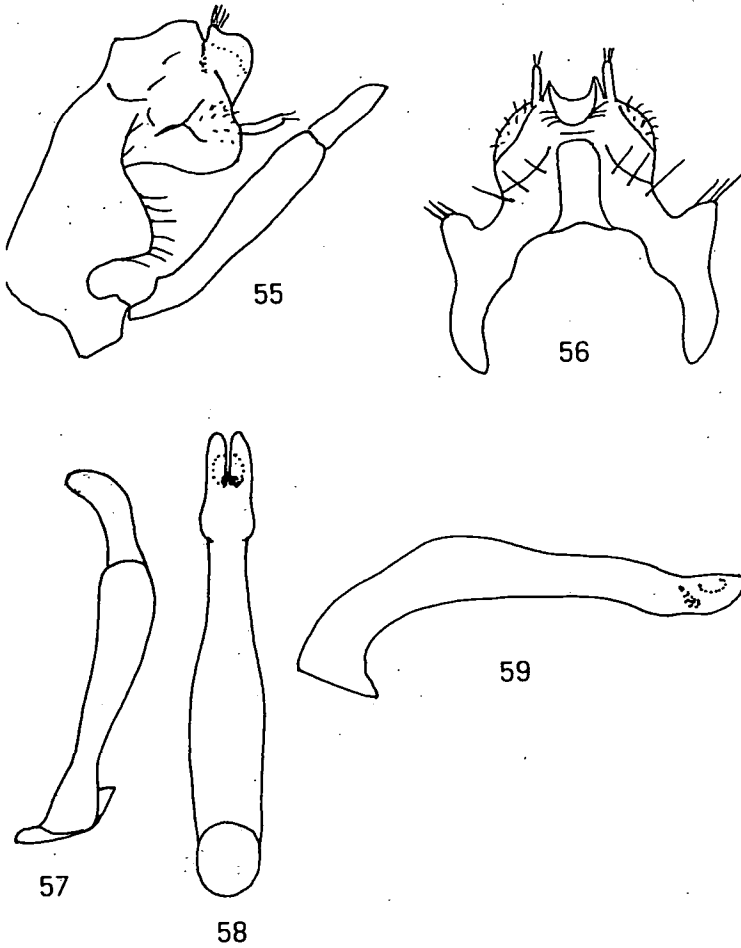
Figs 47-52 *Hydropsyche mahrkusha* SCHMID, male genitalia (Artvin, Şavşat): 47 lateral; 48 dorsal; 49 inferior appendage ventral; 50 phallus ventral; 51 phallus lateral; 52 head dorsal.



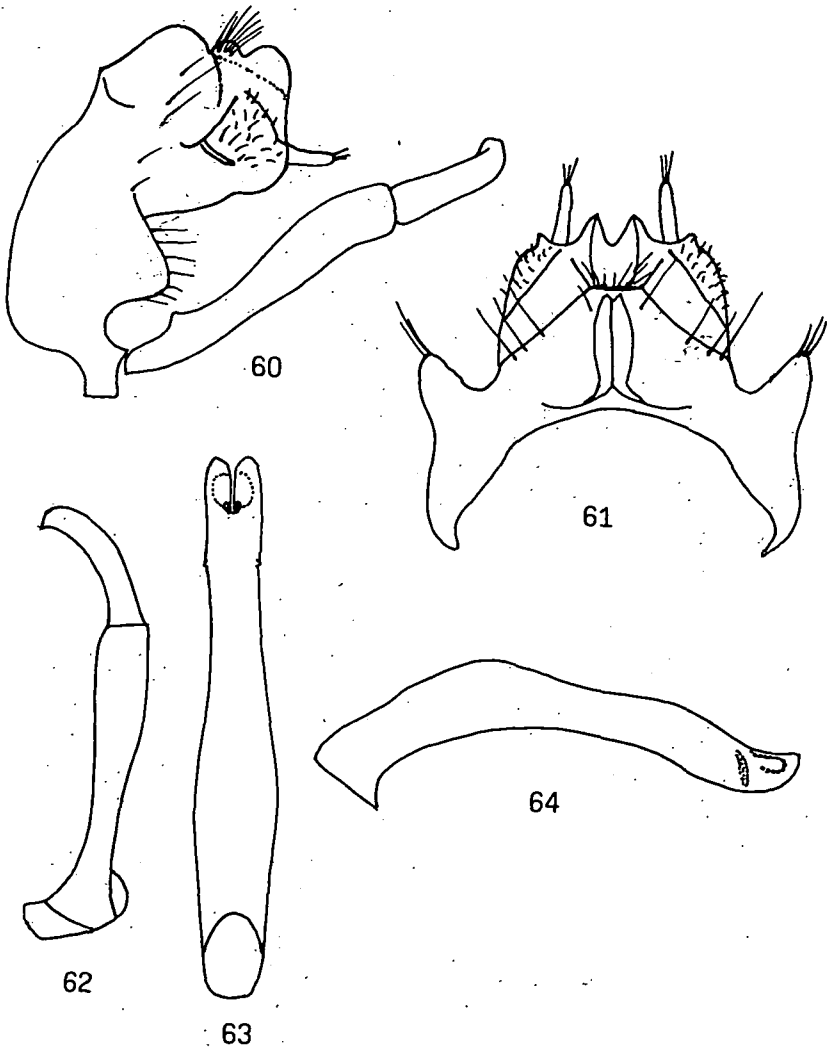
Figs 53 *Hydropsyche markusha* SCHMID, variations in male genitalia: 53 Trabzon, Uzungöl.



