

## On the Trichoptera of Batanta Island (Indonesia, Papua, Raja Ampat Archipelago) VI

JÁNOS OLÁH & TIBOR KOVÁCS

**ABSTRACT:** This paper, the sixth in the Batanta Island series on Trichoptera, presents new species records and describes new species in the families of Philopotamidae: *Chimarra parza* Oláh sp. n.; Dipseuopsidae; Ecnomidae: *Ecnomus fiak* Oláh sp. n., *Ecnomus vajtos* Oláh sp. n.; Psychomyiidae: *Tinodes savos* Oláh sp. n., *Tinodes simul* Oláh sp. n.; Polycentropodidae: *Nyctiophylax (Paranyctiophylax) sotet* Oláh sp. n.; Hydropsychidae: *Abacaria kevera* Oláh sp. n.; Glossosomatidae: *Agapetus perem* Oláh sp. n.; Hydroptilidae: *Hydroptila batanta* Oláh sp. n., *Ugandatrichia batanta* Oláh sp. n., *Orthotrichia fosla* Oláh sp. n., *Orthotrichia holaga* Oláh sp. n., *Niuginitrichia harmas* Oláh sp. n., *Niuginitrichia homora* Oláh sp. n., *Niuginitrichia vagva* Oláh sp. n., *Pseudoxyethira egba* Oláh sp. n.; Calamoceratidae: *Anisocentropus arfakensis* Oláh sp. n., *Anisocentropus batantensis* Oláh sp. n., *Anisocentropus susanna* Oláh et Kovács sp. n. *Triplectides sugaras* Oláh, 2014 is considered a junior synonym of *Triplectides dombos* Oláh, 2014, syn. n. and the erroneously associated female paratype of *Triplectides dombos* represents an undescribed species.

### Introduction

The sixth taxonomic paper on the Trichoptera of Batanta Island indicates and demonstrates the high diversity of caddisflies on this tropical island in the Papua Faunal Region. Repeated collecting efforts along the same streams have yielded new caddisfly species, although in a decreasing number. However, our collecting activity was limited to the habitats of low elevation. The habitats above 300 meters were not sampled at all. Most probably collectings in wetlands, springs, spring streams and streams on high elevations up to 1184 meters would yield far more undescribed species.

The material for the present paper was collected in Batanta Island during several field expeditions supported by Sakertour Eastern Europe, Birdwatching and Hide Photography Company. A new *Anisocentropus* species described here was collected during an expedition to the Arfak and Snow Mountains, West Papua that was organised, financed and realised by the Papua Paradise EcoResort (Birie Island, Raja Ampat, Papua, Indonesia) and by the Nature Discovery Fund (Kisar, Hungary). Field collections were accomplished with the use of UV light traps or white sheets illuminated by lamps powered by Honda generator or batteries. The material including all holotypes and paratypes is preserved in 70-80% alcohol, and is deposited in the collection of the author (Oláh Private Collection = OPC) under presented property of the Hungarian Natural History Museum, Budapest, if not stated otherwise: Museum for Natural History of the Humboldt University of Berlin (ZMB), Swedish Museum of Natural History, Stockholm (NHRS), National Museum of Natural History, Smithsonian Institution, Washington, D. C. (NMNH).

## Taxonomic part

PHILOPOTAMIDAE Stephens, 1829

*Chimarra agasa* Oláh, 2013 – Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (12 males, OPC).

*Chimarra bobita* Oláh, 2012 – Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 22.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (7 males, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (4 males, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 males, OPC).

*Chimarra bogos* Oláh, 2013 – Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (8 males, OPC).

*Chimarra felkora* Oláh, 2012 – Indonesia, Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (1 male, OPC).

*Chimarra holda* Oláh, 2012 – Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 22.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (3 males, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (28 males, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (6 males, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (11 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (7 males, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (6 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (14 males, OPC).

*Chimarra horgoka* Oláh, 2012 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (4 males, OPC).

