

**STUDIES ON THE MALES OF THE *HYDROPSYCHE*
INSTABILIS GROUP IN TURKEY, WITH THE
DESCRIPTION OF NINE NEW SPECIES
(TRICHOPTERA: HYDROPSYCHIDAE)**

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ABSTRACT: The males of the *Hydropsyche instabilis* group distributed mostly in the northern part of Turkey are revised, and the following new species are described and illustrated: *H. evreni* sp. n., *H. caçilae* sp. n., *H. salimcalisi* sp. n., *H. kurensis* sp. n. *H. burmukensis* sp. n., *H. yildizae* sp. n., *H. ayasi* sp. n, *H. beysehircensis* sp. n., *H. aslani* sp. n. A redescription of *H. delamarei* Jacquemart, 1965 is given. The new and the additional localities for the distribution of *H. krassimiri* Malicky, 2001, *H. mahrkusha* Schmid, 1959, *H. salihli* Sipahiler, 2004, *H. lepnavae* Botosaneanu, 1967, *H. djabai* Schmid, 1959 and *H. acuta* Martynov, 1909 are provided. *H. alaca* Malicky, 1974 is regarded as a synonym of *H. delamarei* Jacquemart, 1965.

KEY WORDS: Trichoptera, *Hydropsyche*, *instabilis* group, Turkey, taxonomy, new species, distribution.

Hydropsyche instabilis species group is characterized by digitiform appendages on the apical margin of segment X. There are several systematic studies on this group that clarify the identification of the species found in Europe (Botosaneanu & Marinkovic-Gospodnetic, 1966, Tobias, 1972, Kumanski, 1974) and eastern Mediterranean region excluding Turkey (Malicky, 2001).

H. delamarei Jacquemart, 1965 was the first species described from Turkey (Jacquemart, 1965). Because of the insufficient description this species could not be identified and not listed in the faunistic lists of Turkey, remaining almost unknown. In 1974 two new species belonging to the *instabilis* group were described, one of which *H. alaca* Malicky, 1974 (Malicky, 1974) is regarded in this study as a synonym of *H. delamarei*.

In 1987, 11 species belonging to the *instabilis* group were reported from Turkey (Sipahiler & Malicky, 1987). Later a few new species (Sipahiler, 1987, 1998, 2004, 2006) and a paper on the taxonomy of the group with descriptions of 12 new species were published, based on mainly the species distributed in southern Turkey (Sipahiler, 2004a). After the rediscovery of *H. delamarei* from the type locality, it became possible to revise the species distributed in the northern part of Turkey. The number of known species of this species group reaches 39 with the 9 new species described in the present study.

Malicky (2001) discussed the distribution pattern of the group in the Aegean islands and noted that some species were widespread in the area, others were found in one or a few islands and a few species were found together on one island, some of which could be found on the other islands. In Turkey several species of the group, namely *H. instabilis* Curtis, 1834, *H. delamarei* Jacquemart, 1965, *H. lepnavae* Botosaneanu 1967, and *H. kebab* Malicky, 1974, appear to be widespread, found in many places. Among them *H. delamarei* is found mostly on

the high plateaus of northeastern Anatolia or on the plains of central Anatolia. Some populations of this species are found on the southern slopes of the north Anatolian mountains, with a few found further north. The closely related species are known from only one or a few localities in the northern parts of north Anatolian mountain range, such as *H. cagilae* sp. n. Similarly, in the central part of northern Turkey, in the Ilgaz Mountains, which extend in an east-west direction and parallel to the Küre Mountains, lives *H. delamarei*; further north, in the Küre Mountains, which are separated from the Ilgaz Mountains by a large plain, lives *H. burmukensis* sp. n., and further west *H. kurensis* sp. n.

MATERIALS AND METHODS

Materials collected mainly from the northern part of Turkey between 1979 and 2009 were studied. The specimens were collected by hand net and light trap with a blacklight tube (6 W), preserved in alcohol (75 %), and deposited in my collection at the Biology Education Department, Hacettepe University. The pupae are also included in the study. For the code of depository the CD abbreviation is used. The genital terminology follows several authors (Botosaneanu & Marinkovic-Gospodnetic, 1966, Tobias, 1972, Malicky, 2001).

DESCRIPTIONS

Hydropsyche delamarei Jacquemart, 1965

(Figs. 1-5)