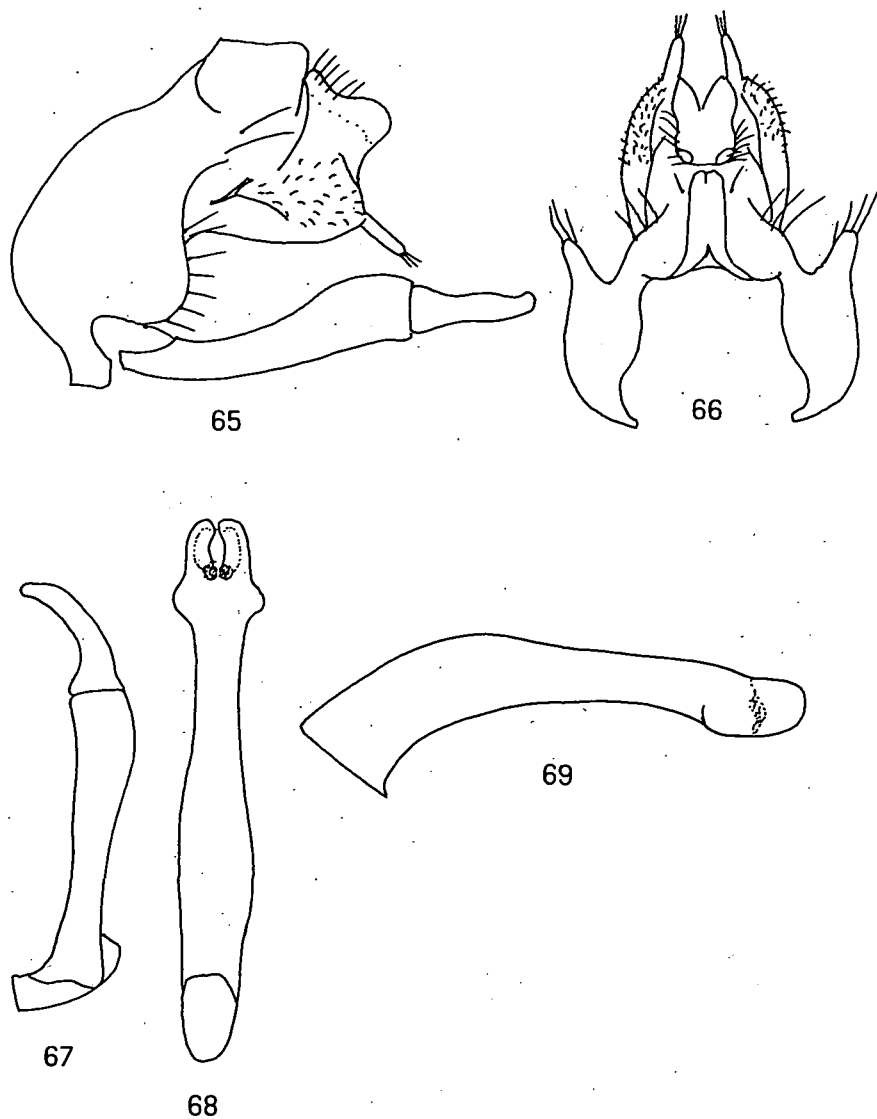
Figs 53-54 *Hydropsyche markusha* SCHMID, variations in male genitalia: 53 Trabzon, Uzungöl; 54 Gümüşhane, Bayburt



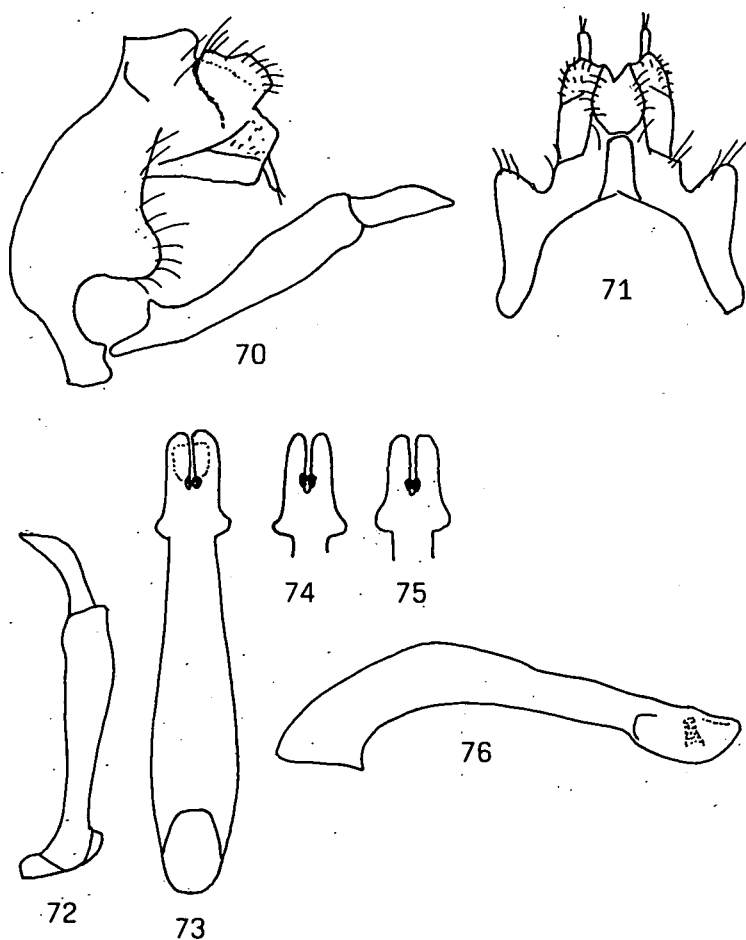
Figs 55-59 *Hydropsyche yukaritepe* sp. nov., male genitalia: 55 lateral; 56 dorsal; 57 inferior appendage ventral; 58 phallus ventral; 59 phallus lateral.