*Chimarra kanala* Oláh, 2012 – Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (12 males, OPC); 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (8 males, OPC).

*Chimarra kerka* Oláh, 2013 – Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 22.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (2 males, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (18 males, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (32 males, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (9 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (8 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (24 males, OPC).

*Chimarra nurga* Oláh, 2016 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (5 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC); 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (6 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (6 males, OPC).

### *Chimarra parza* Oláh sp. n. (Figs 1–4)

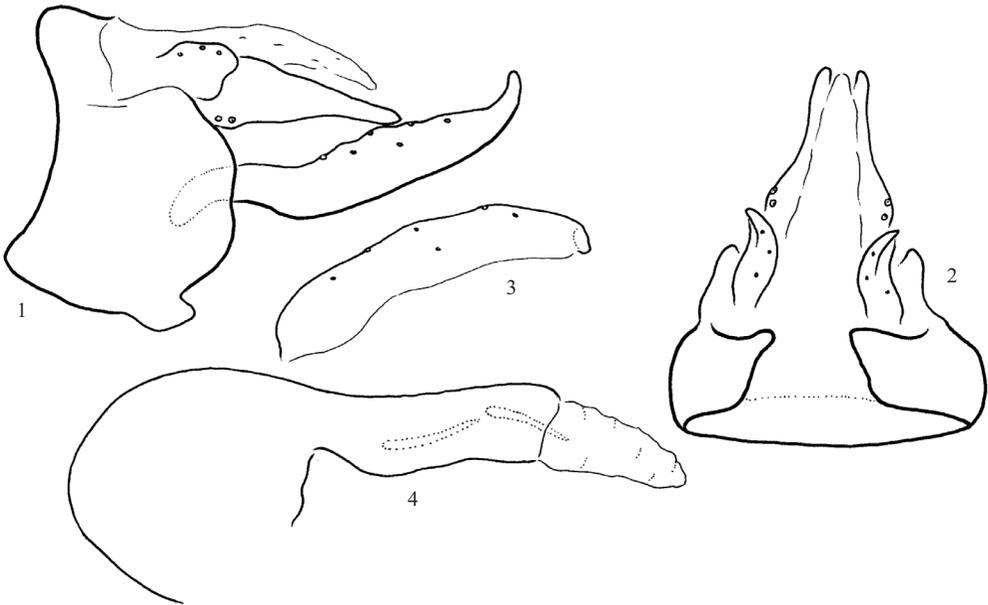
*Diagnosis* – Wing venation and genital architecture are similar to *Chimarra lerovida* Oláh, 2015 described from the Arfak Mts (Indonesia, Papua) of the main island, the probable ancestor of *C. cyclopica* described from the Cyclops Mts. In Batanta Island we have discovered and described *C. rokona* Oláh, 2016 the sibling species of *C. cyclopica* Kimmins, 1962 and in the

Welebed stream of Batanta island we have collected *C. parza* sp. n. the probable ancestor of *C. rokona*. *C. parza* sp. n. differs from *C. lerovida* by the elongated paraproct and by the modified shape patterns of almost all genital structure.

*Description* – Male (in alcohol). Medium-sized pale brown animal. Maxillary palp formula I-IV-II-III-V, segment II much shorter than segment III. Fore tibial spurs reduced to diagnostic one; spur formula 144. Wing membrane brown; forewing length 4 mm; discoidal, median and thyridial cells on forewing increasing in length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strongly sinuous with thickening before the discoidal cell, veins at base of discoidal cell also thickened; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on the arculus; on hindwing 2A diagnostic looping to join 1A incomplete, as a result a closed cell is lacking; 3A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII with pointed ventral process. Segment IX synsclerotized, short subdivided into ventral and dorsal parts by a horizontal sign; ventroapical process present, broad. Segment X membranous, elongated discernible. Cerci enlarged, elongated vertically flat and seem fused along its entire length to segment IX. Lateral vertical plates of paraproct long tapering apicad and straight not curving mesad; a pair of sensillae distinct and moved to ventrobasad. Gonopods enlarged liguliform with an apical upward turning narrowing apex. Phallic organ with large spherical basal section; endotheca with two long spines; phallosomal sclerite indiscernible.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (male, OPC).



