

## New species and records of autumnal Trichoptera from Albania

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**ABSTRACT:** Our knowledge on late flying caddisflies, especially at higher elevations and particularly in Albania is very limited. Here we have reported 32 species collected on higher elevations in Albania. Five new species are described: *Annitella ostrovicensis* sp. n., *Allogamus tomor* sp. n., *Potamophylax hajlos* sp. n., *Potamophylax kesken* sp. n., *Potamophylax tagas* sp. n. The unknown female of *Drusus arbanios* Oláh, 2010 has been discovered and described. Females of *Potamophylax haidukorum* Malicky, 1999 and *P. winneguthi* (Klapálek, 1902) were collected in Bosnia & Herzegovina and Serbia, their genitalia redrawn, compared and differentiated. *Potamophylax winneguthi* new species group and *Potamophylax tagas* new species cluster are erected.

### Introduction

Albania is one of the least collected regions in Europe. In addition, the collection of late flying caddisflies are more difficult, especially on higher elevation. The autumnal collection is complicated by bad weather, and the collecting methods are more limited. At low temperature the light attracts few specimens. Sakertour, the Birdwatching and Hide Photography Company of the Carpathian Basin and Danube Delta has organised and financed an autumnal Trichoptera collecting trip to the high elevations of Albania between 6<sup>th</sup> and 14<sup>th</sup> of October in 2012. The results are presented here.

We have applied the methods described by OLÁH (2011). Depositories: HNHM = Hungarian Natural History Museum, Budapest, Hungary, MM = Mátra Museum, Gyöngyös, Hungary, OPC = OLÁH Private Collection presently under National Protection of the Hungarian Natural History Museum, Hungary.

### Results

#### PHILOPOTAMIDAE Stephens, 1829

*Philopotamus montanus* (Donovan, 1813) – Albania: Kolonjë district, Grammos Mts, Leskovik, forest brook along the road to Ersekë, E of the city, N40°09.932', E20°38.282', 1015 m, 13.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC).

*Wormaldia occipitalis* (Pictet, 1834) – Albania: Skrapar district, Ostrovicë Mts, Backë, brook and spring NE of the village, N40°31.346', E20°25.096', 1650 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (4 ♂, 3 ♀, OPC).

#### PSYCHOMYIIDAE Walker, 1852

*Lype reducta* (Hagen, 1868) – Albania: Tepelenë district, Tepelenë, Uji i Ftohtë, karst springs and forest, N40°15.009', E20°03.876', 165 m, 13.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC).

*Agapetus iridipennis* (McLachlan, 1879) – Albania: Bulqizë district, Çermenikë Mts, brooks in open forest beneath Mt. Kaptinë, N41°23.199', E20°17.338', 1600 m, 10.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC).

RHYACOPHILIDAE Stephens, 1836

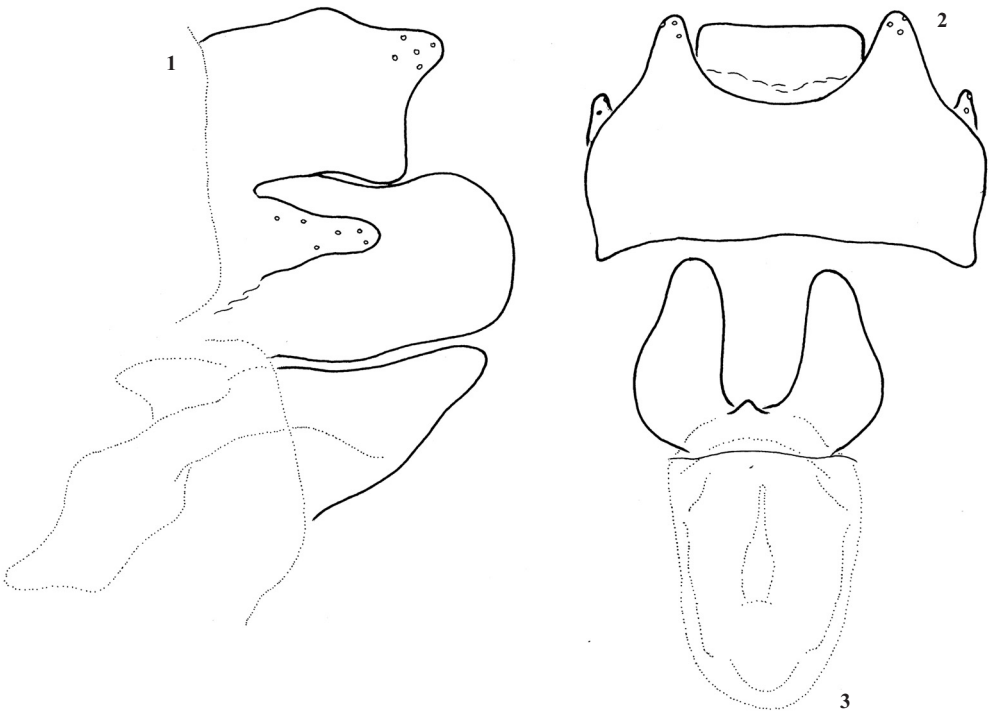
*Rhyacophila balcanica* Radovanovic, 1953 – Albania: Skrapar district, Ostrovicë Mts, Backë, brook and spring NE of the village, N40°31.346', E20°25.096', 1650 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC).

*Rhyacophila obliterated* McLachlan, 1863 – Albania: Shkodër district, Prokletije Mts, Theth, Shalë River S (beneath) of the village, N42°23.138', E19°46.845', 715 m, 09.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, 1 ♀, OPC).

LIMNAPHILIDAE Kolenati, 1848

*Drusus arbanios* Oláh, 2010 (Figs 1–3)

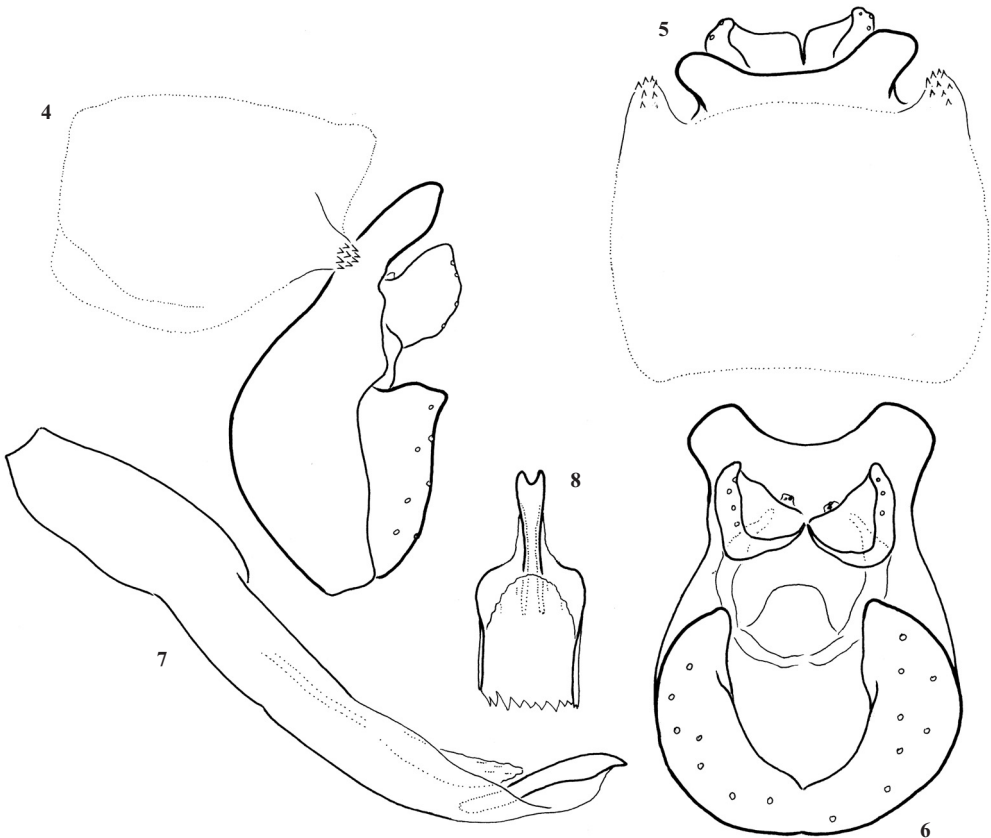
This species was described from a single male collected in early July. We have collected 4 males and 11 females in the same habitats around the middle of October. Only few *Drusus* species fly in such a late season. Here we describe the unknown female.