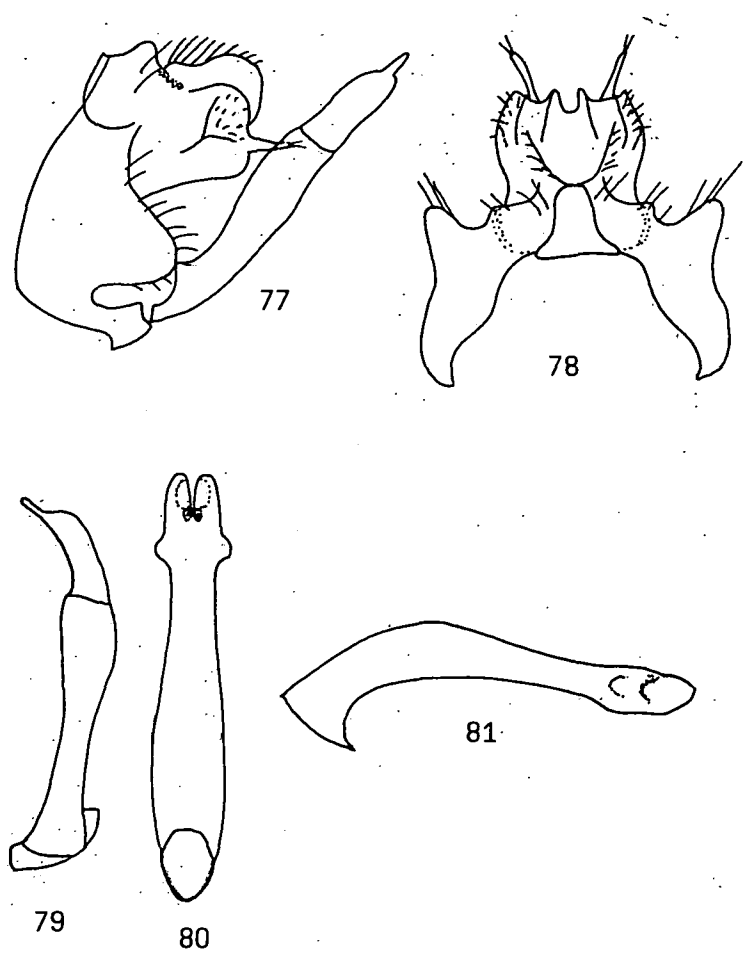
Figs 60-64 *Hydropsyche salihli* sp. nov., male genitalia: 60 lateral; 61 dorsal; 62 inferior appendage ventral; 63 phallus ventral; 64 phallus lateral.



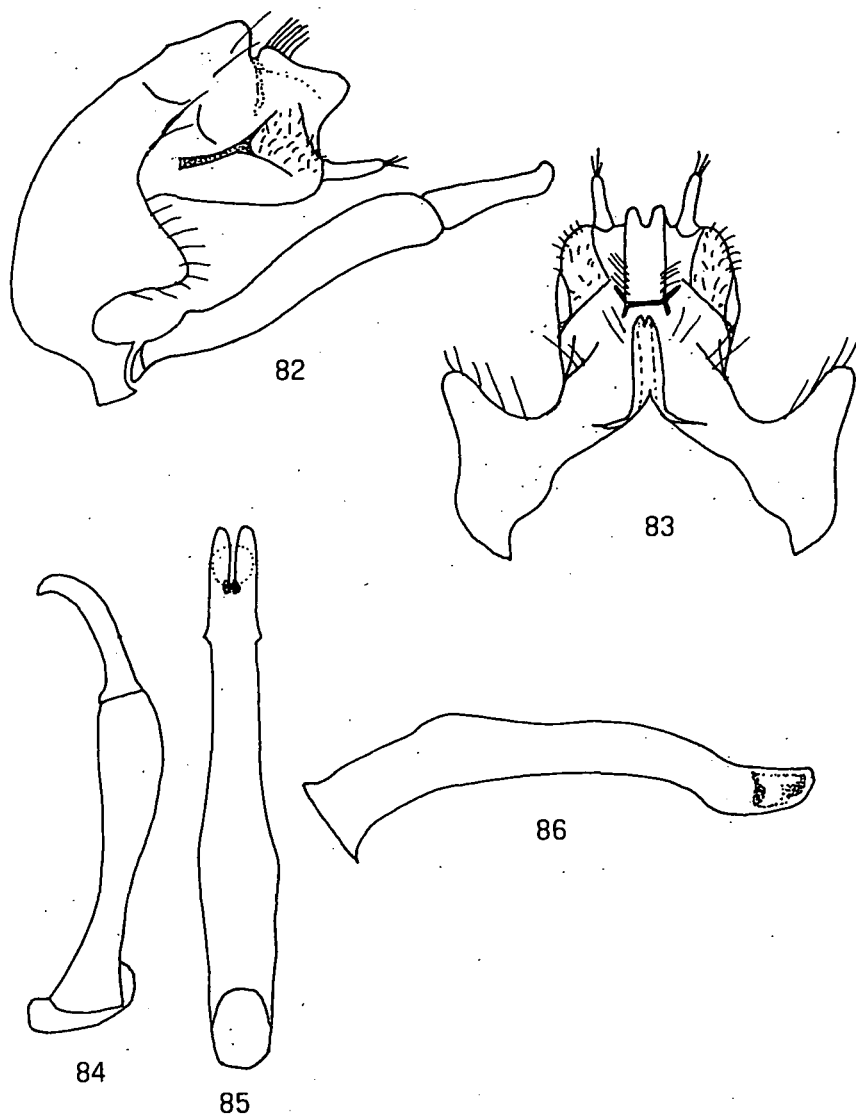
Figs 65-69 *Hydropsyche valkanovi* KUMANSKI, male genitalia: 65 lateral; 66 dorsal; 67 inferior appendage ventral; 68 phallus ventral; 69 phallus lateral.