Material examined: Bayburt province: Bayburt, Aşkale direction, 35 km south of Bayburt, 7.7.2007, CD: H-676, 9 males; Bayburt, Aşkale direction, 15 km south of Bayburt, 7.7.2007, CD: H-678, 3 males; Aşkale direction, Kop ski station, CD: H-723, 1900 m, 12.7.2008, 3 males, 2 females; Aşkale direction, CD: H- 641, 39° 59 N, 40° 33 E, 11.8.2007, 2 males, 1 female; Erzurum province: Aşkale, after Kop pass 1900 m, 12.7.2008, CD: H-723, 3 males, 2 females; Erzurum, Aşkale, 17 km north of Aşkale, 12.7.2008, CD: H-727, 5 males; Aşkale direction, 1990 m, CD: H-645, 40° 03 N, 40° 27 E, 11.8.2007, 10 males; Gümüşhane province: Bayburt direction, 45 km south of Gümüşhane, 1800 m, 12.7.2008, CD: H-731, 3 males, 1 female; Bayburt direction, 12.7.2008, 25 km, south of Gümüşhane, CD: H-729, 1 male (pupa), 5 females (pupa); Ağrı province, Doğu Beyazıt, İshakpaşa sarayı, 10.7.1993, 1 male, leg. Chivoska, coll. Sipahiler. Van province: Erciş direction, 60 km. north of Van, Çakırbey, CD: H- 439, 22.7.1995, 12 males; Erzincan province: Sivas direction, 48 km west of Erzincan, 8.7.2007, CD: H-689, 13 males, 1 female; Sivas direction, 127 km east of Erzincan, Kevenli village, 1500 m, CD: H-708, 5 males, 1 female; Sivas direction 115 km west of Erzincan, 2100 m, CD: H-707, 12.7.2008, 8 males, 1 female; Sivas direction, 50 km. west of Erzincan, CD: H-741, 13.7.2008, 19 males; 30 km. east of Erzincan, Çağlayan village, Girlevik, CD: H-766, 21 males, 1 female; Tunceli province: Ovacık, 1 km east, Değirmendere, 25.7.1983, CD: H-221, 1 male; Ovacık, 10 km. west of Ovacık, CD: H-228, 5 males, 1 female; Ovacık, 10 km northeast of Ovacık, CD-521, 10 males; Sivas province: Koyulhisar, Eğriçimen Yaylası, 8.8. 1995, 11 males, CD: H-424, leg. Yıldız Demirkalp; same place, 1600 m, 5.7.2007, CD: H-656, 30 males, 3 females; same place, 8.8.2007, CD: H-660, 3 males; same place, CD: H-740, 8.7.2008, 1540 m, 18 males, 3 females; same place, 15.8.2008, CD: H-745, 3 males; Ordu province: Niksar- Ordu direction, Özdemiş, CD: H-646, 3.7.2007, 3 males; Koyulhisar-Mesudiye direction, Arpaalan, 1610 m, CD: H-654, 8.8.2007, 6 males, 2 females; Niksar, Ordu direction, 4 km north of Özdemiş, 3.7.2007, CD: H-646, 3 males; same place, CD: H-737, 23 males, 5 females; same place, CD: H-744, 10 males, 2 females; Tokat province: Niksar, Çamiçi yaylası, CD: H-748, 15.8.2008, 40° 38 N, 36° 59 E, 1180 m, 4 males; same place, CD: H- 706, 1 male; same place, CD: H-672, 3.7.2007, 1 male; Trabzon province: Macka, Sumela, Camiboğazı yaylası, Çukurgöl, 2380 m, 40° 35 N, 39° 39 E, CD: H-714, 10 males; Giresun province: Trabzon province border, Sis Mountain, 1700 m, CD: H-722, 11.7.2008, 1 male, 2 females; Kumbet, CD: H-682, 9.8.2007, 1580 m, 1 male; Ankara province: 10 km southeast of Eymir, CD: H-367, 23 males; same place, 4.6.1988, CD: H-256,

26 males, 2 females; Kızılcahamam, Işık Mountain, Sofular spring, CD: 457, 10 males, 2 females; Çankırı direction, Baykuş Boğazı, 15.5.1981, CD: H- 522, 3 males; same place, CD: H-119, 15.5.1981, 53 males, 5 females; Çubuk, Yukarı Kışlacık village, CD: H-62, 9.7.1980, 66 males, 9 females; same place, 29.5.1981, CD: H-127, 30 males; Çubuk, Karagöl, CD: H-60, 9.7.1980, 9 males, 2 females; same place, CD: H-396, 33 males, 3 females; Çatıköy, CD: H-126, 28.5.1981, 1 male; Beytepe, CD: H-31, 18.6.1981, 10 males; Aksaray province: İhlara, Melendiz stream, CD: H- 357, 15.5.1993, 5 males; Amasya province, near Borabay Lake, CD: H-238, 8.8.1985, 10 males, 1 female; Çorum province: Kırkdilim village, CD: H-52, 29.6.1980, 8 males; Kargı, Ilgaz Mountains, Günyazı village, 15.8.2009, CD: H- 804, 3 males; same place, Pelit yaylası, CD: H- 803, 15.8.2009, 5 males; same place, CD: H- 815, Dağlıca yaylası direction, 41° 14 N, 34° 33 E, 1526 m, 8.8.2009, 3 males, 1 female; same place, CD: H-791, 41° 12 N, 34° 21 E, 11.7.2009, 5 males; Yozgat province: Boğazkale direction, 12 km north of Yozgat, CD: H-45, 28.6.1980, 6 males; all leg. and coll. Sipahiler.

Antennae, palps, head, and thorax are dorsally blackish; first and second pairs of legs black, coxa and femur of the third pair of legs blackish, tibia pale brown, of which the basal portion is blackish, the tarsal segments yellowish; wings are blackish brown. The length of the anterior wing of males is 6-7 mm, of females 8-10 mm.

Male genitalia (Figs. 1-5): Cavity IX is large and rather deep; the dorsal keel of segment IX is narrow; in lateral view, the margin of the dorsal stripe and the posterior margin are straight, the digitiform appendages are slender, rather short, directed somewhat ventrally; in dorsal view, the dorsal keel of segment IX is narrow; the median part of segment X is short, broad, with a rather small excision on the apical margin. The phallic apparatus is slightly curved basally, in lateral view the apical portion is broader than the rest, which is equal in breadth; in ventral view, the lateral projections of the phallic apparatus are large, broadly triangular, narrowing towards the apex. The harpago of the inferior appendage is somewhat curved basally, almost equal in breadth.

Distribution: This species is known only from Turkey and is largely distributed in the northern part of Anatolia.

