FOLIA HISTORICO-NATURALIA MUSEI MATRAENSIS
2015 39: 99–104

New species and records of Trichoptera from Turkey

János Oláh & Ottó Kiss

Abstract: Based on a small collection, 18 new caddisfly species records have been presented from Turkey. A new species, *Hydropsyche derek* sp. n., is described as a sister species of *Hydropsyche acuta* Martynov, 1909 with unknown distribution and contact zones or clines.

Introduction

A small adult caddisfly material, a byproduct of Lepidoptera collection at light installed not necessary at water, was provided to the authors. The availability of a historical collection of the *Hydropsyche acuta* Martynov, 1909 and the discovery of speciation traits permitted a comparative study and resulted in the delineation of a new sister species *Hydropsyche derek* sp. n. in the newly established *Hydropsyche acuta* species complex. The material including the holotype and paratypes is preserved in 70-80% alcohol and is deposited in the collection of the first author (Oláh Private Collection = OPC) under the protection of the Hungarian Natural History Museum (Budapest).

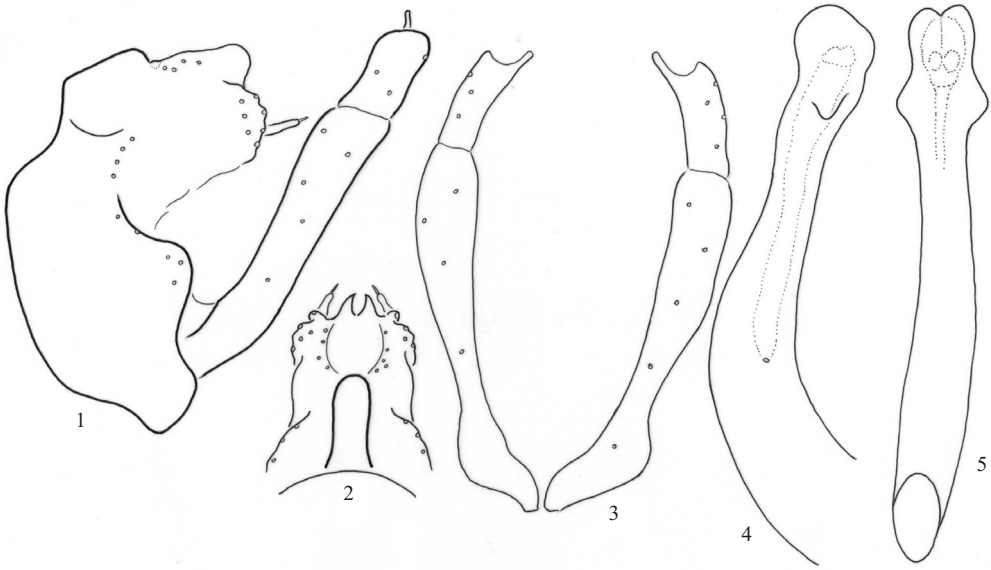
Taxonomic part

Hydropsychidae Curtis, 1835

Hydropsyche acuta Martynov, 1909 (Figs 1–5)
Hydropsyche instabilis ssp. *acuta* Martynov, 1909 – Martynov (1909): 542. Martynov has described two taxa under subspecies *Hydropsyche instabilis acuta*: (1) "Form α" with digitiform apicomesal process on the harpago and (2) "Form β" without this digitiform mesal process. He considered that the head of the phallic organ of these two taxa are similar and he has given the ventral view drawings of the terminal third of the phallic organ together with the gonopods. Martynov described "Form α" as *Hydropsyche instabilis* ssp. *acuta* and considered "Form β" as aberrant specimens of the same species. Both forms were collected by Martynov himself on the same day and in the same habitat in Kars Province (that time in Russia) along the River Tschaldyrka, at outflow from Tschaldyr Lake.