**Figs 1–3.** *Drusus arbanios* Oláh, 2010 female: 1 = genitalia in left lateral view; 2 = anal tube in dorsal view; 3 = vulvar scale and spermathecal sclerite complex in ventral view

*Description of female* – Most similar to the female of *Drusus lepcos* Oláh, 2011. Tergite of segment IX forming short tube, open ventrally, roundly excised dorsally; its apical lateral lobes setose, tapering in dorsal view; the lateral setose lobe of sternite IX digitate and continuing into setaless less pigmented downward section. Segment X membranous and embedded inside segment IX and encircling anus; supragenital plate of segment X well-developed and quadrangular both in lateral and dorsal view; slightly rounded middle in lateral view. Median lobe of the vulvar scale (lower vaginal lip) present and small in ventral view. Genital chamber, the vagina is medium sized reaching 2 thirds of sternite VIII. Vaginal sclerite pattern clearly visible.

*Material examined* – Allotype female. Albania: Skrapar district, Ostrovicë Mts, Backë, Krojmbret Spring and its outlet brook NE of the village, N40°31.753', E20°25.152', 1965 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♀, OPC). Same as allotype (3♂, 6♀, OPC). Skrapar district, Ostrovicë Mts, Backë, brook and spring NE of the village, N40°31.346', E20°25.096', 1650 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♂, 4♀, OPC).



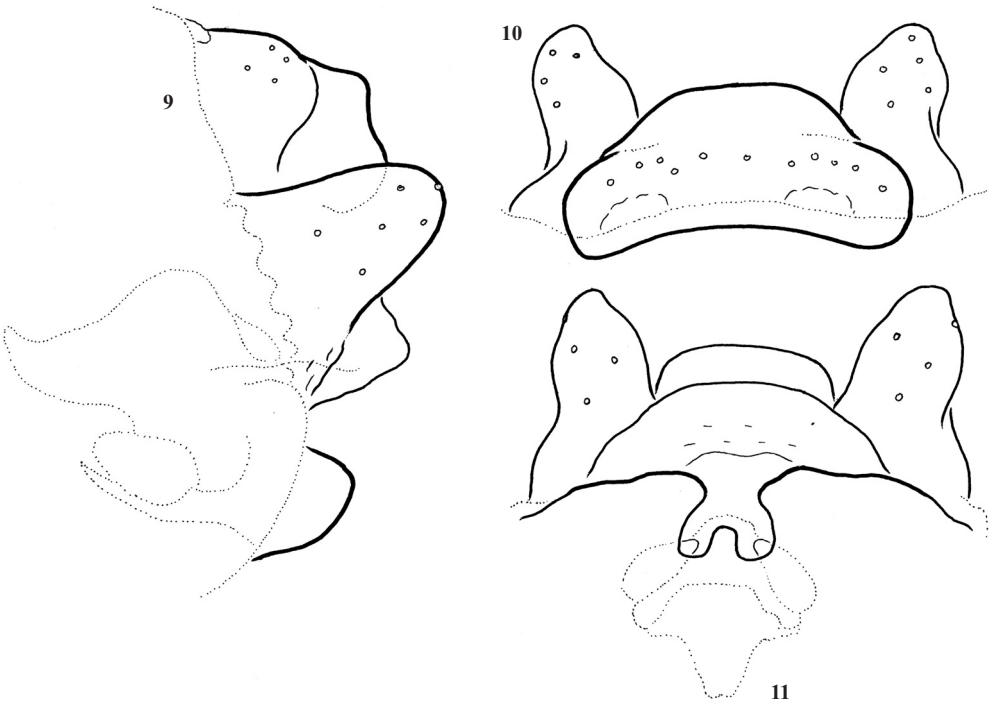
**Figs 4–8.** *Anitella ostrovicensis* sp. n. holotype male: 4 = genitalia without phallic organ in left lateral view; 5 = genitalia without phallic organ in dorsal view; 6 = genitalia without phallic organ in caudal view, 7 = phallic organ in lateral view; 8 = tip of phallic organ in dorsal view

***Annitella ostrovicensis* Oláh et Kovács sp. n.** (Figs 4–11)

**Diagnosis** – This spring brook dwelling new species collected on high elevation is a sister species of *Annitella triloba* Marinkovic–Gospodnetic, 1955 but differs in male by having tergite VIII without median spinate lobe, paraproct without median process, cerci reduced to an almost indiscernible pair of warts, bifid distal sclerite of aedeagus very narrow. Also differs in female by having sternite IX (setosa lateral lobes) with very short ventrum, dorsal black region of segment X simple rounded, not with ventral pair of oblique rounded ridges. *A. ostrovicensis* sp. n., probably a parapatric or peripatric species occurs not far from the southernmost populations of its sister species *A. triloba*.

**Description** – Male (in alcohol). Dark brown animal with lighter body appendages and with pale yellowish-testaceous wings. Maxillary palp formula I–II–III. Head dorsum, mesothorax and metathorax, femurs and setal warts dark brown, face, prothorax and legs yellowish brown. Anterior wing with rounded apex and with long erect spine-like setae present on both the membrane and the veins. Tibial spur number reduced to 022. Femur and tibia armed on foreleg with long mesal row of dense short spines. Forewing length 10 mm.

Male genitalia (Figs 4–8) Posterodorsal spinate lobe of vestitural noncellular microtrichiae on segment VIII vestigial, lateral spinate lobes present. Segment IX short, dorsum developed into a pair of lateral auriform lobes, Cerci almost indiscernible, detectable deep between dorsum IX and paraproct as a pair of very small warts. Paraproctal complex (intermediate appendages) composed of a pair of heavily sclerotized auriform and mesally concave spoons.



**Figs 9–11.** *Annitella ostrovicensis* sp. n. allotype female:

9 = genitalia in left lateral view; 10 = genitalia in dorsal view; 11 = genitalia in ventral view

Membranous subanal lobe rounded. Gonopods with blunt apex. Phallic organ without distinct parameres, bifid distal sclerite very narrow in dorsal view.