**Figs 1–4.** *Chimarra parza* sp. n. Holotype: 1 = male genitalia in left lateral view; 2 = male genitalia in dorsal view; 3 = left gonopod in ventrolateral view; 4 = phallic organ in left lateral view

*Etymology* – *Parza* from “párzó” in the sense of fitting in Hungarian, refers to the adequate plesiomorphic relation to *Chimarra rokona* Oláh, 2016 evolved on Batanta Island compared to the plesiomorphy of *C. lerovida* Oláh, 2015 to the apomorphy of *C. cyclopica* Kimmins, 1962.

***Chimarra sarkos*** Oláh, 2013 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (5 males, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

***Chimarra tompa*** Oláh, 2013 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC).

***Chimarra tulok*** Oláh, 2013 – Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 22.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (5 males, OPC).

***Chimarra vegsem*** Oláh, 2013 – Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (2 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC).

***Chimarra vekon*** Oláh, 2013 – Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (8 males, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (7 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (6 males, OPC); 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (11 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (14 males, OPC).

#### DIPSEUDOPSIDAE Ulmer, 1904

***Hyalopsyche batanta*** Oláh, 2016 – Batanta Island, valley of Warmon stream, between the lower and upper waterfall, S00°50'04.50", E130°42'54.01" and S00°50'23.25", E130°42'35.18", 20.02.2017, singled, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

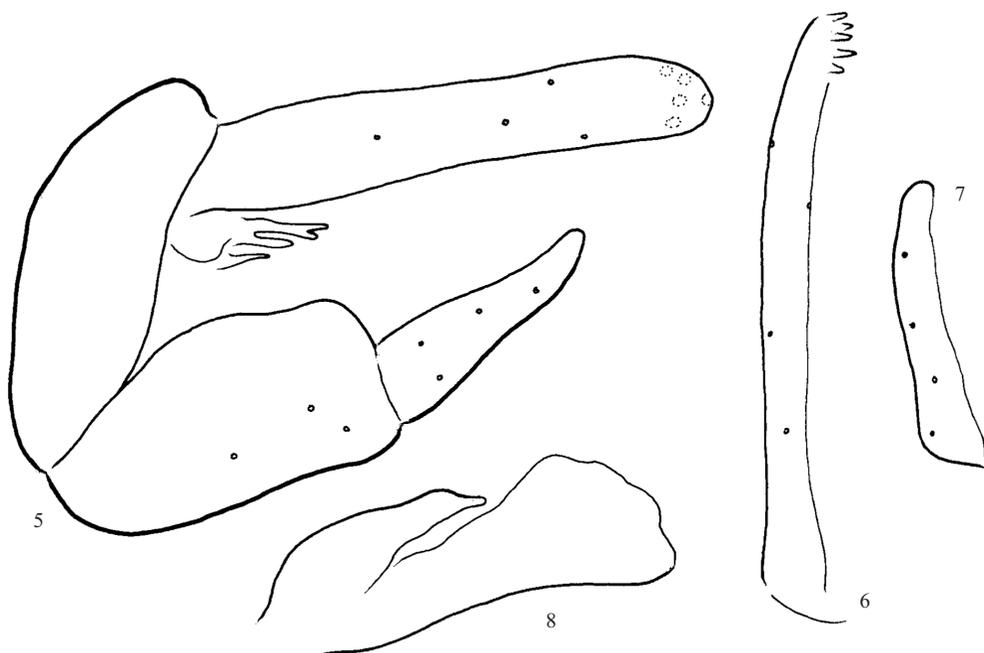
#### ECNOMIDAE Ulmer, 1903

***Ecnomus bogos*** Oláh, 2013 – Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (3 males, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (8 males, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (11 males, OPC).