Hydropsyche acuta Martynov, 1909 – Martynov (1916): 173–174. In this paper Martynov has raised the taxonomic status from subspecies to species level. Specimens from Crimea have been considered similar to *H. acuta*. However on his drawing the lateral corner of the harpago is not angled. Specific status of *Hydropsyche* from Crimea having harpago with digitate or filiform mesal process is uncertain, needs further examination.

Hydropsyche acuta Martynov, 1909 – Martynov (1934): 272. In this monograph Martynov has presented all his previous drawings: (1) ventral view of harpago and phallic head of



Figs 1–5. *Hydropsyche acuta* Martynov, 1909 male: 1 = genitalia in left lateral view; 2 = genitalia in dorsal view; 3 = gonopods in ventral view; 4 = phallic organ in left lateral view; 5 = phallic apex in ventral view

"Form α" (2) ventral view of harpago of "Form β", and (3) dorsal view of genitalia of Crimean specimen. This comparative presenting clearly suggests that these three taxa are independent species.

Hydropsyche acuta Martynov, 1909 – Schmid 1959: 772–773. Schmid has collected specimens with filiform mesal process on the harpago from Walazir in the Iranian part of small Caucasus and determined as *Hydropsyche acuta*. His drawings were reproduced in both editions of the Malicky's Atlas of European Trichoptera (Malicky 1983, 2004), in spite of the pronounced differences in the microstructure of harpago and phallic head between the drawings of Martynov and Schmid. The Iranian specimens represent an independent species.

Hydropsyche acuta Martynov, 1909 – Sipahiler (2004): 188–189. According to the drawings, the drawn specimen has long filiform mesal process and obliquely truncate lateral corner apicad on the harpago. Moreover the lateral profile of the entire phallic organ is entirely different compared to *H. acuta*, as drawn here from Armenian specimens having ventral and dorsal microstructures identical to Martynov's original drawings. In Sipahiler's drawings the trait combination suggests a new sibling species from the *H. acuta* species complex. Unfortunately the origin of the drawn specimen is not documented, whether it was selected from Ankara, Ardahan, Kars or Van region.

Examined material – **Armenia**, Sisian District, Dastakert, River Ayriget, 16.07.1956, L. Zhiltzova (2♂, OPC).

Notes – Today we have learnt the taxonomic importance of the microstructural divergences of speciation traits directly involved in sexual selection processes (Oláh et al. 2015). It seems that the lateral and ventral profile of the hydropsychid phallic organ is the most

stable trait in distinguishing among taxa in the contemporary divergences of sibling species. Here we distinguish the *Hydropsyche acuta* new species complex characterized by digitiform or filiform mesal process on the harpago in the *Hydropsyche instabilis* species group. In this complex the phallic head and harpago with stable differences in microstructure must represent independent taxa. The "Form α", the true *Hydrospyche acuta* Martynov, 1909 has short digitate, not long filiform mesal process and angled, not obliquely truncate lateral corner on the harpago. Besides the numerous microstructural stable differences in the lateral profile of the entire phallic organ, especially the lateral subapical projection on the head of the phallic organ has sensitive trait value in distinguishing among contemporary diverging sibling species.

Re-diagnosis – We have examined two male specimens collected from Armenia having identical fine structures of the "Form α", the true *Hydrospyche acuta* as indicated in the original Martynov's drawings. Here we present detailed drawings, including the fine structure of the lateral profile of the entire phallic organ. The lateral profile of the entire phallic organ from the phallobase to the head has proved to be a very sensitive and stable fine structure in separating hydropsychid species (Oláh & Johanson 2008a,b, 2012), even in the initial stages of speciation processes (Oláh et al. 2015). The lateral apical corner of harpago angled, not obliquely rounded truncate; the lateral subapical projection on the head of the phallic organ triangular, not right-angled posterad; the lateral profile of the phallic head rounded, not elongated.