Female (in alcohol). Colour pattern is similar to the male. Maxillary palp formula I–IV–III–II–V. Spur number 122. Foreleg femur and tibia without spine row. Length of forewing 12 mm. Forewing length close to abdomen.

Female genitalia (Figs 9–11). Tergite IX short, scattered with vestitural small setae; a pair of lightly sclerotized membranous rounded window present dorsolaterad near anterior margin. Sternite IX elongated triangular setose lobes dominating over the terminalia connected by glabrous large convex mesal plate, this glabrous ventral surface of sternite IX functions like the upper vaginal lip. Segment X rounded convex, dorsal half heavily sclerotized black, ventral part membranous housing the anal opening. The lower vaginal lip, the trifold vulvar scale is visible somewhat separated from sternite VIII by its more sclerotized structure, glabrous without any setae; its lateral lobes mesad turning, its mesal lobe small. Vaginal chamber is short, reaching only half length of sternite VIII; vaginal sclerite pattern clearly visible.

*Type material* – Holotype. Albania: Skrapar district, Ostrovicë Mts, Backë, Krojmbret Spring and its outlet brook NE of the village, N40°31.753', E20°25.152', 1965 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC). Allotype. Same as holotype (1 ♀, OPC). Paratypes. Same as holotype (20 ♂, 10 ♀, OPC; 4 ♂, 3 ♀, MM)

*Etymology* – The new species is named after the Ostrovicë Mts, where the type locality is found. These mountains are rich in valuable autumnal Trichoptera species (even our one-day collecting demonstrates it).

*Ecological notes* – In the type locality of the new species (Fig. 41) the following Trichoptera species were found: *Drusus arbanios*, *Allogamus tomor* sp. n., *Chaetopteryx stankovici*, *Potamophylax pallidus*. From the lower section (1650 m) of the brook starting from the spring the following species were collected: *Wormaldia occipitalis*, *Rhyacophila balcanica*, *Drusus arbanios*, *Enoicyla costae*, *Potamophylax goulandrionum*.

*Annitella triloba* Marinkovic-Gospodnetic, 1955 – Albania: Dibër district, Korab Mts, brook beneath Fushë Korabit, N41°49.209', E20°30.745', 1770 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (12 ♂, 6 ♀, OPC; 5 ♂, 4 ♀, MM). Dibër district, Korab Mts, Radomirë, brook E (above) of the village, N41°49.152', E20°30.111', 1495 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (3 ♂, 3 ♀, OPC). Dibër district, Korab Mts, Radomirë, stream E (above) of the village, N41°49.043', E20°30.013', 1440 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (3 ♂, OPC). Dibër district, Korab Mts, spring brooks of the bog beneath Mt. Korab, N41°47.913', E20°33.561', 2165 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 ♂, OPC). Mirditë district, Shent Mts, Kurbnesh, Urakë River and its sidespring NE of the city, N41°47.711', E20°06.703', 800 m, 08.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (9 ♂, 3 ♀, OPC). Shkodër district, Prokletije Mts, Okol, stream with a waterfall along the road to Theth, N42°23.852', E19°45.925', 845 m, 09.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (4 ♂, 1 ♀, OPC). Shkodër district, Prokletije Mts, Theth, Shalë River S (beneath) of the village, N42°23.138', E19°46.845', 715 m, 09.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 ♂, OPC).

*Chaetopteryx bosniaca* Marinkovic-Gospodnetic, 1955 – Albania: Bulqizë district, Çermenikë Mts, brooks in open forest beneath Mt. Kaptinë, N41°23.199', E20°17.338', 1600 m, 10.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (9 ♂, 5 ♀, OPC; 5 ♂, 4 ♀, MM). Bulqizë district, Çermenikë Mts, open brook beneath Mt. Kaptinë, N41°23.212', E20°17.506', 1610 m, 10.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (4 ♂, 2 ♀, OPC).

*Chaetopteryx stankovici* Marinkovic-Gospodnetic, 1966 – Albania: Dibër district, Korab Mts, Radomirë, brook E (above) of the village, N41°49.152', E20°30.111', 1495 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (7 ♂, 3 ♀, OPC). Dibër district, Lurë area, Fushë Lurë, brook in the village, N41°48.719', E20°12.823', 1075 m, 08.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (14 ♂, 5 ♀, OPC). Kolonjë district, Grammos Mts, Radanj, brook, open seeps and Mergimtori Spring at Çezma Has, N40°12.184', E20°38.270', 1085 m, 13.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 ♂, OPC). Skrapar district, Ostrovicë Mts, Backë, Krojmbret Spring



Fig. 41. Locus typicus of *Anitella ostrovicensis* sp. n. (photo Dávid Murányi)

and its outlet brook NE of the village, N40°31.753', E20°25.152', 1965 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (12 ♂, 3 ♀, OPC; 5 ♂, 3 ♀, MM). Tiranë district, Gropë Mts, Vakumonë, karst spring and brook along the road to Elbasan, N41°15.109', E20°05.805', 1195 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (6 ♂, OPC).

*Psilopteryx montanus* Kumanski, 1968 – Albania: Dibër district, Korab Mts, brook beneath Fushë Korabit, N41°49.209', E20°30.745', 1770 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (7 ♂, 4 ♀, OPC; 5 ♂, 3 ♀, MM).

*Limnephilus affinis* Curtis, 1834 – Albania: Mat district, Gropë Mts, brook along the Klos-Elbasan road, N of Shtyllë Pass, N41°22.455', E20°05.073', 1505 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, 1 ♀, OPC).

*Limnephilus cianficconiae* Malicky, 1980 – Albania: Dibër district, Lurë area, swampy spring outlet at Lan Lurë, N41°48.904', E20°15.449', 1385 m, 08.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♀, OPC).

*Limnephilus bipunctatus* Curtis, 1834 – Albania: Kolonjë district, Grammos Mts, Leskovik, forest brook along the road to Ersekë, E of the city, N40°09.932', E20°38.282', 1015 m, 13.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, 1 ♀, OPC). Tiranë district, Gropë Mts, Vakumonë, karst spring and brook along the road to Elbasan, N41°15.109', E20°05.805', 1195 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♀, OPC)

*Limnephilus lunatus* Curtis, 1834 – Albania: Kolonjë district, Grammos Mts, Radanj, brook, open seeps and Mergimtori Spring at Çezma Has, N40°12.184', E20°38.270', 1085 m, 13.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♀, OPC).

*Limnephilus sparsus* Curtis, 1834 – Albania: Mat district, Gropë Mts, brook along the Klos-Elbasan road, N of Shtyllë Pass, N41°22.455', E20°05.073', 1505 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 ♀, OPC).