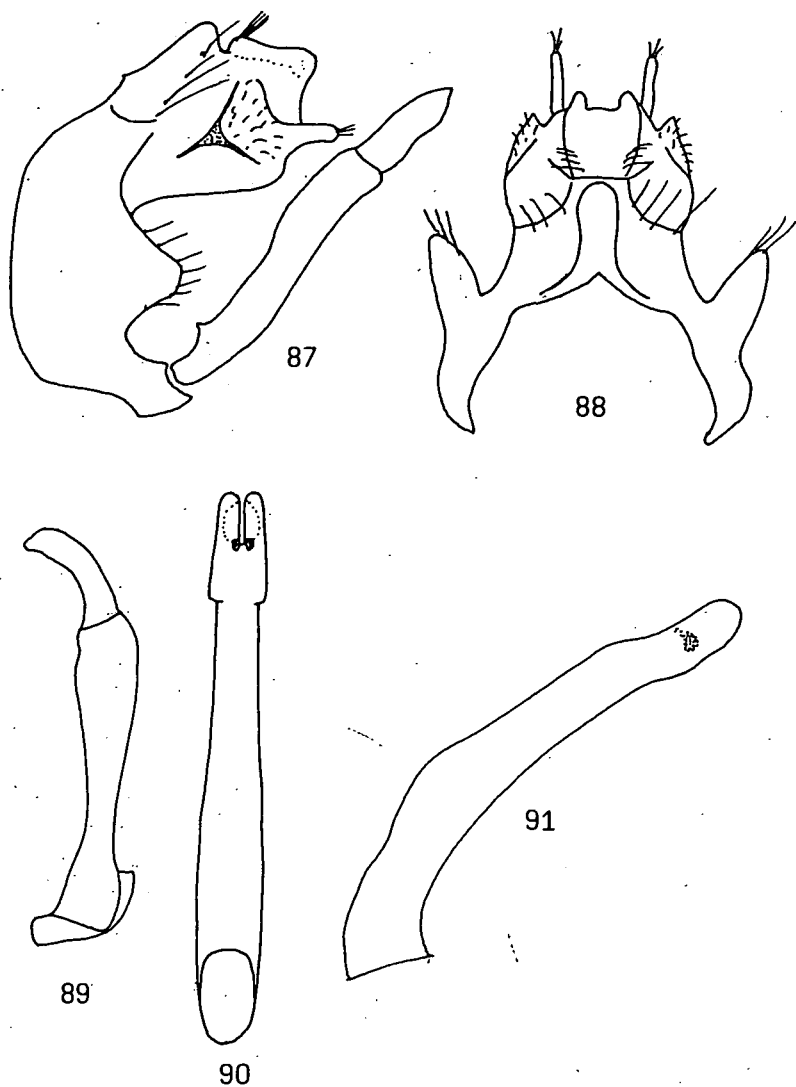
Figs 70-76 *Hydropsyche djabai* SCHMID, male genitalia (Ardahan): 70 lateral; 71 dorsal; 72 inferior appendage ventral; 73 phallus ventral; 74 phallus ventral (Ardahan, Taşlıdere); 75 phallus ventral (Van); 76 phallus lateral.



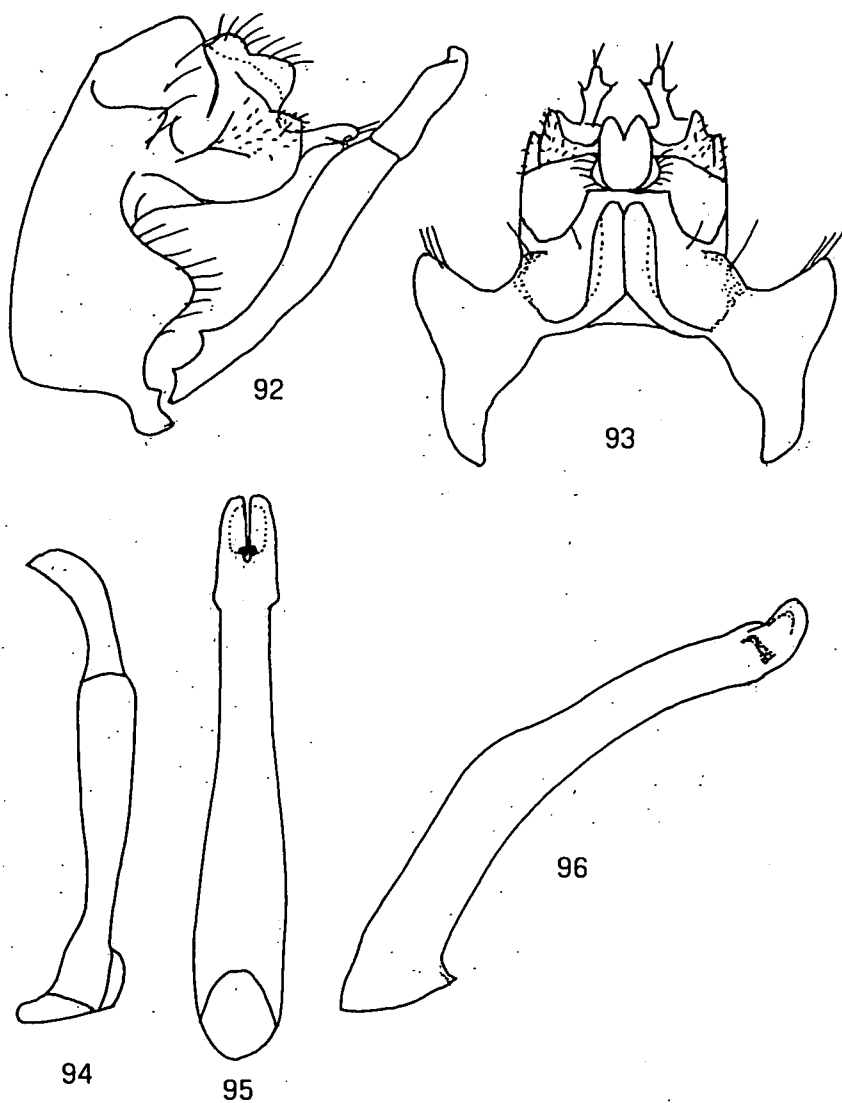
Figs 77-81 *Hydropsyche acuta* MARTYNOV, male genitalia (Ardahan): 77 lateral; 78 dorsal; 79 inferior appendage ventral; 80 phallus ventral; 81 phallus lateral.