***Ecnomus bunkos*** Oláh, 2012 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (4 males, OPC). Batanta Island, valley of Warai stream, S00°50'51.0", E130°35'14.0", 11.02.2015, at light, T. Kovács & P. Juhász (3 males, OPC).

#### ***Ecnomus fiak* Oláh sp. n. (Figs 5–8)**

*Diagnosis* – Most similar to *Ecnomus vekon* Oláh, 2012, but differs by having cerci straight in dorsal view, not arching mesad, paraproctal processes subdivided, not a single process, phallic organ simple, not complex and gonopods are slender, not broad.



**Figs 5–8.** *Ecnomus fiak* sp. n. Holotype: 5 = male genitalia in left lateral view; 6 = right cercus in dorsal view; 7 = left gonopod in perpendicular ventral view; 8 = phallic organ in left lateral view

*Description* – Male (in alcohol). Small light brown animal. Foretibial spurs complete, three; spur formula 344. Maxillary palp formula I-II-III-IV-V, second segment slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale brown; forewing length 3 mm; forewing forks complete, F1 present; corneous nygmæ present and well-visible in F2 and in thyridial cell; forewing vein R1 strongly hypertrophied, thickened along its entire length; false fork of R1 indistinct on the granulated pterostigmal area; median cell longer than discoidal cell; thyridial cell low and slightly shorter than discoidal.

Male genitalia. Tergum IX concave anteriorly and narrowing ventrally and broadening dorsally in lateral view; sclerotized strips, the skeletal holder connecting tergum IX to phallobase indistinct; sternum IX rounded subquadrangular. Vestigial segment X indiscernible. Cerci slender parallel-sided both in lateral and dorsal view; cercal stout setae black, spread mesad on dorsoapical margin. Paraproctal processes subdivided into small digitiform processes, probably of alveolus origin. Gonopod short slightly narrowing apicad. Phallic apparatus starts from a ring-like phallic apodeme followed by short digitiform pair of parameres; aedeagus forming a broadening shape in lateral view.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (male, OPC).

*Etymology* – *Fiak* from “fiak” boys, sons, saplings in Hungarian, refers to the small digitiform processes present on the ventrum of cerci and on the paraproctal vestigium.

*Ecnomus lelog* Oláh, 2012 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Warai stream S00°50'51.0", E130°35'14.0", 11.02.2015, at light, T. Kovács & P. Juhász (6 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 males, OPC).

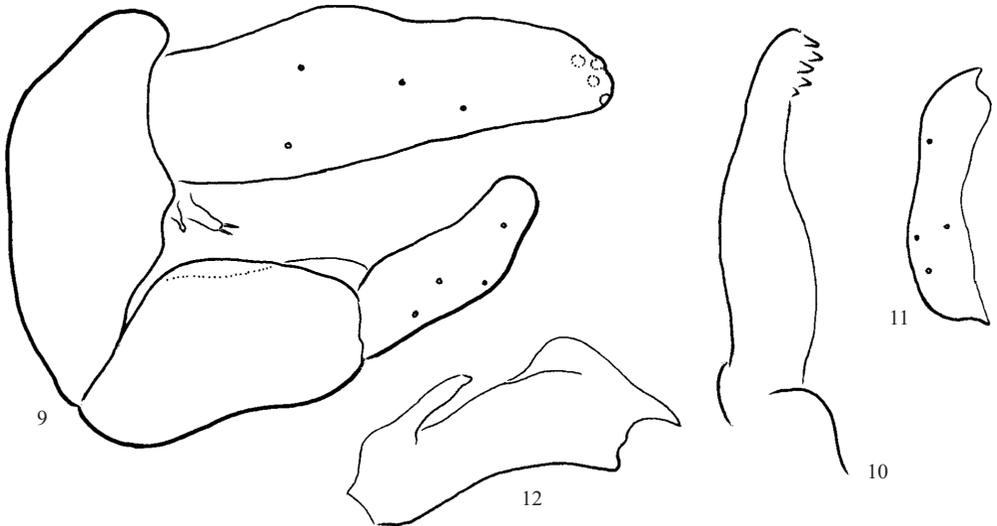
***Ecnomus vajtos* Oláh sp. n. (Figs 9–12)**