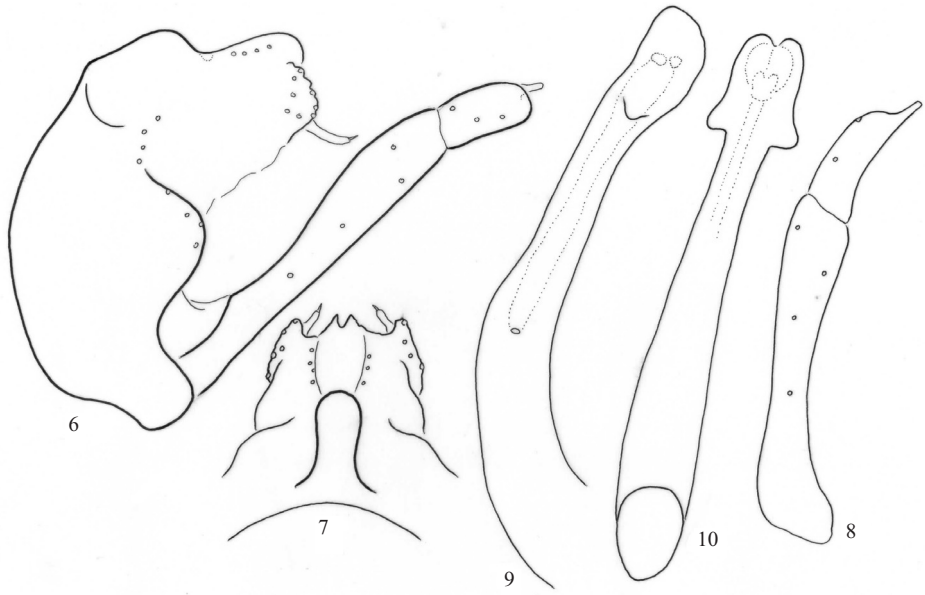
***Hydropsyche derek* sp. n. (Figs 6–10)**

Diagnosis – Belongs to to the *Hydropsyche acuta* species cluster inside the *Hydropsyche instabilis* species group. Close to the nominate species *Hydropsyche acuta* Martynov, 1909 but differs by having lateral apical corner of harpago obliquely rounded truncate, not angled; the lateral subapical projection on the head of the phallic organ right-angled posterad, not triangular; the lateral profile of the phallic head elongated, not rounded. The limited number of specimens collected and available for comparative study of both the nominate species and the new sibling species does not permitted us to realise a detailed survey on the interpopulation and intrapopulation trait variabilities of speciation fine structures of the phallic organ.

Description – Male (dry transferred into alcohol). Body brown, dorsal thoracic sclerites darker. Wings ochraceous with lighter pubescence, without pronounced pattern. Maxillary palp formula I-III-II-IV-V. Spur formula 244. Forewing length 8 mm.

Male genitalia. Segment IX fused annular and short; its median keel rounded broadening apicad with granulose dorsal surface; apical lobe on posterolateral margin rounded triangular, anterior margin concave. Intersegmental profile between the ninth and tenth segments low step, little more than right angled. Segment X short, rounded quadrangular in dorsal view; lateral setose area, the cerci fused with ventroapical setose lobe, located in posterad position; semicircular in lateral and lobulose in dorsal view; dorsoapical setose lobes forming the setose bases of the unsetose dorsolateral stripes of segment low X in lateral view. The coxopodit of the gonopod slightly longer than the apex of segment X, harpago with short digitate mesal process and the lateral apical corner obliquely rounded truncate. Phallic organ with very produced subapical lateral projection right-angled posterad.

Type material – Holotype: **Turkey**, Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 10.07.2002, B. Benedek, T. Csővári (1♂, OPC). Paratypes: same



Figs 6–10. *Hydropsyche derek* sp. n. male holotype: 6 = genitalia in left lateral view; 7 = genitalia in dorsal view; 8 = left gonopod in ventral view; 9 = phallic organ in left lateral view; 10 = phallic apex in ventral view

as holotype (5♂, OPC). Agri Province, 6 km NE of Cumacay, 39°56'N, 43°14'E, 2050 m, 9.07.2002, B. Benedek, T. Csővári (2♂, OPC). Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 7-8.07.2000, B. Benedek, T. Csővári (7♂, OPC).