Remarks: *H. delamarei* Jacquemart, 1965 had been described from Turkey based on the material collected near Aşkale and published with insufficient description and illustrations (Jacquemart, 1965). Later, *H. alaca* Malicky, 1974 was described from Yozgat province, near Alacahöyük (Malicky, 1974), and this species was collected from different places and identified as *H. alaca* (Sipahiler & Malicky, 1987, Sipahiler, 2005). In 2007 and 2008 *H. delamarei* was collected again from the type locality and the surrounding area and compared with the specimens collected from Yozgat province, very close to the type locality of *H. alaca*. It is clear that this species has the same characteristics as *H. alaca*; thus I regard it as a synonym of *H. delamarei*. *Hydropsyche alaca* Malicky, 1974 **syn. nov.** = *Hydropsyche delamarei* Jacquemart, 1965.

***Hydropsyche evreni* sp. n.**

(Figs. 6-10)

Material: Holotype and paratypes (12 males and 2 females) : Ardahan, Gölbelen village, near Çıldır Lake, 41° 02 N, 43° 08 E, CD: H-261, 19.7.1988, leg. and coll. Sipahiler; other paratypes: Kars, Doğruyol, CD: H-158, 41° 03 N, 43° 22 E, 24.7.1981, leg. Kazancı, coll. Sipahiler.

Antennae and palps dark brown/blackish, head and thorax dorsally black, wings blackish, first and second pairs of legs are black, tibia and femur of third pair are pale brown, tarsal segments dark brown. The length of the anterior wings of males is 7.5-8 mm, of females 8.5-9 mm.

Male genitalia (Figs. 6-10): Cavity IX slightly deep, cavity X deep, dorsal keel is long, dorsally broadly triangular; in lateral view, segment X is shorter than segment IX, dorsal stripe is smooth, slightly directed ventrally; the sclerotized bands of spiny area are thick, strongly sclerotized; the vertical band is long, reaching the dorsal depression and forms a ridge, possessing a small, rounded, pale spot in the middle, which is weakly sclerotized; the digitiform appendages rather short. The dorsal edge of the phallic apparatus is dilated near the middle, with a small excision subdistally; the apical portion is strongly developed, the lateral projections are broad and rounded; the coxopodite of the inferior appendage is narrow near the base, the harpago is curved inwards, almost equal in breadth, or somewhat dilated on the subdistal portion, the apex is broad and smooth.

Distribution: This species is known only from eastern Turkey.

Remarks: This species is similar to *H. delamarei* and characterized by the shape of the lateral projections of the phallic apparatus, which are large and rounded, the shape of the dorsal keel, which is broadly triangular, and the sclerotized bands of spiny areas, which are strongly sclerotized, thick, forming a pale rounded spot near the dorsal portion of segment X; in *H. delamarei* the lateral projections of the phallic apparatus are moderately large, the dorsal keel is narrow, almost equal in breadth, the sclerotized bands of spiny area are thin.

Etymology: This new species is dedicated to Mr. Evren Erk'akan.

***Hydropsyche cagilae* sp. n.**

(Figs. 11-15)

Material: Holotype male and paratype female: Turkey, Ordu, Çambaşı Yaylası, Yeşilce-Mesudiye direction, 1960 m, CD: H-749, 40° 35' N, 37° 53' E, 19.9.2008, leg. and coll. Sipahiler.

Antennae and palps are dark brown; in the male, the tibia of the second leg is brown and the rest of the legs are dark brown, in the female the first leg is dark brown, the femur of the second leg is brown, the tibia of the third leg is pale yellowish and the tarsi are brown; the wings are brown; the length of the anterior wing of male is 8 mm, of female 9.5 mm.

Male genitalia (Figs. 11-15): Cavities IX and X are deep; the dorsal keel of segment IX is very narrow, acute at the tip; in lateral view, dilating dorsally. In lateral view, the dorsal stripe of segment X is sinuate, forming rounded lobes at the base and apical portion, ventral margin is rounded apically; the digitiform appendages are rather short. In dorsal view, the dorsomedian area of segment X is large, the sides are rounded. The coxopodite of the inferior appendages is broad and long, the harpago is almost equal in breadth, somewhat dilated on the outer edge subdistally, narrowing at the tip. In lateral view, the phallic apparatus is curved at the base, rather narrow, narrowing towards the apical part; in ventral view, the lateroapical projections are very broad, triangular, narrowing towards the tip.

Distribution: This species is known only from northeastern Turkey.

Remarks: This species is related to *H. delamarei*, but differs from this species by the following features: The dorsal keel is very narrow, the dorsal stripes of segment X are sinuate, forming large lobes apically, the harpago is broad, dilating on the subdistal part, the shaft of the phallic apparatus is thin and the lateroapical projections are very large; in *H. delamarei*, the dorsal keel is narrow, the dorsal stripe is smooth, the harpago is rather thin, almost equal in breadth, the lateroapical projections are moderately broad.

Etymology: *Hydropsyche cagilae* sp.n. is dedicated to Mrs. Çağıl Hoş.

***Hydropsyche salimcalisi* sp. n.**

(Figs. 16-20)

Material: Holotype male and paratype male: Turkey, Ankara, Beypazarı, Karaşar, Eğriova, 1500 m, (CD: H- 485) 9.7.1999; paratypes: same place, 10 km north, 1550 m, (CD: H- 484), 12 males, 1 female, 40° 19 N, 31° 55 E, 9.7.1999, leg. and coll. Sipahiler.

Antennae, palps, wings are dark brown/blackish; head and thorax dorsally black; first and second legs are blackish brown, the tibia of the third leg is pale brown, tarsi dark brown. The length of the anterior wing of males is 9-9.5 mm, of female 10 mm.

Male genitalia (Figs. 16-20): Cavity IX is deep, cavity X less deep; the dorsal keel of segment IX is narrow at the base, possessing a median line on the basal portion, roundly dilated towards the apex. In lateral view, the dorsal keel is directed dorsally; the dorsal stripes and apical margin of segment X are straight, the digitiform appendages are long and rather thick. The harpago of the inferior appendages is moderately broad, slightly narrowing towards the apex; the apex is rounded. The phallic apparatus is rather long; the apical portion is long and narrow, narrowing at the tip, the lateral projections are small.