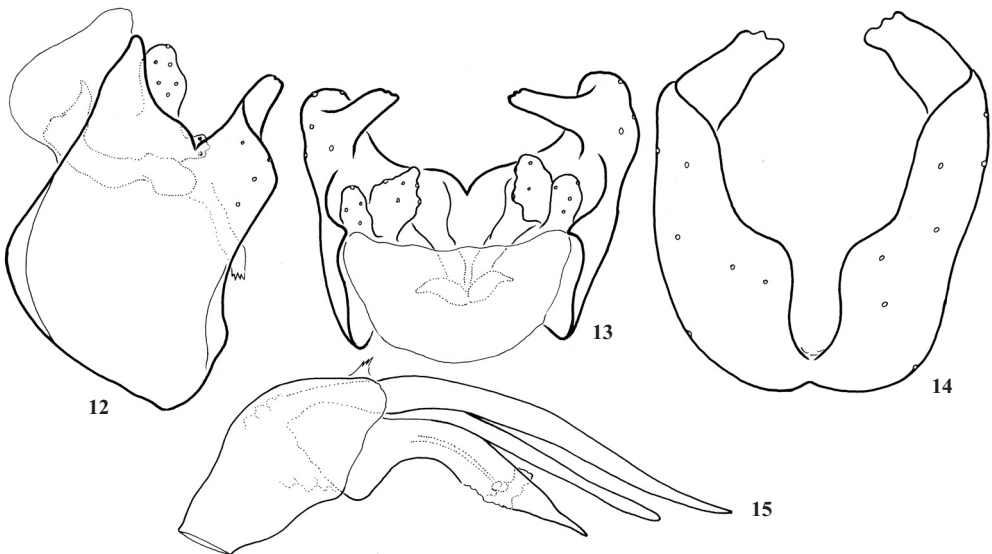
*Allogamus auricollis* (Pictet, 1834) – Albania: Dibër district, Korab Mts, brook beneath Fushë Korabit, N41°49.209', E20°30.745', 1770 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC). Dibër district, Korab Mts, open stream above Fushë Korabit, N41°49.215', E20°32.738', 1945 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 ♀, OPC). Dibër district, Korab Mts, Radomirë, brook E (above) of the village, N41°49.152', E20°30.111', 1495 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, 1 ♀, OPC; 2 ♂, 2 ♀, MM). Dibër district, Korab Mts, Radomirë, stream E (above) of the village, N41°49.043', E20°30.013', 1440 m, 7.X.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 ♂, 4 ♀, OPC).

***Allogamus tomor* Oláh sp. n.** (Figs 12–19)

*Diagnosis* – Having mesad angled gonopods together with three-armed aedeagus and fused paramere this new species is close to *Allogamus uncatus* (Brauer, 1857), but differs by having “apparent harpago” with transversally cut trilobed apical margin, not with pointed or narrowing monolobed apicoventral corner; aedeagus abbreviated and dilated, not long and slender; on female the elongated mesal structure of the vaginal sclerite complex short, not as long as at *A. uncatus*. This elongated sheath is connected to the dorsum of the vaginal or spermathecal sclerite was first mentioned by SCHMID (1951) as a *vestibular apparatus* with equilibrating function. Later SCHMID (1955) mentioned as *bursa copulatrix*. We have found this long tube-like structure as functioned to receive the long fused paramere in copulation.

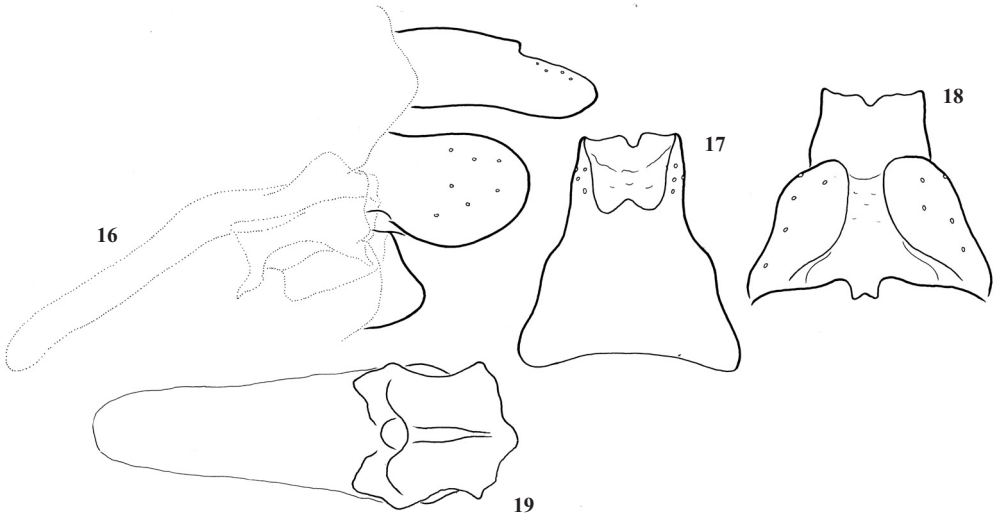
*Description* – Male and female (in alcohol). Brown animal with spotted forewing; both male and female have strong erect setae on forewing, setae on the longitudinal veins are almost as strong as in the Chaetopterygini tribe. Forewing length of holotype male is 21 mm, and that of the allotype female is 15 mm.

Male genitalia (Figs 12–15). Posterodorsal spinate area of vestitural noncellular microtrichiae on segment VIII present. Segment IX with narrowing dorsum in lateral view; anterior margin rounded triangular with long antecosta; posterior margin fused with gonopods. The pouch-like concavity of segment X large giving space for the paraproct anchored female anal tube during copulation. Cerci rounded lobe with an additional more irregularly shaped mesal lobe. Apical hook of the paraproctal complex with narrowing dorsad and laterad directed pointed apex middle connecting section long, basal triangle monolobe in lateral view, basal triangles function like a supporting fulcrum during copulation. Membranous subanal lobe short. Gonopods short with mesad turning apical flap “apparent harpago” with shallowly trilobed apical margin. Phallic organ composed of short narrowing phallic apodeme, short tube of phallosome, short endotheca,



**Figs 12–15.** *Allogamus tomor* sp. n. holotype male: 12 = genitalia without phallic organ in left lateral view; 13 = genitalia without phallic organ in dorsal view; 14 = gonopods in caudal view; 15 phallic organ in lateral view

aedeagus and paramere; aedeagus is short and robust arching; terminating in well-sclerotized bifid head and supplied with a pair of aedeagal rods fusing to the basement of the aedeagus; single fused paramere with bifid apical third is independently articulated to the membranous endotheca. Female genitalia (Figs 16–19). Anal tube formed by the fusion of tergite IX and X is medium long slightly downward arching; setose sternite IX regular elliptical in lateral view. Supragenital plate of segment X narrow in ventral view compressed by the enlarged sternite IX. Vulvar scale (lower vulvar lip) short plate with small quadrangular excision middle with the very small mesal lobe. Vaginal chamber medium sized reaching to the middle of sternite VIII. Vaginal sclerite pattern clearly visible, elongated sheath of the modified bursa copulatrix short and wide.



**Figs 16–19.** *Allogamus tomor* sp. n. allotype female: 16 = genitalia in left lateral view; 17 = genitalia in dorsal view; 18 = genitalia in ventral view; 19 = spermathecal sclerite complex with the elongated bursa copulatrix in ventral view

*Type material* – Holotype. Albania: Skrapar district, Ostrovicë Mts, Backë, Krojmbret Spring and its outlet brook NE of the village, N40°31.753', E20°25.152', 1965 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC). Allotype. Same as holotype (1 ♀, OPC).

*Etymology* – tomor from “tömör” solid or concise in Hungarian, refers to the abbreviated and dilated aedeagus of the phallic organ.

*Allogamus uncatus* (Brauer, 1857) – Albania: Bulqizë district, Çermenikë Mts, open brook beneath Mt. Kaptinë, N41°23.212', E20°17.506', 1610 m, 10.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC). Dibër district, Korab Mts, spring brooks of the bog beneath Mt. Korab, N41°47.913', E20°33.561', 2165 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 ♀, OPC).