Etymology – derek, from "derékszög", rectangular, right-angled in Hungarian, refers to the right-angled lateral subapical projection posterad on the head of the phallic organ.

Hydropsyche incognita Pitsch, 1993 – **Turkey**, Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 7-8.07.2000, B. Benedek, T. Csővári (3♂, OPC).

Hydropsyche instabilis Curtis, 1834 – **Turkey**, Sivas Province, 5 km W of Kizildag Pass, 39°47'N, 42°28'E, 2050 m, 12.07.2002, B. Benedek, T. Csővári (4♂, OPC). Van Province, Yuksekova Mts, 11 km W of Guseldere Pass, 38°14'N, 43°80'E, 2300 m, 02.07.2002, B. Benedek, T. Csővári (45♂, OPC).

Hydropsyche sakarawaka Schmid, 1959 – **Turkey**, Agri Province, 5 km NE of Cumacay, 39°56'N, 43°14'E, 2050 m, 9.07.2002, B. Benedek, T. Csővári (1♂, OPC). Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 7-8.07.2000, B. Benedek, T. Csővári (1♂, OPC).

RHYACOPHILIDAE Stephens, 1836

Rhyacophila nubila Zetterstedt, 1840 – **Turkey**, Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 10.07.2002, B. Benedek, T. Csővári (1♂, OPC).

BRACHYCENTRIDAE Ulmer, 1903

Micrasema bifoliatum Martynov, 1925 – **Turkey**, Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 10.07.2002, B. Benedek, T. Csővári (2♂, OPC). Erzerum Province, 8 km NW of Kop Pass, 40°02'N, 40°28'E, 2000 m, 11.07.2002, B. Benedek, T. Csővári (3♂, 2♀, OPC).

Lepidostomatidae Ulmer, 1903

Lepidostoma hirtum Fabriciusy, 1775 – **Turkey**, Agri Province, 65 km NE of Cumacay, 39°56'N, 43°14'E, 2050 m, 9.07.2002, B. Benedek, T. Csővári (1♂, OPC). Van Province, Yuksekova Mts, 2.5 km E of Guseldere Pass, 38°11'N, 43°56'E, 2600 m, 5.07.2002, B. Benedek, T. Csővári (25♂, 6♀, OPC).