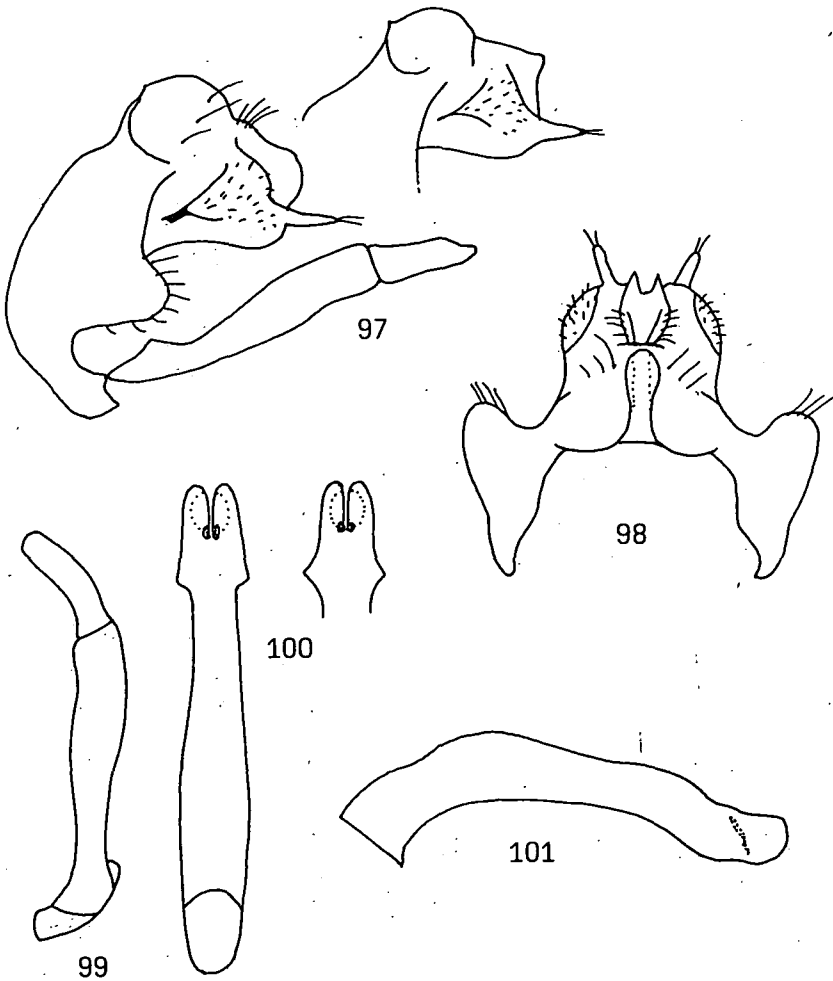
Figs 82-86 *Hydropsyche elmali* sp. nov., male genitalia: 82 lateral; 83 dorsal; 84 inferior appendage ventral; 85 phallus ventral; 86 phallus lateral.



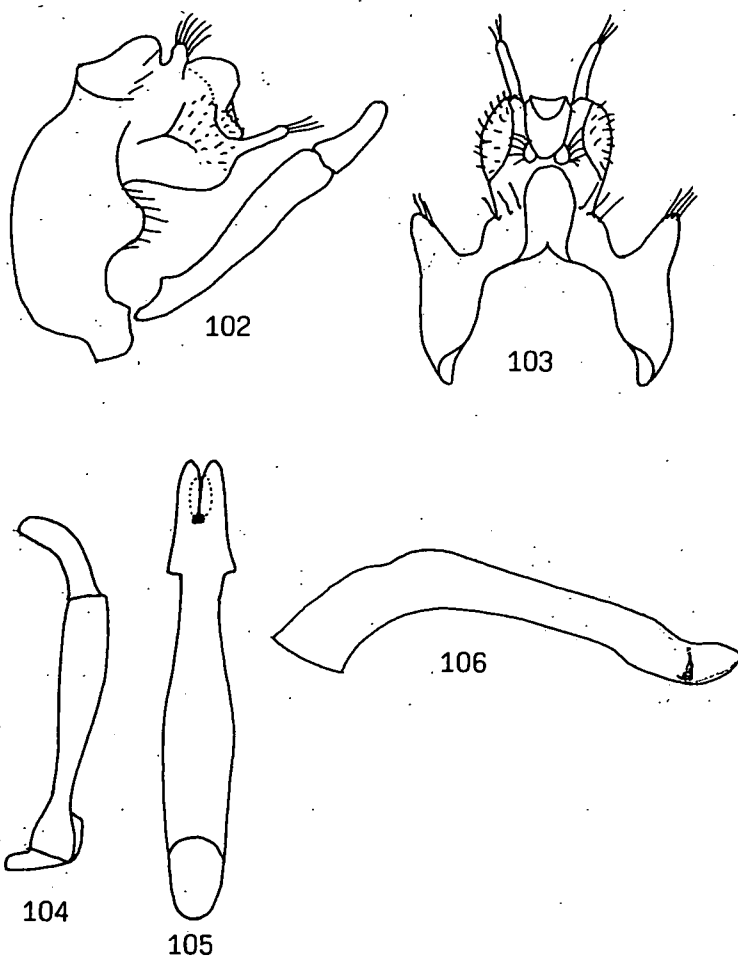
Figs 87-91 *Hydropsyche peristerica* BOTOSANEANU & MARINKOVIC, male genitalia (Kırklareli): 87 lateral; 88 dorsal; 89 inferior appendage ventral; 90 phallus ventral; 91 phallus lateral.



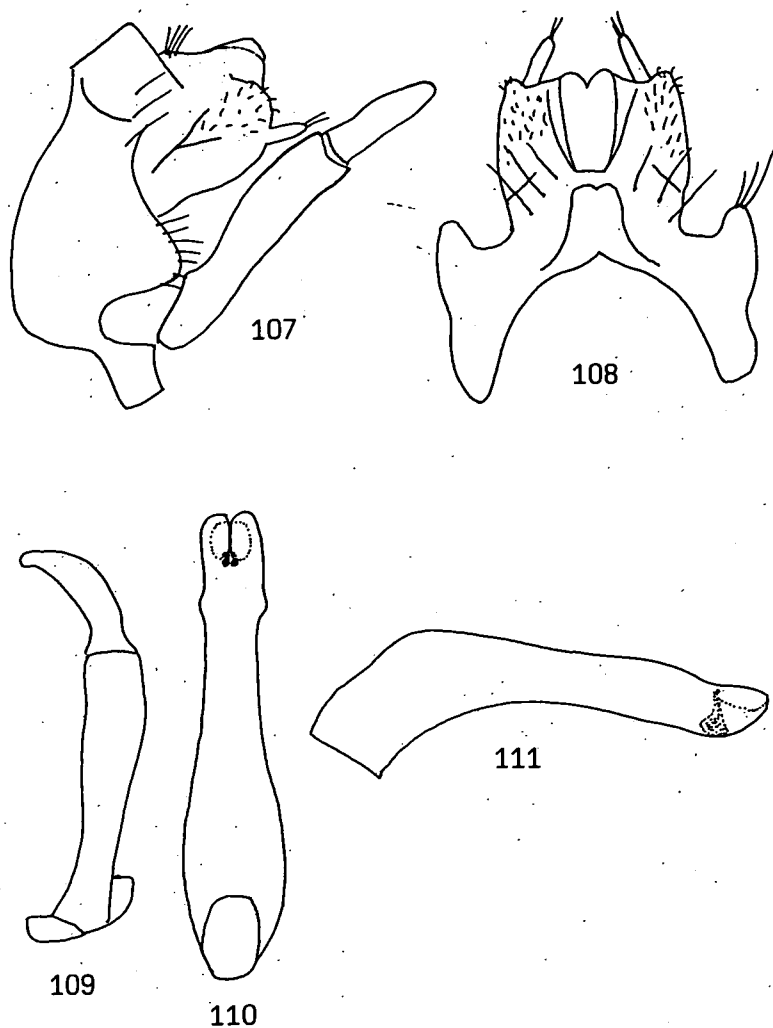
Figs 92-96 *Hydropsyche hadimensis* sp. nov., male genitalia: 92 lateral; 93 dorsal; 94 inferior appendage ventral; 95 phallus ventral; 96 phallus lateral.