*Enoicyla costae* McLachlan, 1876 – Albania: Skrapar district, Ostrovicë Mts, Backë, brook and spring NE of the village, N40°31.346', E20°25.096', 1650 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♀, OPC).

*Halesus digitatus* (Schrank, 1781) – Albania: Kolonjë district, Grammos Mts, Radanj, brook, open seeps and Mergimtori Spring at Çezma Has, N40°12.184', E20°38.270', 1085 m, 13.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC).

*Potamophylax cingulatus* (Stephens, 1837) – Albania: Dibër district, Lurë area, Fushë Lurë, brook in the village, N41°48.719', E20°12.823', 1075 m, 08.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, 2 ♀, OPC).



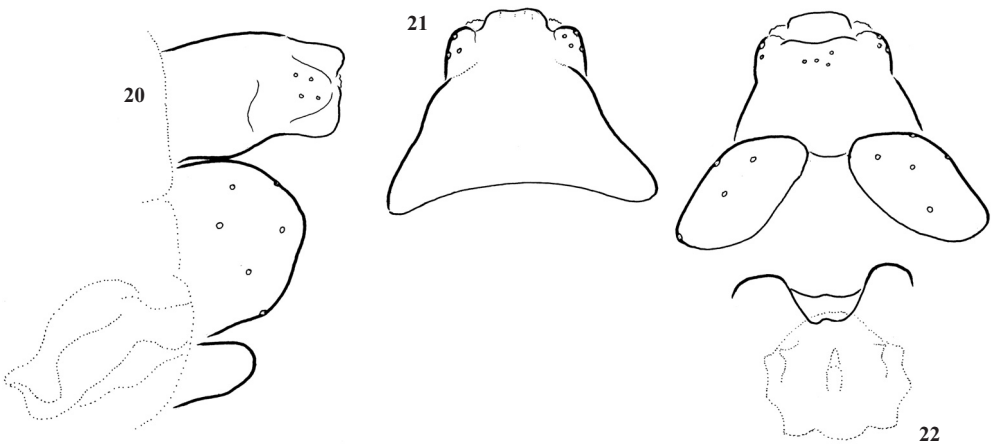
*Potamophylax goulandrionum* Malicky, 1975 – Albania: Bulqizë district, Çermenikë Mts, open brook beneath Mt. Kaptinë, N41°23.212', E20°17.506', 1610 m, 10.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♀, OPC; 1♀, MM). Dibër district, Lurë area, Fushë Lurë, brook in the village, N41°48.719', E20°12.823', 1075 m, 08.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♀, OPC). Skrapar district, Ostrovicë Mts, Backë, brook and spring NE of the village, N40°31.346', E20°25.096', 1650 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♂, OPC; 1♂, MM). Tiranë district, Gropë Mts, Vakumonë, karst spring and brook along the road to Elbasan, N41°15.109', E20°05.805', 1195 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2♂, OPC).

***Potamophylax winneguthi* new species group**

The habit of this species group differs from the typical *Potamophylax*. Species with known males and females are characterized by very pronounced sexual dimorphism. Females are lighter and smaller than males with tendency to brachyptery. They have very long and strong erect setae of “Chaetopteryx type” on forewings, especially strong setae are present on the longitudinal veins. Males are larger with normal forewing shape without any brachyptery. Male have less and shorter erect setae on forewing. However the males of *P. kesken* sp. n. and *P. tagas* sp. n. are brachypterous and have long and strong erect setae on forewing similarly to the females of the other species, which have however males without this chaetopterygini character. Unfortunately their females are not known. The male and female genital structures also differ from a typical *Potamophylax*. Their genitalia are more similar to *Chaetopteryx*. Male gonopods have very high or broad apex. Female anal tube closed. The discovery of the two new species where the males and not only the females have typical *Chaetopterygini* wings further emphasizes the need to examine the phylogenetic relations in *Stenophylacini* tribe. Seven species belong to this group: *Potamophylax gurunaki* Malicky, 1992 from Greece, *P. haidukorum* Malicky, 1999 from Bosnia, *P. hajlos* sp. n. from Albania, *P. juliani* Kumanski, 1999 from Bulgaria, *P. kesken* sp. n. from Albania, *P. tagas* sp. n. from Albania, *P. winneguthi* Klapálek, 1902 from Bosnia and Serbia.

***Potamophylax haidukorum* Malicky, 1999 (Figs 20–22)**

*Material examined* – Bosnia & Herzegovina: Banja Luka region, Borja Planina, between Maslovare and Klupe, Hajduk spring, N44°35'29.2", E17°35'50.9", 790 m, 06.11.2012, leg.



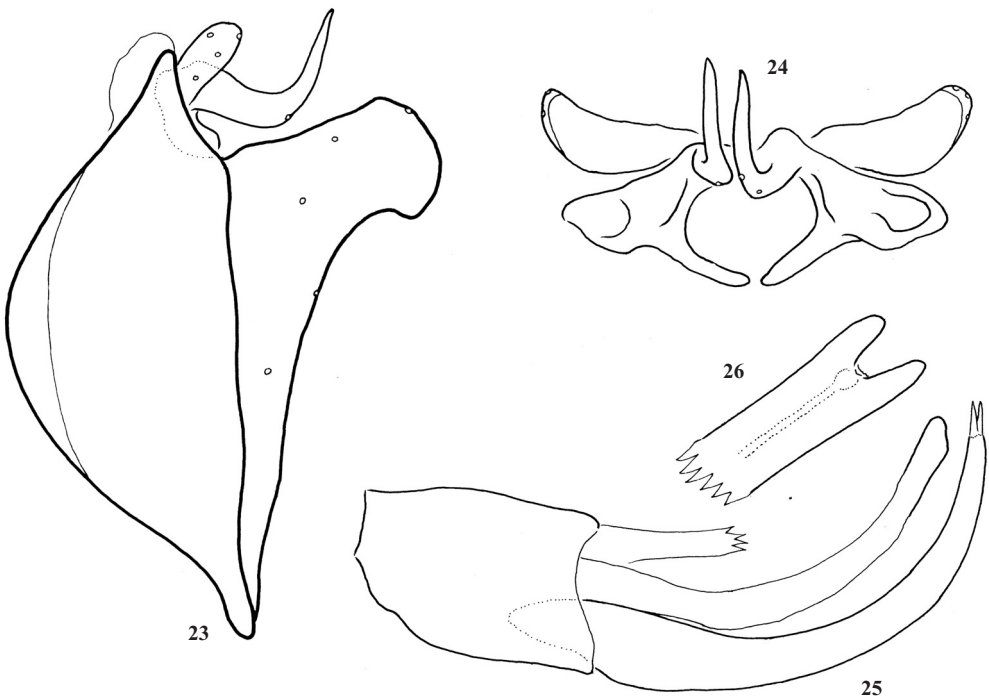
**Figs 20–22.** *Potamophylax haidukorum* Malicky, 1999 female: 20 = genitalia in left lateral view; 21 = genitalia in dorsal view; 22 = genitalia in ventral view

T. Kovács, G. Magos (1♀, OPC; 1♂, 1♀, MM). Banja Luka region, Kozara Mts, forest brook below the Vrbaška – Kozarac road, N45°02.480', E16°54.266', 560 m, 07.11.2012, leg. T. Kovács, G. Magos (1♀, OPC). Bosnien, Hajdučka voda, Zucht 1990, leg. H. Malicky (1♂, 1♀, OPC).