Limnephilidae Kolenati, 1848

Drusinae Banks, 1916

Limnephilus affinis Curtis, 1834 – **Turkey**, Konya Province, Sultan Daglari, 14 km SW of Aksehir, 38°14.878'N, 31°20.447'E, 1659 m, 13.05.2015, T. Csővári, B. Tóth (3♂, 1♀, OPC).
Limnephilus ponticus McLachlan, 1898 – **Turkey**, Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 10.07.2002, B. Benedek, T. Csővári (1♂, OPC). Agri Province, 65 km NE of Cumacay, 39°56'N, 43°14'E, 2050 m, 9.07.2002, B. Benedek, T. Csővári (1♂, OPC). Van Province, Yuksekova Mts, 2.5 km E of Guseldere Pass, 38°11'N, 43°56'E, 2600 m, 5.07.2002, B. Benedek, T. Csővári (1♂, OPC). Erzerum Province, 8 km NW of Kop Pass, 40°02'N, 40°28'E, 2000 m, 11.07.2002, B. Benedek, T. Csővári (1♂, OPC).
Mesophylax impunctatus McLachlan, 1884 **– Turkey**, Kütahya Province, 12 km NNE of Kütahya, 39°31'N, 30°45'E, 913 m, 12.05.2015, T. Csővári, B. Tóth (1♂, OPC). Konya Province, Sultan Daglari, 14 km SW of Aksehir, 38°14.878'N, 31°20.447'E, 1659 m, 13.05.2015, T. Csővári, B. Tóth (1♂, 2♀, OPC).
Potamophylax armeniacus Mey, 1979 – Turkey, Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 7-8.07.2000, B. Benedek, T. Csővári (1♂, OPC). Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 10.07.2002, B. Benedek, T. Csővári (1♂, OPC). Agri Province, 65 km NE of Cumacay, 39°56'N, 43°14'E, 2050 m, 9.07.2002, B. Benedek, T. Csővári (1♂, OPC).
Psilopterna alageza Oláh, 1985 – **Turkey**, Van Province, Yuksekova Mts, 2.5 km E of Guseldere Pass, 38°11'N, 43°56'E, 2600 m, 02.07.2002, B. Benedek, T. Csővári (3♂, OPC). Van Province, Yuksekova Mts, 2.5 km E of Guseldere Pass, 38°11'N, 43°56'E, 2600 m, 5.07.2002, B. Benedek, T. Csővári (1♂, OPC).
Stenophylax caesareicus (Schmid, 1959) – **Turkey**, Tokat Province, Camlibel Pass, 39°57'N, 36°31'E, 1700 m, 29.06.2002, B. Benedek, T. Csővári (9♂, 6♀, OPC).
Stenophylax hatatitla Malicky, 1985 – **Turkey**, Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 7-8.07.2000, B. Benedek, T. Csővári (32♂, 19♀, OPC). Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 10.07.2002, B. Benedek, T. Csővári (8♂, 2♀, OPC). Sivas Province, 5 km W of Kizildag Pass, 39°47'N, 42°28'E, 2050 m, 12.07.2002, B. Benedek, T. Csővári (1♂, OPC). Erzerum Province, 8 km NW of Kop Pass, 40°02'N, 40°28'E, 2000 m, 11.07.2002, B. Benedek, T. Csővári (1♀, OPC). Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 30.VI-1.07.2000, B. Benedek, T. Csővári (4♂, OPC).
Stenophylax meridiorientalis Malicky, 1980 – **Turkey**, Sivas Province, 5 km W of Kizildag Pass, 39°47'N, 42°28'E, 2050 m, 12.07.2002, B. Benedek, T. Csővári (1♂, 3♀, OPC). Erzerum Province, 8 km NW of Kop Pass, 40°02'N, 40°28'E, 2000 m, 11.07.2002, B. Benedek, T. Csővári (6♂, 5♀, OPC). Bilecik Province, 3 km NE of Bözüyük, 39°55.295'N, 30°03.194'E, 962 m, 11.05.2015, T. Csővári, B. Tóth (5♂, 3♀, OPC).
Stenophylax muehleni McLachlan, 1884 – **Turkey**, Van Province, Yuksekova Mts, 2.5 km E of Guseldere Pass, 38°11'N, 43°56'E, 2600 m, 02.07.2002, B. Benedek, T. Csővári (4♂, 2♀, OPC). Van Province, Yuksekova Mts, 2.5 km E of Guseldere Pass, 38°11'N, 43°56'E, 2600 m, 5.07.2002, B. Benedek, T. Csővári (9♂, 3♀, OPC). Sivas Province, 5 km W of Kizildag Pass, 39°47'N, 42°28'E, 2050 m, 12.07.2002, B. Benedek, T. Csővári (3♀, OPC). Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 7-8.07.2000, B. Benedek, T. Csővári (2♀, OPC). Erzerum Province, 8 km NW of Kop Pass, 40°02'N, 40°28'E, 2000 m, 11.07.2002, B. Benedek, T. Csővári (2♂, 3♀, OPC). Nevsehir Province, 8 km NE of Ava Nos, 38°45.568'N, 34°54063'E, 1109 m, 15.05.2015, T. Csővári, B. Tóth (1♂, OPC). Agri Province, Karasu-Aras Mts, 5 km SE of Sarican, 39°47'N, 42°28'E, 2000 m, 30.VI-1.07.2000, B. Benedek, T. Csővári (2♀, OPC).
Stenophylax permistus, McLachlan, 1895 – **Turkey**, Konya Province, Sultan Daglari, 14 km SW of Aksehir, 38°14.878'N, 31°20.447'E, 1659 m, 13.05.2015, T. Csővári, B. Tóth (2♀, OPC).
Stenophylax tauricus (Martynov, 1917) – **Turkey**, Van Province, Yuksekova Mts, 2.5 km E of Guseldere Pass, 38°11'N, 43°56'E, 2600 m, 02.07.2002, B. Benedek, T. Csővári (1♂, 1♀, OPC). Konya Province, Sultan Daglari, 14 km SW of Aksehir, 38°14.878'N, 31°20.447'E, 1659 m, 13.05.2015, T. Csővári, B. Tóth (1♂, OPC).
Stenophylax testaceus Gmelin, 1789 – **Turkey**, Erzerum Province, 8 km NW of Kop Pass, 40°02'N, 40°28'E, 2000 m, 11.07.2002, B. Benedek, T. Csővári (1♀, OPC).