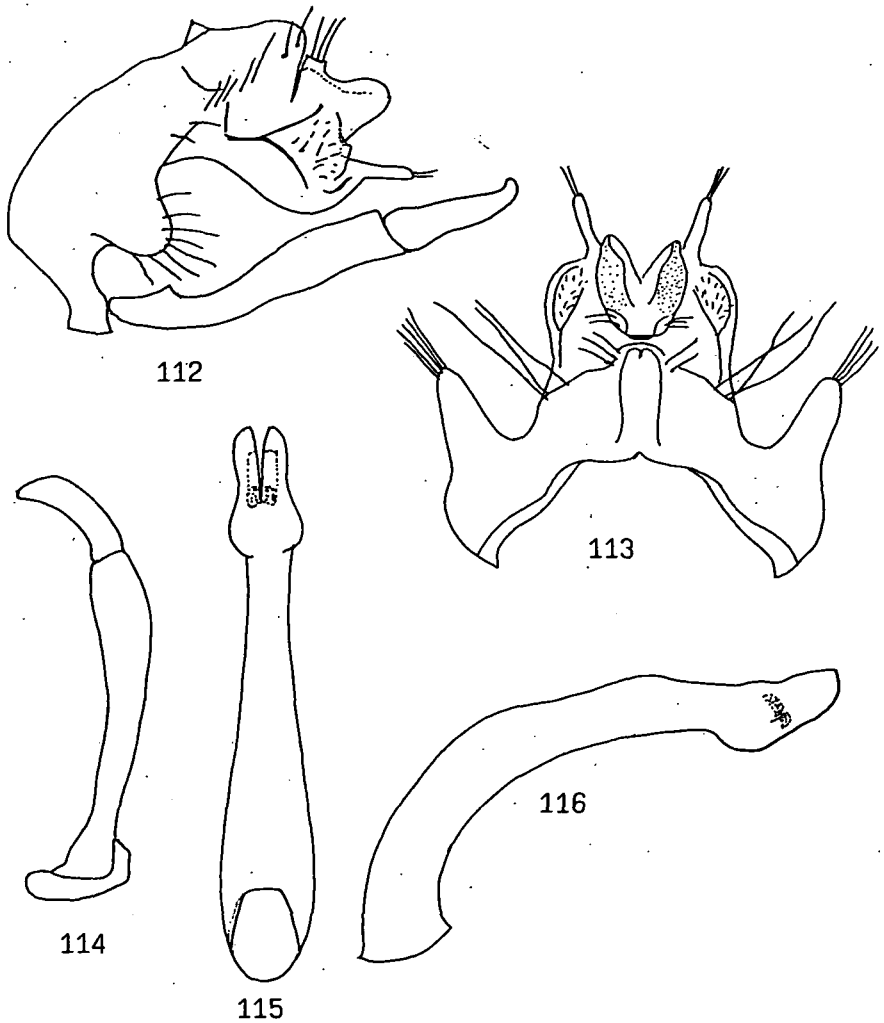
Figs 97-101 *Hydropsyche kazdagensis* sp. nov., male genitalia: 97 lateral; 98 dorsal; 99 inferior appendage ventral; 100 phallus ventral; 101 phallus lateral.



Figs 102-106 *Hydropsyche yenisar* sp. nov., male genitalia: 102 lateral; 103 dorsal; 104 inferior appendage ventral; 105 phallus ventral; 106 phallus lateral.



Figs 107-110 *Hydropsyche kebab* MALICKY, male genitalia (Beyşehir, Kurucuova): 107 lateral; 108 dorsal; 109 inferior appendage ventral; 110 phallus ventral; 111 phallus lateral.



Figs 112-116 *Hydropsyche sinopensis* sp. nov., male genitalia: 112 lateral; 113 dorsal; 114 inferior appendage ventral; 115 phallus ventral; 116 phallus lateral.

References

- BOTOSANEANU, L. - 1992. Trichoptera of the Levant, Imagines. - Fauna Palestina, Insecta 6, 293 pp., Jerusalem.
- BOTOSANEANU, L. & MARINKOVIC-GOSPODNETIAE, M. - 1966. Contribution à la Connaissance des *Hydropsyche* du groupe *fulvipes* - *instabilis*. Étude des genitalia males (Trichoptera). - Ann. Limnol. 2: 503-525.
- JACQUEMART, S. - 1965. Sept Trichoptères nouveaux de Turquie et Iran. - Bull. Inst. r. Sci. nat. Belg. 41 (33): 1-7.
- KUMANSKI, K. - 1974. Le groupe *fulvipes* - *instabilis* de genre *Hydropsyche* PICT. en Bulgarie, avec description de deux nouvelles espèces (Trichoptera, Hydropsychidae). - Nouv. Rev. Ent. 4: 145-152.
- MALICKY, H. - 1974. Acht neue mediterrane Köcherfliegen (Trichoptera). - Ent. Z. 84: 229-238.
- MALICKY, H. - 2001. Ein Beitrag zur Kenntnis der Arten der *Hydropsyche instabilis*-Verwandtschaft im östlichen Mittelmeergebiet (Trichoptera). - Linzer. Biol. Beitr. 33 (1): 489-518.
- MALICKY, H. & SIPAHILER, F. - 1993. Köcherfliegen (Trichoptera) aus der Türkei, mit Bemerkungen zu weiteren mediterranen Köcherfliegen. - Mitt. Schweiz. Ent. Ges. 66: 457-478.
- SCHMID, F. - 1959. Trichoptères d'Iran (Trichoptera). - Beitr. Ent. 9: 200-219, 376-412, 683-689, 760-799.
- SIPAHILER, F. - 1987. Türkiye'deki *Hydropsyche* cinsi *instabilis* grubu (Trichoptera, Hydropsychidae) erkeklerinin sistematik yönden incelenmesi. - DOGA TU Zooloji D. 11 (3): 161-178.
- SIPAHILER, F. - 1998. New species and records of Trichoptera from Turkey (Hydroptilidae, Hydropsychidae, Beraeidae). - Braueria 25: 9-11.
- SIPAHILER, F. - 2003. A checklist of Trichoptera of Turkey. 11. Int. Symp. Trichoptera, Osaka (in print).
- SIPAHILER, F. & MALICKY, H. - 1987. Die Köcherfliegen der Türkei (Trichoptera). - Entomofauna 8: 77-165, Linz.
- TJEDER, B. - 1946. On a small collection of Trichoptera from Palestine. - Ent. Tidskr. 67: 154-157.
- TOBIAS, B. - 1972. Zur Kenntnis europäischer Hydropsychidae (Insecta: Trichoptera), II. - Senckenbergiana biol. 53: 245-268.