Distribution: This species is known only from northwestern Turkey.

Remarks: This species is similar to *H. delamarei*, but differs from this species by the shape of the dorsal keel of segment IX, which is broad and rounded, narrow only at the basal portion; the digitiform appendages are long and thick; the apical portion of the phallic apparatus is long and narrow, the lateroapical projections are very small.

Etymology: *Hydropsyche salimcalisi* sp.n. is dedicated to Mr. Salim Çalış, retired technician of the Biology Department, Hacettepe University.

***Hydropsyche kurensis* sp. n.**

(Figs. 21-25)

Material: Holotype male: Turkey, Kastamonu, İnebolu direction, 28 km south of Küre, (CD: H-550), 41° 36 N, 33° 43 E, 2.6.2002; paratype male: Turkey, Kastamonu, Azdavay, Cide direction, (CD: H-440), 41° 37 N, 33° 20 E, 21.6.1996, leg. and coll. Sipahiler.

Antennae, palps, and wings are dark brown; thorax and head blackish; the first leg is dark brown, coxa and femur of the second leg dark brown, tibia and tarsi brown, coxa and femur of the third leg dark brown, tibia and tarsi are pale brown yellowish. Forewings are sparsely spotted on the apical margin. The length of the anterior wings of males is 8-9.5 mm.

Male genitalia (Figs. 21-25): Cavity IX is deep, cavity X less deep; in dorsal view, the dorsal keel is broad at the base, becoming broader on the subdistal portion, somewhat narrowing towards the apex. In lateral view, the dorsal stripe of segment X has a large and rounded basal dilatation, the apical half of the margin is smooth; the apical lobe is somewhat shorter than the basal lobe; the sclerite lines of the spiny area are very thin, only the base is thick. The digitiform appendages are long and rather thick at the base. The harpago of the inferior appendages is rather broad, broader on the subdistal part, roundly narrowing towards the apex. The phallic apparatus is rather short, in lateral view curved at the base, the dorsal edge is dilated near the middle and subdistal part; in ventral view, the apical part is long, the lateroapical projections are large, triangular, and pointed at the tips.

Distribution: This species is known only from northwestern Turkey.

Remarks: *Hydropsyche kurensis* sp. n. is closely related to *H. delamarei*. The following differences are seen in the genitalia: The dorsal keel of the new species is large, dilated almost in the middle, the dorsal stripe of segment X has a long basal lobe, reaching the middle, the sclerite bands of the spiny area are thin, the digitiform appendages are broad and long, the harpago is broad, dilating medially and the phallic apparatus is curved at the base, the lateroapical projections are large and triangular; in *H. delamarei* the dorsal keel is narrow, the dorsal margin of segment X is almost smooth, the sclerite bands of the spiny area are thicker, the digitiform appendages are short and rather thin, the harpago is narrow and equal in breadth, the phallic apparatus is not curved at the base and the apical portion is shorter than that in the new species.

Etymology: This new species is named after the place where the specimens were collected.

***Hydropsyche burnukensis* sp. n.**

(Figs. 26-30)

Material: Holotype male, paratype female and 1 pupa female: Turkey, Sinop, Bürnük, 1146 m, CD: H-786, 41° 39' N, 34° 51' E, 12.7.2009, leg and coll. Sipahiler.

Antennae dark brown, palps, and the coxa of the legs blackish brown, the rest of the segments pale brown, head and thorax blackish, wings are uniform dark brown. The length of the anterior wing of male and female is 9 mm.

Male genitalia (Figs. 26-30): Cavity IX is deep, cavity X deeper, the dorsal keel of segment IX is moderately broad, broader at the base, narrowing towards the apex, and the apex is smooth. In lateral view, dorsal stripe and dorsal part of the apical margin of segment X are straight, the sclerite bands of the spiny area are thick at the base, the digitiform appendages are long in dorsal view, the dorsomedian area of segment X is broad, the apical edge is deeply and roundly excised. The harpago of the inferior appendages is rather narrow, subdistally curved inside, the apex is rounded. The phallic apparatus is curved at the base; in lateral view, the dorsal edge is dilated near the middle and on the subdistal part; in ventral view, the apical portion is long, its distal part narrow, the lateroapical projections are rather large and triangular.

Distribution: This species is known only from northwestern Turkey.

Remarks: *H. burnukensis* sp. n. is well characterized by the shape of the dorsal keel, the dorsal and apical margin of segment X, and the apical part of the phallic apparatus, which is long and narrower at the tip. It is similar to *H. marhkusha* Schmid, 1959 (Malicky, 2004, Sipahiler, 2004a), which has a broader dorsal keel with a broad apex, a sinuate dorsal and apical margin of segment X, and a shorter apical part of the phallic apparatus with a broader apex.

Etymology: This species is named after the place around where the specimens were collected.

***Hydropsyche yildizae* sp. n.**

(Figs. 31-35)

Material: Holotype male: Turkey, Bolu, Abant, Bulanık yaylası, 1400 m, 40° 40' N, 31° 27' E, CD: H-820, 26.6.1999; paratypes: Bolu Abant, 6.6.1983, CD: H-519, 1 male; Bolu, Abant 2 km southeast of Bulanık yaylası, CD: H-191, 19.6.1982, 1 male, 1 female, all leg. and coll. Sipahiler.

Antennae, palps, and legs pale brown, wings are brown; the length of the anterior wing of male is 9-9.5 mm, of female 12 mm.