References

Malicky, H. (1983): Atlas of European Trichoptera. – Dr W. Junk Publisher, The Hauge-Boston-London, 298 pp.

Malicky, H. (2004): Atlas of European Trichoptera. Second Edition. – Springer, Dordrecht, The Netherlands, 359 pp.

Martynov, A. (1909): Die Trichopteren des Kaukasus. – Zoologische Jahrbücher. Abteilung für Systematik, Geographie und Biologie der Tiere, 27: 509–558.

Martynov, A. V. (1916): Notice sur la faune des Trichoptéres de la Crimée. – Annuaire du Musée Zoologique de l'Academie Imperiale des Sciences, 21: 165–199.

Martynov, A. V. (1934): The Trichoptera, Annulipalpia of the USSR. – Tableaux analytiques de la faune de l'URSS, 13: 1–343.

Oláh, J. & Johanson, K. A. (2008a): Revision of the Oriental and Afrotropical species of Cheumatopsyche Wallengren (Hydropsychidae, Trichoptera). – Zootaxa, 1702: 3–171.

Oláh, J. & Johanson, K. A. (2008b): Generic review of Hydropsychinae, with description of *Schmidopsyche*, new genus, 3 new genus clusters, 8 new species groups, 4 new species clades, 12 new species clusters and 62 new species from the Orinetal and Afrotropical regions (Trichoptera: Hydropsychidae). – Zootaxa, 1802: 3–248.

Oláh, J. & Johanson, K. A. (2012): New species and records of Neotropical Macronematinae and Smicrideinae (Trichoptera: Hydropsychidae). – Annales historico-naturales Musei nationalis hungarici, 104: 215–294.

Oláh, J., Chvojka, T. P., Coppa, G., Godunko, R. J., Lodovici, O., Majecka, K., Majecki, J., Szczesny, B., Urbanič, G. & Valle, M. (2015): Limnephilid taxa revised by speciation traits: Rhadicoleptus, Isogamus, Melampophylax genera, Chaetopteryx rugulosa, Psilopteryx psorosa species groups, Drusus bolivari, Annitella kosciuszkii species complexes (Trichoptera, Limnephilidae). – Opuscula zoologica, Budapest, 46(1): 3–117.

Schmid, F. (1959): Trichoptera d'Iran. – Beiträge zur Entomologie, 9(1/2): 200-219, 9(3/4): 376–412, 9(5/6): 683–799.

János Oláh
Tarján u. 28.
H-4032 Debrecen, Hungary
E-mail: profolah@gmail.com

Ottó Kiss
Bajcsy Zs. 4.
H-3014 Hort, Hungary
III.otto.kissIII@gmail.com