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Literaturbesprechung

FRAGASZY, D.M. & PERRY, S. (eds.) 2003: The Biology of Traditions. Models and Evidence. - Cambridge University Press, Cambridge. 456 S.

Sozial aufrechterhaltene Verhaltenstraditionen in nonhumanen Arten sind für Biologen, Anthropologen, Verhaltensforscher und Psychologen immer noch von großem und aktuellem Interesse. In diesem Buch werden von über 30 Wissenschaftlern Verhaltenstraditionen vorgestellt und definiert; es wird beschrieben, wie sie entstehen konnten, wie weit sie verbreitet sind, wie sie erkannt werden können und wie man sie studieren kann. Auch wenn das Spektrum an vorgestellten Tierarten nicht sehr breit ist, sind es erstaunlicherweise nicht nur Primaten, die analysiert wurden. Auch Vögel, Ratten und Delphine dienen als "Beispiele"; bei den Primaten sind es neben Schimpansen und Orang Utans vor allem Kapuzineraffen, die zahlreiche neue Erkenntnisse liefern. Hier kommen die führenden Forscher auf diesem Gebiet zu Wort und stellen ihre aktuellen Forschungsergebnisse vor.

Als Schlussfolgerung lässt sich ziehen, dass die Biologie von sozialem Lernen und Traditionen ein Forschungsbereich ist, der noch in den Kinderschuhen steckt, obwohl wir ihm schon faszinierende und aufschlussreiche Erkenntnisse verdanken. Dieser Band ist auf jeden Fall hervorragend geeignet Neugierde zu wecken und weitere Forschungen anzuregen.

R. GERSTMEIER

SCHAEFER, M. 2003: Wörterbuch der Ökologie. - Spektrum Akademischer Verlag, Heidelberg-Berlin. 4. neu bearbeitete und erweiterte Auflage. 452 S.

Nach über 10 Jahren liegt nun die 4. Auflage dieses erfolgreichen und beliebten Wörterbuches vor. Der Umfang ist gar nicht so stark erweitert worden; zwar wurde das Gesamtformat etwas vergrößert, aber ebenso wurde eine größere Schrifttype ausgewählt, was die Lesbarkeit deutlich verbessert. Mathematische Formeln sind besser abgesetzt worden und einige Abbildungen wurden hinzugefügt. Bezüglich der Stichwörter sind alle Teilbereiche der Ökologie vertreten, aber auch Termini aus den Randbereichen Evolutionsbiologie, Systematik, Parasitologie, Biogeographie und Bodenkunde sind zu finden. Sehr nützlich sind die englischen Übersetzungen der Begriffe, die das Verfassen eigener englischer Texte erleichtern.

Nach wie vor das Standard-Nachschlagewerk für alle ökologischen Termini.

R. GERSTMEIER

NENTWIG, W., BACHER, S., BEIERKUHNLEIN, C., BRANDL, R. & GRABHERR, G. 2004: Ökologie. - Spektrum Akademischer Verlag, Heidelberg-Berlin. 466 S.

Dieses Lehrbuch der Ökologie folgt dem klassischen und hierarchischen Aufbau, von Individuen über Populationen und Wechselwirkungen zwischen verschiedenen Arten zu Gemeinschaften, Ökosystemen und Landschaften. Der rote Faden erstreckt sich also vom Organismus zum Planeten und stellt im letzten Kapitel "Raumschiff Erde" die "Konsequenzen" dar. In allen Teilen des Buches wird der Einfluss des Menschen auf Organismen und Ökosysteme gezeigt; die Beispiele sind brandaktuell, Grafiken, Abbildungen, Tabellen und Formeln äußern anschaulich und nicht "überfrachtet". Dem Anspruch, die großen Zusammenhänge aufzuzeigen, ist voll gerecht geworden. Besonders im Kapitel "Naturschutz" spürt man den sensiblen Umgang der Autoren mit der Materie. Bei aller Breite geht der Text in allen notwendigen Grundlagen ausreichend ins Detail, so dass dieses Buch als kompaktes, anschauliches, lebendiges und erfreulich aktuelles Lehrbuch allen Studierenden und Lehrenden der Naturwissenschaften nur wärmstens empfohlen werden kann.

R. GERSTMEIER

TURIN, H., PENEV, L. & CASALE, A. (eds.) 2003: The Genus *Carabus* in Europe. A Synthesis. - Pensoft, Sofia-Moscow. 511 S.

Die Gattung *Carabus* gehört in Europa mit zu den größten, attraktivsten, artenreichsten und bestuntersuchten Käfergattungen. Aufgrund ihrer Beliebtheit bei vielen Käfersammlern liegt umfangreiches Material in Museums- und Privatsammlungen vor, was z.T. auch zur Beschreibung zahlloser Unterarten und Variationen führte.