Male genitalia (Figs. 31-35): Cavity IX rather deep, cavity X less deep; the dorsal keel of segment IX is rather broad, the apex is rounded. In lateral view, the dorsal stripe of segment X has a small basal dilatation, the apical lobe broadly rounded; the ventral margin is as long as the dorsal margin; the digitiform appendages are long, rather thin; in dorsal view, the dorsomedian part of segment X is large, the lateral stripes are directed somewhat on the sides. The coxopodite of the inferior appendages is rather short, the harpago is long, basally broad, becoming narrow towards the middle, slightly dilating subdistally and pointed at the apex. In lateral view, the phallic apparatus is curved at the base, the basal portion is broad, gradually narrowing towards the tip; in ventral view, the apical part is long, rather narrow, the lateroapical projections are small and broadly rounded.

Distribution: This species is known only from northwestern Turkey.

Remarks: *H. yildizae* sp. n. is well characterized by having large and rounded lateroapical projections of the phallic apparatus, which is curved at the base, and the short coxopodite of the inferior appendages. It is similar to *H. ayasi* sp. n., discussed below.

Etymology: *Hydropsyche yildizae* sp. n., is dedicated to Prof. Dr. Yıldız Demirkalp, of the Biology Department, Hacettepe University.

***Hydropsyche ayasi* sp. n.**

(Figs. 36-40)

Material: Holotype male (pupa): Turkey, Erzincan, Sivas direction, 127 km east of Sivas, Kevenli village, 8.8.2007, leg. and coll Sipahiler.

Antennae, palps and wings yellowish, thorax and abdomen dorsally pale brown. The length of the pupa is 8 mm.

Male genitalia (Figs. 36-40): Cavities IX and X are deep; the dorsal keel of segment IX is broad, gradually rounded towards the apex. In lateral view the dorsal part of segment X is longer than the ventral part; dorsal stripe is straight, rounding posteriorly. In dorsal view, the dorsomedian area of segment X is rounded, the posterior margin is almost V-shaped excised. The digitiform appendages are long, turning somewhat towards the sides. The harpago of the inferior appendages rather long and thin, thinner on the basal portion slightly dilated subdistally, becoming narrower on the apex. The phallic apparatus is broad and curved at the base; narrowing towards the apex; in ventral view the apical portion is long, the lateroapical projections are large, long, and rounded.

Remarks: *Hydropsyche ayasi* sp. n. is well characterized by the shape of the phallic apparatus, which is curved at the base and has broad and rounded lateroapical projections, and the long and narrow harpago. It is related to *H. yildizae* sp. n., but differs from this species by the shape of the phallic apparatus, which in *H. yildizae* sp. n. is curved at the base and has smaller lateroapical projections; the coxopodite of the related species is short, while it is long in *H. ayasi* sp. n. In addition, the shape of segment X, of which the dorsal stripe and the apical margin are sinuate in *H. yildizae* sp. n. and straight in the new species, separate these species.

Distribution: This species is known only from eastern Turkey.

Etymology: *Hydropsyche ayasi* sp. n., is dedicated to Univ. Doz. Dr. Zafer Ayaş, of the Biology Department, Hacettepe University.

***Hydropsyche beysehirensis* sp. n.**

(Figs. 41-45)

Material: Holotype male and paratype (1 female): Turkey, Konya, Beyşehir direction, 35 km North of Beyşehir, 1250 m, 19.5. 2003, (CD: H-559), leg. and coll. Sipahiler.

Antennae, palps, and wings blackish brown, the veins of the wings black; legs pale brown; the length of the anterior wing of male 8.5 mm, of female 10 mm.

Male genitalia (Figs. 41-45): Cavities IX and X are deep; the dorsal keel of segment IX is broad at the base, dilated in the middle, slightly narrowing towards the apex; the apical edge has a small excision in the middle; in lateral view, the distal portion of the dorsal keel is dilated dorsally. In lateral view, the dorsal stripe of segment X is rather smooth, producing a small lobe at the base, bearing dense hairs; the apical margin is excised on the dorsal half, forming rounded lobes on the dorsal and ventral part of this excision. The digitiform appendages are rather short and thin. In dorsal view, the dorsomedian part of segment X is very broad, broader than the dorsal keel, the lateral stripes are almost rounded; the sclerotized bands of spiny areas are thick. The coxopodites of the inferior appendages are smooth; the harpago gradually narrows towards the pointed apex. In lateral view, the dorsal edge of the phallic apparatus is strongly dilated near the middle, the apical part is large; in ventral view the shaft subdistally is narrower than the apex of the apical part, the lateroapical projections are large and rounded.

Distribution: This species is known only from southern Turkey.

Remarks: The specimen of this species was identified as *H. valkanovi* and reported in the list of this species (Sipahiler, 2004). Later it was compared with the specimens of this species and *H. emarginata* collected from Bulgaria and regarded as a new species. *Hydropsyche beysehirensis* sp. n. is closely related to *H. emarginata* Navas, 1923 and *H. valkanovi* Kumanski, 1974, (Kumanski, 1985), but differs from these species by the following features: In *H. emarginata* the dorsal keel of segment IX is rather narrow, almost oval, narrowing towards the apex, the dorsomedian area is also narrower, the sclerite bands of the spiny area are thin; in *H. valkanovi* the dorsal keel is narrow, equal in breadth, the dorsomedian area is larger and the sclerite band of the spiny area is thin, while in *H. beysehirensis* sp. n. the dorsal keel is large, medially dilated in a triangular manner and the apex is bilobed; the dorsomedian area of segment X is large, the sclerite bands of the spiny area are thick; in *H. emarginata* the phallic apparatus laterally is not dilated in the middle, the apical part is short, very broad, and the lateroapical projections are broadly triangular; in *H. valkanovi* the lateroapical projections are slightly smaller and the shaft somewhat narrower, while in *H. beysehirensis* sp. n. the phallic apparatus is dilated in the middle, the apical part is longer and narrower than that of the related species, the shaft is very narrow before the apical part and the lateroapical projections are broader and rounded.