*Notes* – There seems to be no clear feature for separating the females of *P. haidukorum* and *P. winneguthi* wrote Malicky (KUMANSKI & MALICKY 1999). After a detailed examination of both the external and internal genital structure we have found significant differences to separate the females of these species. The fused regions of segment IX and X, the closed anal tube is subquadrangular on *P. winneguthi* and triangular on *P. haidukorum* both in dorsal and ventral view; sternite IX, the setose lateral lobes differently shaped, longer than high on *P. winneguthi* and higher than long on *P. haidukorum*; vulvar scale, the lower vulvar lip very developed on *P. winneguthi* and less developed on *P. haidukorum*; the mesal lobe of the vulvar scale is present on *P. winneguthi* and almost vestigial on *P. haidukorum*; the internal genital structure, the vaginal or spermathecal sclerite complex clearly differently formed in the two species.

***Potamophylax hajlos* Oláh sp. n.** (Figs 23–29)

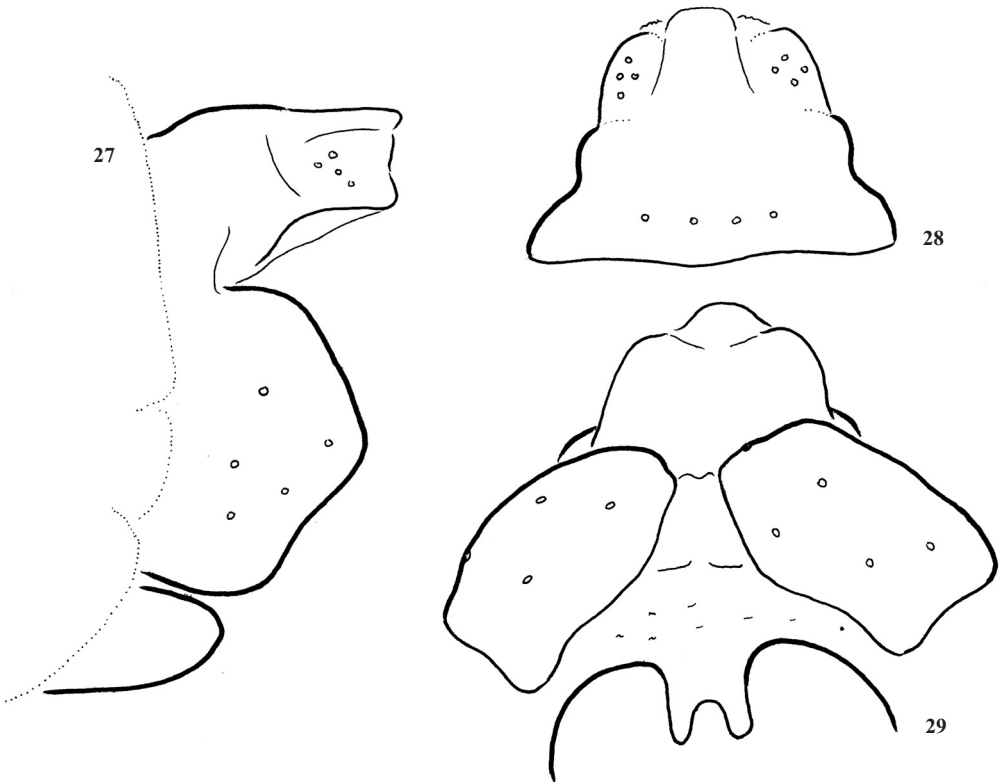
*Diagnosis* – A member of the *Potamophylax winneguthi* new species group and of the *Potamophylax tagas* new species cluster. Most close to *P. kesken* sp. n. but differs by having gonopod apical margin with downward directed outgrow and paramere tip with two spines; apicomasal excision on the aedeagus narrow, not wide U-shaped.



**Figs 23–26.** *Potamophylax hajlos* sp. n. holotype male: 23 = genitalia without phallic organ in left lateral view; 24 = superanal genital complex of cerci and paraproct in caudal view; 25 = phallic organ in lateral view; 26 = tip of phallic organ in ventral view

*Description* – Male (in alcohol). Antennae slender, not as stout as on *P. kesken* sp. n. and *P. tagas* sp. n. Spur number 134 both on male and female. Thoracic and femur sclerites dark brown on male, lighter on female; forewing with very long and strong erect setae on the longitudinal veins, almost as strong as in the *Chaetopterygini* tribe on female, but shorter and less strong on males. Forewing length of holotype male is 16 mm, that of allotype female is 10 mm.

Male genitalia (Figs 23–26). Posterodorsal spinate area of vestitural noncellular microtrichiae on segment VIII present. Segment IX with very short dorsum and ventrum in lateral view; anterior margin rounded semicircular with long antecosta; posterior margin fused with gonopods with visible suture. The pouch-like concavity of segment X very short. Cerci elongated spatulate in lateral view. Apical hook of the paraproctal complex slender upward curving; middle connecting section broad, bipartite; basal triangle bipartite, composed of lateral small triangular and mesal narrow sclerites. Gonopods long and low with downward directed apicoventral lobe on the rounded apical margin. Phallic organ composed of short narrowing phallic apodeme, short tube of phallosome, short endotheca, aedeagus and paramere; aedeagus bifid, its mesal excision narrow, V-shaped; pair of paramere stout upward curving, its tip composed of two equal spines.



**Figs 27–29.** *Potamophylax hajlos* sp. n. allotype female:  
27 = genitalia in left lateral view; 28 = genitalia in dorsal view; 29 = genitalia in ventral view

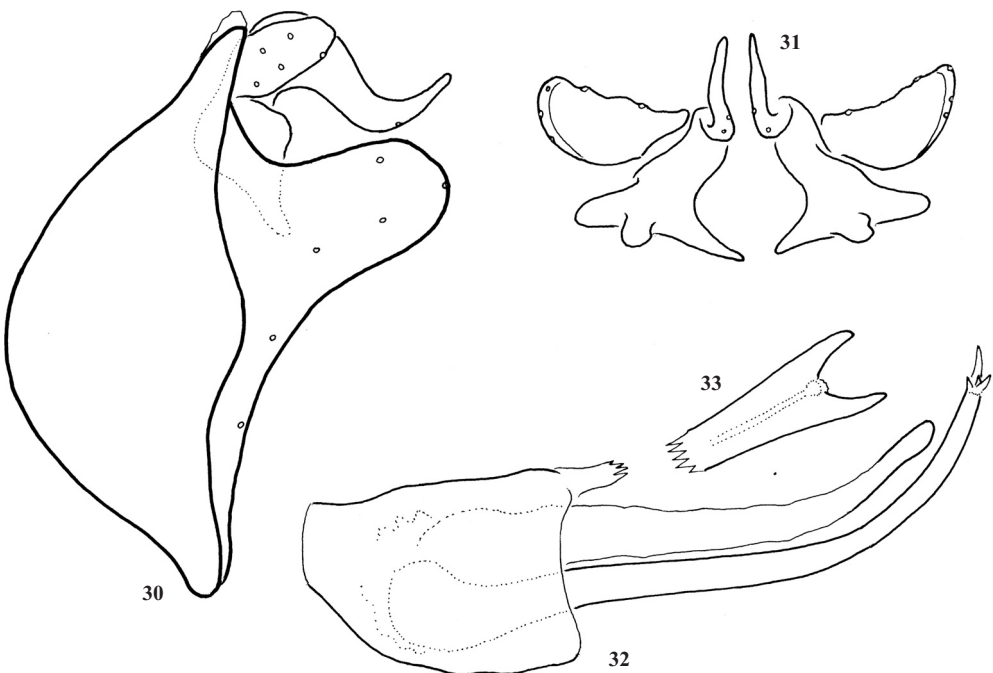
Female genitalia (Figs 27–29). Anal tube formed by the fusion of tergite IX and X is short; setose sternite IX rounded triangular in lateral view. Supragenital plate of segment X narrow in ventral view compressed by the enlarged sternite IX. Vulvar scale (lower vulvar lip) composed of large rounded lateral and small mesal lobe. Vaginal chamber medium sized reaching to the middle of sternite VIII. Vaginal sclerite pattern clearly visible.