In dieser gewichtigen Monographie werden 132 Arten in ihrer Morphologie, Verbreitung und Ökologie beschrieben. Nach einer Einführung werden im "Speziellen Teil" zunächst eine Checklist, ein Bestimmungsschlüssel zu den 31 Untergattungen und Bestimmungsschlüssel zu den Arten vorgestellt. In diesem Teil gibt es auch ein Kapitel zur Bestimmung der Larven, inkl. Schlüssel. Das gewichtigste Kapitel im Speziellen Teil besteht in der ausführlichen Vorstellung der Arten. Der "Allgemeine Teil" befasst sich mit der Biologie und Ökologie, z.B. Reproduktion und Entwicklung, Aktivität, abiotischen und biotischen Faktoren sowie der Populationsbiologie. Sehr ausführlich werden dann aber auch Phylogenie, Biogeographie und Naturschutz behandelt. Natürlich fehlen auch Glossar, Literatur, Autoren- und taxonomischer Index nicht.

Eine bemerkenswerte, herausragende und überaus empfehlenswerte Monografie, die nicht nur jede entomologische Bibliothek zieren wird, sondern auch für Ökologen, Zoogeographen und Naturschützer eine sehr interessante Lektüre bietet.

R. GERSTMEIER

BOESCH, C., HOHMANN, G. & MARCHANT, L.F. (eds.) 2002: Behavioural Diversity in Chimpanzees and Bonobos. - Cambridge University Press, Cambridge. 285 S.

Schimpansen und Bonobos (Zwergschimpansen) sind die beiden einzigen Arten der Gattung *Pan* und die nächsten Verwandten des Menschen. Zahlreiche Studien haben sich deshalb den Fragen gewidmet, welche Ähnlichkeiten und Unterschiede zwischen diesen beiden Arten und unserer eigenen Spezies bestehen. Dieses Buch basiert auf einer Tagung "Behavioural Diversity in Chimpanzees and Bonobos" vom Juni 2000 im oberbayerischen Seon. Allerdings sind hier nicht einfach die Tagungsbeiträge abgedruckt, sondern die einzelnen Artikel sind zu Themenkomplexen neu arrangiert, durch neu verfasste Beiträge und durch neu gewonnene Autoren ergänzt worden. Somit bietet dieser Band eine ausführliche Übersicht über die jüngsten Forschungsergebnisse an wildlebenden Populationen dieser beiden Arten. Eine breite Palette an sozialen Verhaltensweisen wie Werkzeuggebrauch, Jagd, Fortpflanzungsstrategien und Konfliktmanagement wird ebenso diskutiert, wie demographische Variationen und ökologische Zwänge. Neben einer Beschreibung der interspezifischen Verhaltensdiversität werden auch aufregende neue Forschungsergebnisse zur Variation einzelner Populationen derselben Art aufgezeigt. Die Themenkomplexe erstrecken sich von der sozialen Flexibilität über soziale Beziehungen, spezielle Strategien der Weibchen hinsichtlich Fortpflanzung und Gruppenzugehörigkeit, Jagd und Teilen von Nahrung, bis hin zur genetischen Diversität.

Eine hochaktuelle und spannende Darstellung für Zoologen, Ökologen, Anthropologen und natürlich Primatologen.

R. GERSTMEIER

REICHARD, U.H. & BOESCH, C. (eds.) 2003: Monogamy. Mating Strategies and Partnerships in Birds, Humans and other Mammals. - Cambridge University Press, Cambridge. 267 Seiten.

Das Buch "Monogamy" beinhaltet Paarungsstrategien und Partnerschaften bei Vögeln, Menschen und anderen Säugetierarten. Es geht Fragen nach, wie, warum leben Vögel normalerweise in Paaren, während Säugetiere oft in größeren Gruppen leben, in denen die Weibchen ihre Jungen ohne männliche Hilfe aufziehen; warum paaren sich Weibchen mit nur einem männlichen Partner und nicht mit mehreren; warum leben manche Männchen mit nur einem

weiblichen Partner zusammen, wenn sie die Chance auf eine weit größere Fortpflanzung hätten. Wo liegen die evolutiven, ökologischen und sozialen Wurzeln der Monogamie?

Die 16 Spezialkapitel sind in drei Teile gegliedert: "Evolution of social monogamy", "Reproductive strategies of socially monogamous males and females" und "Reproductive strategies of human and non-human primates".

Diese hervorragende Zusammenstellung aktueller und qualitativ hochstehender Originalartikel kann allen Zoologen, Verhaltensökologen, Anthropologen und Primatologen nur wärmstens empfohlen werden.

R. GERSTMEIER

MACKAY, R. 2003 (reprinted): The Atlas of Endangered Species. Threatened Plants and Animals of the World. - Earthscan Publications, London. 128 S.

Um Irrtümern gleich vorzubeugen, dies ist kein Bildatlas zu speziellen bedrohten Arten, sondern ein Themenatlas zu generell bedrohten Tier- und Pflanzenarten. Dieses Buch beginnt mit dem Kapitel "Extinction is forever", in welchem Evolution und Auslöschung von Dinosauriern und Hominiden dargestellt werden. Im Kapitel "Ecosystems" werden die besonders bedrohten Ökosysteme, wie tropische Wälder, gemäßigte Wälder, Gras- und Feuchtländer, Mangroven und Korallenriffe vorgestellt. "Fragile Regions" wird nach Kontinenten und großen Inseln (Arktis, Antarktis, Australien, Mittel- und Südamerika, Galapagos-Inseln, Madagaskar) aufgearbeitet und dokumentiert den prozentualen Anteil an Schutzgebieten in den entsprechenden Regionen. Auch die bedrohten Tier- und Pflanzenarten sind zu Gruppen zusammengefasst: Primaten, Großkatzen, Huftiere, Elefanten und Nashörner, Bären, Nagetiere, Fledertiere, Delphine und Wale, Reptilien und Amphibien, Invertebraten, Fische und Pflanzen; entsprechend farbig markierte Weltkarten zeigen den Anteil bedrohter Arten. Ein eigenes Kapitel ist bedrohten Vogelarten gewidmet, unterteilt in Vögel allgemein, Greifvögel, Papageien und Kakadus sowie See- und Wandervögel. Im Teil 6 "Issues of Conservation" wird die Naturschutzsituation in den jeweiligen Ländern dargestellt. Das letzte Kapitel informiert in Tabellenform über geschützte Ökosysteme und die Biodiversität innerhalb der Staaten unserer Erde.

Eine kompakte, anschauliche und informative Broschüre, die ins Bücherregal eines jeden an Naturschutz interessierten Lesers gehört.

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