Etymology: This species is named after the place around where the specimens were collected.

***Hydropsyche aslani* sp. n.**

(Figs. 46-50)

Material: Holotype male: Turkey, Van, 7 km east of Güzeldere pass, Bağkale direction, 2450 m, 31.7.2001, CD: H-530, leg. Beskov, coll. Sipahiler; paratype 1 male, same place and date, in coll. National Museum of Natural History, Sofia.

Antennae, palps, and legs are pale brown yellowish, wings are pale brown; the length of the anterior wing of male 10 mm.

Male genitalia (Figs. 46-50): Cavities IX and X are moderately deep. Dorsal keel of segment IX is broad, the sides are rounded; in lateral view, it is directed dorsally on the apical part. The dorsal stripes of segment X are straight, as long as the dorsal keel, shorter than the ventral edge of segment X. The digitiform appendages are rather thick; in dorsal view, the dorsomedian part is as large as the dorsal keel; the basal portion has a sclerotized trapezoidal plate beneath segment X. The harpago of the inferior appendages is almost equal in breadth, becoming narrower on the subdistal portion. The phallic apparatus in lateral view is broad and curved at the basal portion, narrower towards the apex; the lateroapical projections are small.

Distribution: This species is known only from eastern Turkey.

Remarks: This new species is closely related to *H. kebab* Malicky, 1974 (Malicky, 1974) but differs from this species by the following features: In *H. kebab*, in lateral aspect, the dorsal keel of segment IX is short, segment X is long, the dorsal margin of segment X is longer than the ventral margin and the harpago is dilated subdistally, while in *H. aslani* sp. n. the dorsal keel and segment X are equal in length, the dorsal margin of segment X is shorter than the ventral margin and the harpago is not dilated subdistally. In addition, in the new species, the phallic apparatus is broad and curved at the basal part; in *H. kebab* the basal portion is more slender and not strongly curved.

Etymology: *Hydropsyche aslani* sp. n. is dedicated to Mr. İbrahim Aslan, retired technician of the Biology Department, Hacettepe University.

NEW FAUNISTIC LOCALITIES

New and the additional localities to the distributions of the following species (Sipahiler, 2004) are given.

Hydropsyche krassimiri Malicky, 2001

This species was reported from Ankara, Kızılcahamam and Afyon, Ahırdağı (Malicky, 2001).

Material examined: Turkey, Balıkesir, Edremit, Güre, Zeytinli direction, Kazdağlar, 7.8.1994, CD: H-398, 3 males, 4 females; Konya Hadim, Taşkent, Ermenek direction, 26 km east of Taşkent, 1700 m, 28.6.2000, CD: H-503, 1 male, 1 female, Antalya, Kemer, Çıralı, 21.5.1999, CD: H-517, 4 males; leg. and coll. Sipahiler.

Hydropsyche mahrkusha Schmid, 1959

Material examined: Ordu, Niksar- Ordu direction, Gökçebayır Village, Tifi stream, 40° 40' N, 37° 21' E, 914 m, CD: H-716, 14.8.2008, 2 males; Giresun, Kumbet, Yağlıdere direction, Çıkrıkçı, 1800 m, CD: H-700, 10.7.2008, 29 males, 2 females; Giresun, Bektaş Yaylası, CD: H-653, 6.7.2007, 6 males, 2 females; Giresun, Karagöl Yaylası, 2070 m, 40° 32' N, 38° 12' E, CD: H-751, 16.8.2008, 1 male, 1 female; Trabzon, Macka, Camiboğazı Yaylası, 2300 m, CD: H-758, 18.8.2008, 40° 36' N, 39° 40' E, 3 males 1 female; leg. and coll. Sipahiler.

Hydropsyche salihli Sipahiler, 2004

H. salihli Sipahiler, 2004 was described from Salihli (Sipahiler, 2004), is also found in Turgutlu.

Material examined: Turkey, Manisa, Turgutlu, Bayındır direction, 5 km south of Kamberler village, 600 m, CD: H-333, 21.5.1992, 1 male, leg. and coll. Sipahiler.

Hydropsyche lepnavae Botosaneanu, 1967

Material examined: Tokat, Reşadiye, Kelkit Stream, 3.7.2007, CD: H-698, (at light), 2 males, 1 female; Ordu, Arpaalan, Baldıran Stream, CD: H-703, 8.7.2008, 4 males; Artvin, Yusufeli, Barhal Stream, CD: H-587, 21.7.2004, 1 male; Sivas, Koyulhisar, Eğriçimen Yaylası, CD: H-674, (at light), 1 male, 5 females; Giresun, 25 km east of Şebinkarahisar, Alucra direction, Balcana, CD: H-664, 7.7.2007, 1 male, 1 female, leg. and coll. Sipahiler.

***Hydropsyche djabai* Schmid, 1959**

Material examined: Tokat, Reşadiye, Yolüstü, Zinav Lake, spring, 900 m, CD: H-711, 74.7.2007, 2 males; Erzincan, Sivas direction, Kevenli village, CD: H-690, 8.7. 2007, 1 male, leg. and coll. Sipahiler.

***Hydropsyche acuta* Martynov, 1909**

Material examined: Giresun, 8 km north of Şebinkarahisar, CD: H-665, 7.7.2007, 1 male, 3 females, leg. and coll. Sipahiler.