*Type material* – Holotype. Albania: Tiranë district, Gropë Mts, Vakumonë, karst spring and brook along the road to Elbasan, N41°15.109', E20°05.805', 1195 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC). Allotype. Same as holotype (1 ♀, OPC). Paratypes. Same as holotype (1 ♂, OPC). Bulqizë district, Çermenikë Mts, open brook beneath Mt. Kaptinë, N41°23.212', E20°17.506', 1610 m, 10.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (3 ♂, OPC; 2 ♂, MM). Mat district, Gropë Mts, brook along the Klos-Elbasan road, N of Shtyllë Pass, N41°22.455', E20°05.073', 1505 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC).

*Etymology* – hajlos from “hajló, hajlós” bending in Hungarian, refers to the downward directed ventroapical corner of the gonopods.

***Potamophylax kesken* Oláh sp. n. (Figs 30–33)**

*Diagnosis* – A member of the *Potamophylax winneguthi* new species group and of the *Potamophylax tagas* new species cluster. Most close to *P. hajlos* sp. n. but differs by having



**Figs 30–33.** *Potamophylax kesken* sp. n. holotype male: 30 = genitalia without phallic organ in left lateral view; 31 = superanal genital complex of cerci and paraproct in caudal view; 32 = phallic organ in lateral view; 33 = tip of phallic organ in ventral view

gonopod apical margin without any downward outgrow and paramere tip with a single spines accompanied with three very short basal spines; apicomeral excision on the aedeagus very wide, U-shaped, not narrow.

*Description* – Male (in alcohol). Antennae stout. Thoracic and femur sclerites dark brown; forewing with long and strong erect setae, setae on the longitudinal veins are almost as strong as in the *Chaetopterygini* tribe. Forewing length of holotype male is 7 mm.

Male genitalia. Posterodorsal spinate area of vestitural noncellular microtrichiae on segment VIII present. Segment IX with very short dorsum and ventrum in lateral view; anterior margin rounded semicircular with long antecosta; posterior margin fused with gonopods with visible suture. The pouch-like concavity of segment X very short. Cerci elliptical spatulate. Apical hook of the paraproctal complex slender upward curving; middle connecting section broad, bipartite; basal triangle tripartite, composed of lateral small triangular, middle outgrowth and mesal narrow sclerites. Gonopods long and low with rounded apical margin. Phallic organ composed of short narrowing phallic apodeme, short tube of phallosome, short endotheca, aedeagus and paramere; aedeagus bifid, its mesal excision wide, U-shaped; pair of paramere stout upward curving, its tip composed of a single large and three small peg-like spines.

*Type material* – Holotype. Albania: Dibër district, Korab Mts, open stream above Fushë Korabit, N41°49.215', E20°32.738', 1945 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC).

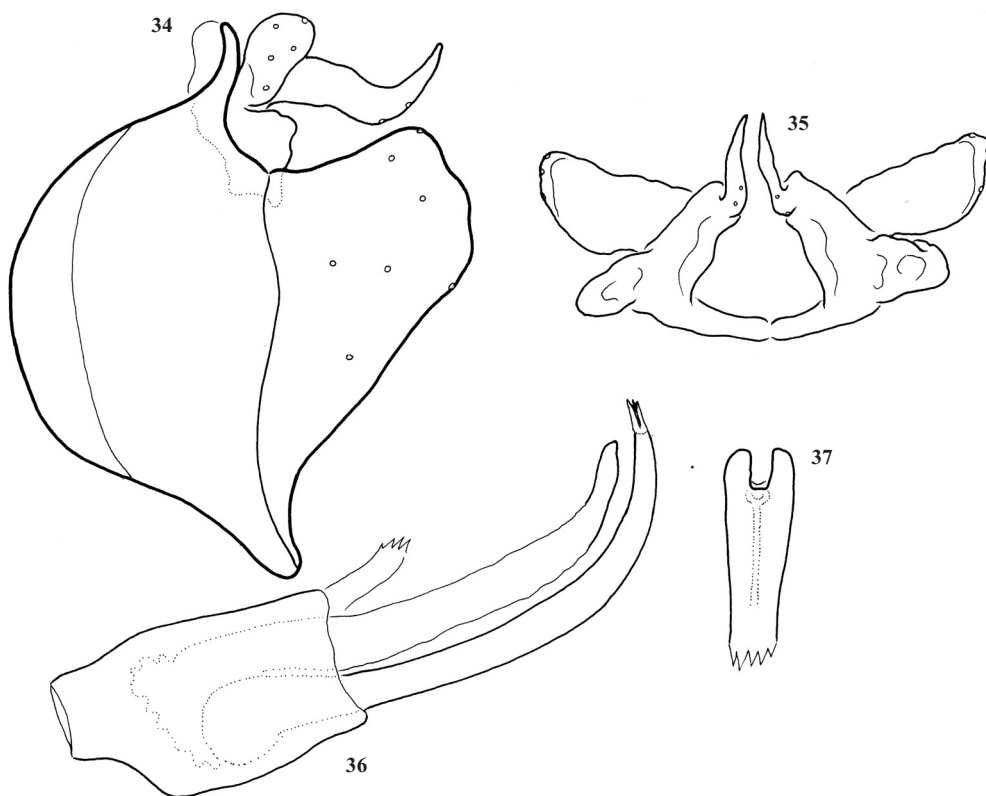
*Etymology* – *kesken* from “keskeny” narrow in Hungarian, refers to the narrow gonopods in lateral view compared to the gonopod of *P. tagas*.

### ***Potamophylax tagas* Oláh et Kovács sp. n. (Figs 34–37)**

*Diagnosis* – A member of the *Potamophylax winneguthi* new species group. *Potamophylax tagas* sp. n. forms a new species cluster together with *P. hajlos* sp. n. and *P. kesken* sp. n. This cluster is characterized by apical margin of the gonopods without any significant projections; superanal genital complex of cerci and paraproct rather uniform; paramere forms stout, upward arching and slightly narrowing rod. The very tip of the rod armed with a few number of short and stout spines. *P. tagas* sp. n. differs from both by the very long and high gonopods, by the tip of aedeagus and parameres.