*Diagnosis* – Most similar to *Ecnomus terul* Oláh, 2013, but differs by having more robust cerci with tapering apex; gonopods and aedeagus with excised ending.

*Description* – Male (in alcohol) Small dark brown animal. Foretibial spurs complete, three; spur formula 344. Maxillary palp formula I-II-III-IV-V, second segment slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale brown; forewing length 3 mm; forewing forks complete, F1 present; corneous nygmae present and well-visible in F2 and in thyridial cell; forewing vein R1 strongly hypertrophied, thickened along its entire length; false fork of R1 indistinct on the granulated pterostigmal area; median cell longer than discoidal cell; thyridial cell low and slightly shorter than discoidal.

Male genitalia. Tergum IX concave anteriorly and narrowing ventrally and broadening dorsally in lateral view; sclerotized strips, the skeletal holder connecting tergum IX to phallobase indistinct; sternum IX rounded subquadrangular. Vestigial segment X indiscernible. Cerci rather robust with higher basal half and slightly tapering apex; cercal stout setae black, spread mesad on dorsoapical margin. External paraproctal processes less developed internal paraproctal processes digitiform with setal apices. Gonopod short stout with excised apex in ventral view. Phallic apparatus starts from a ring-like phallic apodeme followed by short digitiform pair of parameres; aedeagus with excised apex in lateral view.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (male, OPC).



**Figs 9–12.** *Ecnomus vajtos* sp. n. Holotype: 9 = male genitalia in left lateral view; 10 = right cercus in dorsal view; 11 = left gonopod in perpendicular ventral view; 12 = phallic organ in left lateral view

*Etymology* – *Vajtos* from “*vájt, vájtos*” excised in Hungarian, refers to the excised apex of the gonopods as visible in ventral view and excised apex of aedeagus as visible in lateral view.

*Ecnomus vekon* Oláh, 2012 – Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (16 males, OPC).

*Horvathomina gergoi* Oláh, 2014 – Batanta Island, Kalijakut River, S00°52'52.0", E130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Sauyai (2 males, OPC). Batanta Island, right side stream of Forum River, S00°52'22.7", E130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC). Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 14.02.2016, at light, T. Kovács, R. Horváth P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (1 male, OPC). Batanta Island, valley of Warai stream, S00°51'16.6", N130°35'24.3", 09.02.2016, UV light-trap,, T. Kovács, R. Horváth, P. Juhász (1 male, OPC); S00°51'11.6", N130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

*Horvathomina martoni* Oláh, 2014 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 male, OPC).