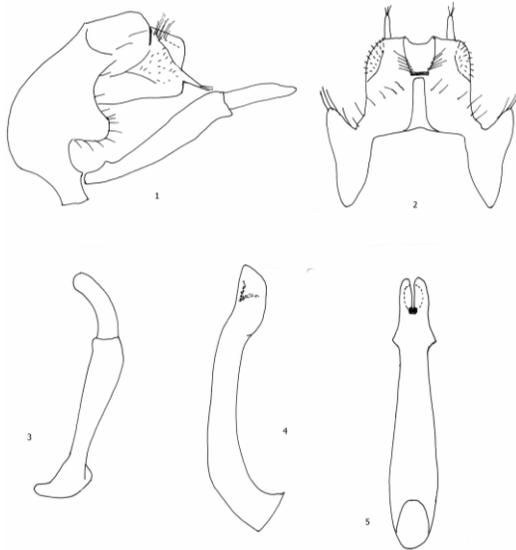
ACKNOWLEDGEMENTS

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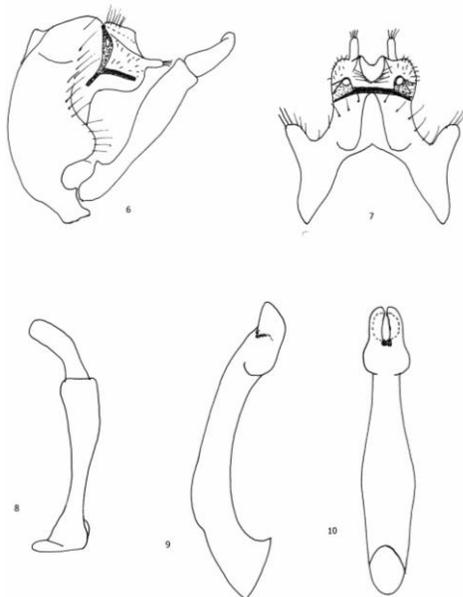
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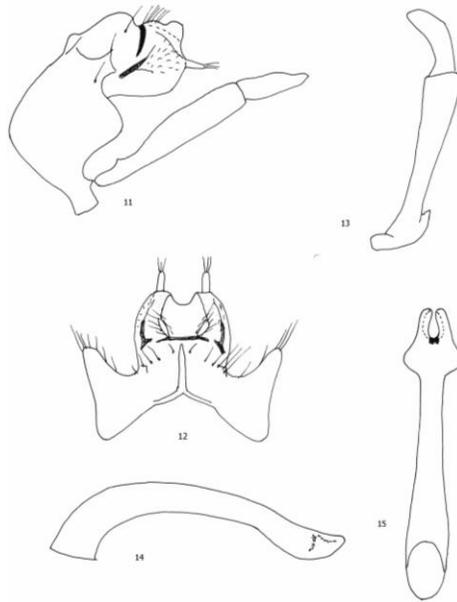
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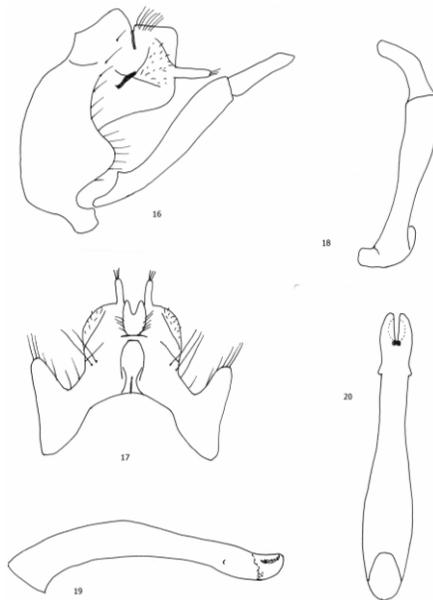
Figures 1–5: *Hydropsyche delamarei* Jacquemart, 1965 Male genitalia: 1. lateral; 2. dorsal; 3. inferior appendage, ventral; 4. phallic apparatus, lateral; 5. phallic apparatus, ventral.



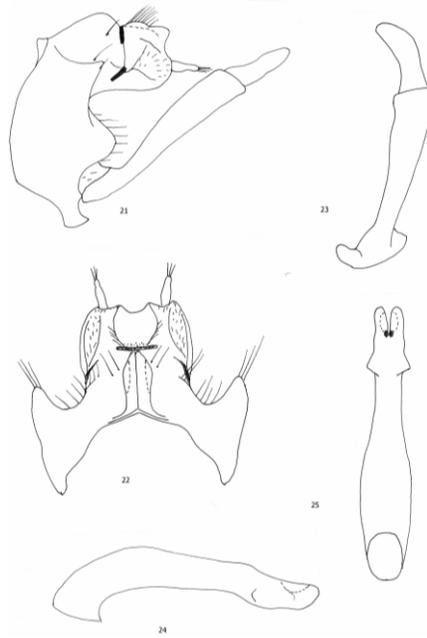
Figures 6–10: *Hydropsyche evreni* sp. n. Male genitalia: 6. lateral; 7. dorsal; 8. inferior appendage, ventral; 9. phallic apparatus, lateral; 10. phallic apparatus, ventral.



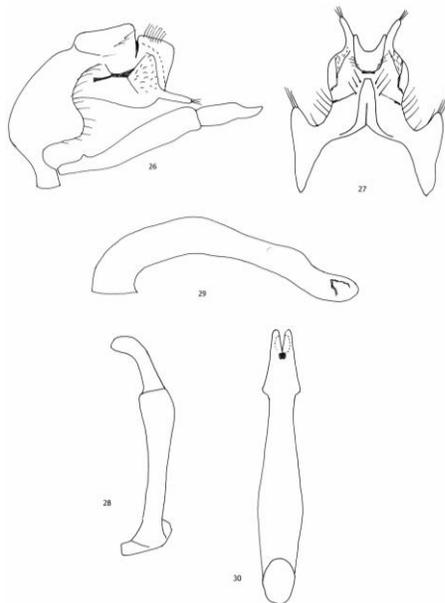
Figures 11-15: *Hydropsyche cagilae* sp. n. Male genitalia: 11. lateral; 12. dorsal; 13. inferior appendage, ventral; 14. phallic apparatus, lateral; 15. phallic apparatus, ventral.