*Description* – Male (in alcohol). Antennae stout. Thoracic and femur sclerites dark brown; forewing with long and strong erect setae, setae on the longitudinal veins are almost as strong as in the *Chaetopterygini* tribe. Forewing length of holotype male is 8 mm.

Male genitalia. Posterodorsal spinate area of vestitural noncellular microtrichiae on segment VIII present. Segment IX with very short dorsum and ventrum in lateral view; anterior margin rounded semicircular with long antecosta; posterior margin fused with gonopods with visible suture. The pouch-like concavity of segment X very short. Cerci elliptical spatulate. Apical hook of the paraproctal complex slender upward curving; middle connecting section broad, bipartite; basal triangle composed of fused more sclerotized lateral triangular and a mesal transversal sclerites. Gonopods long and high with truncate apical margin. Phallic organ composed of short narrowing phallic apodeme, short tube of phallosome, short endotheca, aedeagus and paramere; aedeagus bifid, its mesal excision narrow; pair of paramere stout upward curving, its tip composed of adhering three almost equal spines, one spine only little longer and stouter.



**Figs 34–37.** *Potamophylax tagas* sp. n. holotype male: 34 = genitalia without phallic organ in left lateral view; 35 = superanal genital complex of cerci and paraproct in caudal view; 36 = phallic organ in lateral view; 37 = tip of phallic organ in ventral view

*Type material* – Holotype. Albania: Dibër district, Korab Mts, spring brooks of the bog beneath Mt. Korab, N41°47.913', E20°33.561', 2165 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1 ♂, OPC). Paratypes. Same as holotype (2 ♂, OPC; 1 ♂, MM).

*Etymology* – tagas from “tágas” spacious or wide in Hungarian, refers to the enlarged gonopods.

*Ecological notes* – In the type locality of the new species (Fig. 42) the following species were found: *Annitella triloba* and *Allogamus uncatus*.

***Potamophylax winneguthi* (Klapálek, 1902) (Figs 38–40)**

*Material examined* – Serbia: Zlatibor Mts, Čigota Mts, spring area of Crni Rzav, N43°37'52.6", E19°46'18.0", 1150 m, 03.11.2011, leg. T. Kovács & G. Magos (2 ♂, 2 ♀, OPC) (OLÁH 2011). Zlatibor Mts, Čigota Mts, spring area of Crni Rzav, N43°37'52.6", E19°46'18.0", 1150 m, 20.11.2011, leg. T. Kovács, Cs. Oberczán (15 ♂, 7 ♀, OPC) (OLÁH 2011).

*Notes* – There seems to be no clear feature for separating the females of *P. haidukorum* and *P. winneguthi* wrote Malicky (KUMANSKI & MALICKY 1999). Differences in both the external and internal genital structure have been found and compared. See at *P. haidukorum*.



**Fig. 42.** Locus typicus of *Potamophylax tagas* sp. n. (photo Dávid Murányi)

*Potamophylax pallidus* (Klapálek, 1899) – Albania: Skrapar district, Ostrovicë Mts, Backë, Krojmbret Spring and its outlet brook NE of the village, N40°31.753', E20°25.152', 1965 m, 12.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♂, 1♀, OPC).

*Stenophylax zarathustra* Malicky, 1982 – Albania: Tiranë district, Gropë Mts, Vakumonë, karst spring and brook along the road to Elbasan, N41°15.109', E20°05.805', 1195 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2♀, OPC).

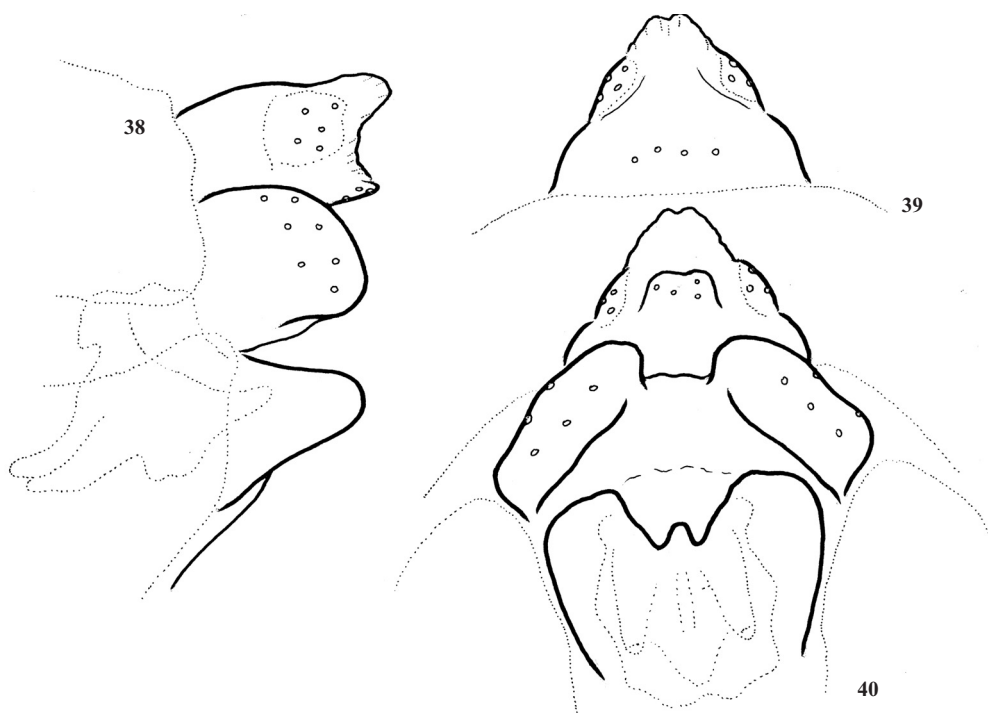
*Stenophylax nycterobius* (McLachlan, 1875) – Albania: Dibër district, Korab Mts, spring and brook at Fushë Korabit, N41°49.251', E20°31.543', 1940 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♀, OPC). Dibër district, Peshkopi, petrol station at the edge of the city, N41°41.467', E20°24.553', 640 m, 08.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♂, OPC). Kolonjë district, Grammos Mts, Radanj, brook, open seeps and Mergimtori Spring at Çezma Has, N40°12.184', E20°38.270', 1085 m, 13.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2♂, 1♀, OPC).

*Stenophylax permistus* McLachlan, 1895 – Albania: Dibër district, Korab Mts, Radomirë, brook E (above) of the village, N41°49.152', E20°30.111', 1495 m, 07.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (1♀, OPC).

#### UENOIDAE Iwata, 1927

*Thremma anomalum* McLachlan, 1876 – Albania: Tiranë district, Gropë Mts, Shëngjergj, forest seep along the road to Elbasan, E of the village, N41°19.875', E20°08.483', 1355 m, 11.10.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2♂, OPC).

**Acknowledgements:** Our sincere thanks are due to Dávid MURÁNYI (Hungarian Natural History Museum, Budapest), a true expert of the region, for planning of the successful collecting trip; to Péter JUHÁSZ (BioAqua Pro Ltd, Debrecen), Dávid MURÁNYI and Gellért PUSKÁS (Hungarian Natural History Museum, Budapest) for their help in the field work.



**Figs 38–40.** *Potamophylax winneguthi* Klapálek, 1902 female:  
 38 = genitalia in left lateral view; 39 = genitalia in dorsal view; 40 = genitalia in ventral view

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