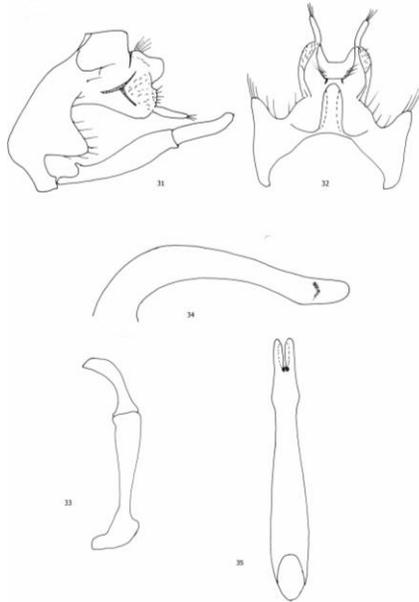
Figures 16-20: *Hydropsyche salimcalisi* sp. n. Male genitalia: 16. lateral; 17. dorsal; 18. inferior appendage, ventral; 19. phallic apparatus, lateral; 20. phallic apparatus, ventral.



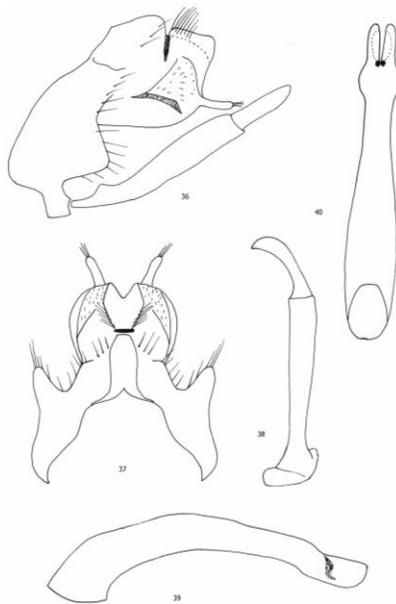
Figures 21-25: *Hydropsyche kurensis* sp. n. Male genitalia: 21. lateral; 22. dorsal; 23. inferior appendage, ventral; 24. phallic apparatus, lateral; 25. phallic apparatus, ventral.



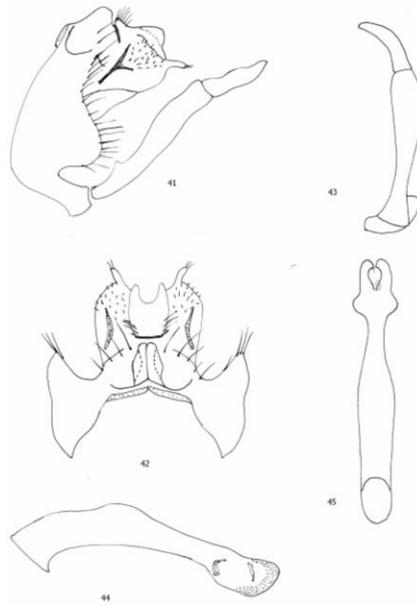
Figures 26-30: *Hydropsyche burnukensis* sp. n. Male genitalia: 26. lateral; 27. dorsal; 28. inferior appendage, ventral; 29. phallic apparatus, lateral; 30. phallic apparatus, ventral.



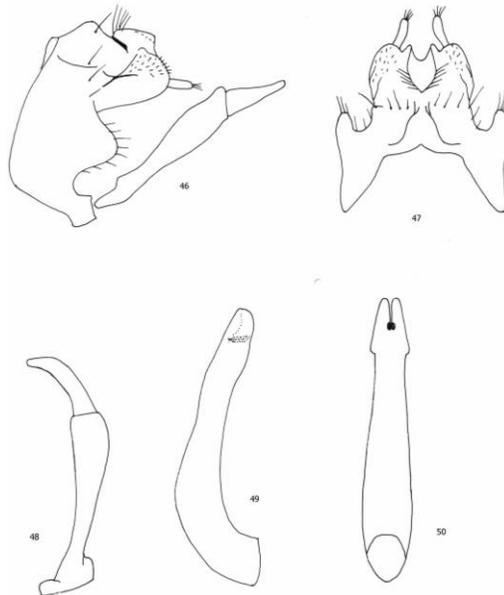
Figures 31-35: *Hydropsyche yildizae* sp. n. Male genitalia: 31. lateral; 32. dorsal; 33. inferior appendage, ventral; 34. phallic apparatus, lateral; 35. phallic apparatus, ventral.



Figures 36-40: *Hydropsyche ayasi* sp. n. Male genitalia: 36. lateral; 37. dorsal; 38. inferior appendage, ventral; 39. phallic apparatus, lateral; 40. phallic apparatus, ventral.



Figures 41-45: *Hydropsyche beysehirensis* sp. n. Male genitalia: 41. lateral; 42. dorsal; 43. inferior appendage, ventral; 44. phallic apparatus, lateral; 45. phallic apparatus, ventral.



Figures 46-50: *Hydropsyche aslani* sp. n. Male genitalia: 46. lateral; 47. dorsal; 48. inferior appendage, ventral; 49. phallic apparatus, lateral; 50. phallic apparatus, ventral.