#### PSYCHOMYIIDAE Walker, 1852

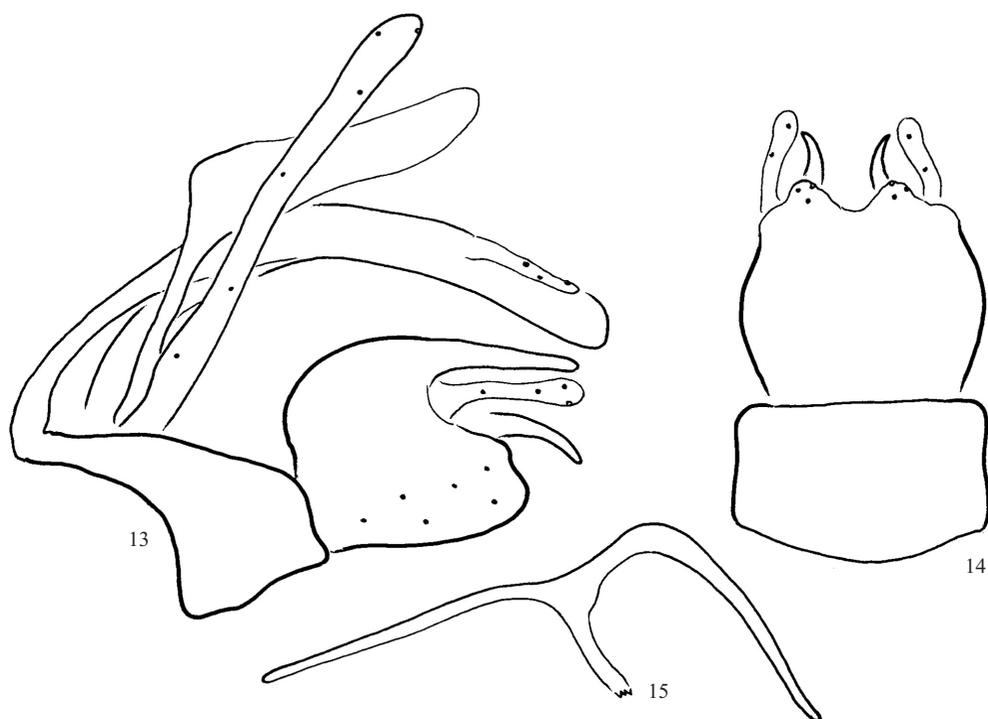
*Tinodes rekae* Oláh, 2012 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

#### *Tinodes savos* Oláh sp. n. (Figs 13–15)

*Diagnosis* – According to the genital structure this new species is most similar to *Tinodes gomboc* Oláh, 2012 described from Batanta Island, but easy to differentiate by habitus. *T. gomboc* has unicoloured forewing of 2.9 mm length and *T. savos* sp. n. has larger size of 5 mm forewing length and white transversal band on the dark forewing. There are several divergences also in the genital structure: paraproct without megasetae, not with four megasetae; paraproct as long as the aedeagus, not shorter; harpagones long, not short; basal plate of gonopods slender, not robust.

*Description* – Male (in alcohol). Large dark animal with white transversal band on the forewing. Sclerites medium brown, setal warts both on head and thorax lighter. Maxillary palp formula I-IV-(II,III)-V. Forewing length 5 mm, forewing median cell closed. Spur formula 244.

Male genitalia. IXth abdominal segment represented by sternite and tergite, both elongated subtriangular in lateral view; setaless tergite is apron-shaped and more dark due to the finely granulated surface densely packed with microtrichia and roofing directly over phallic apparatus and the dorsal paraproctal processes; sternite tall subtriangular with anterior lobe in lateral view joining high to fulcrum complex where met with tergite IX, cerci and paraproct as well as the median bridge providing sclerous connection between phallic apparatus and the IXth sternite. Vestigial membranous segment X present and fused to the tergum IX. Cerci are filiform with broadening apical two thirds in dorsal view, strongly setose. Paraprocts seems fused to the phallic complex without megasetae, but with a free apical filiform part with a few pitted pegs. Coxopodites with trifid apex; dorsal setaless spine like process almost straight horizontal; harpago, the setiferous middle arm elongated as long as the dorsal; the shorter apicoventral



**Figs 13–15.** *Tinodes savos* sp. n. Holotype: 13 = male genitalia in left lateral view; 14 = male genitalia in ventral view; 15 = basal plate of gonopods in left lateral view

setaless process curved downward; the basal plate of gonopods composed of long anterior apodeme and a tapering and curving distal process; the middle is attached to gonopods by lateral wings. In the phallic apparatus the the shape of the aedeagus indiscernible, but seems an even curving structure as fused or integrated to the paraprocts.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, Kalijakut River, S00°52'52.0", EE130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Sauyai (male, OPC). Paratype: West Papua, Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 female, OPC).

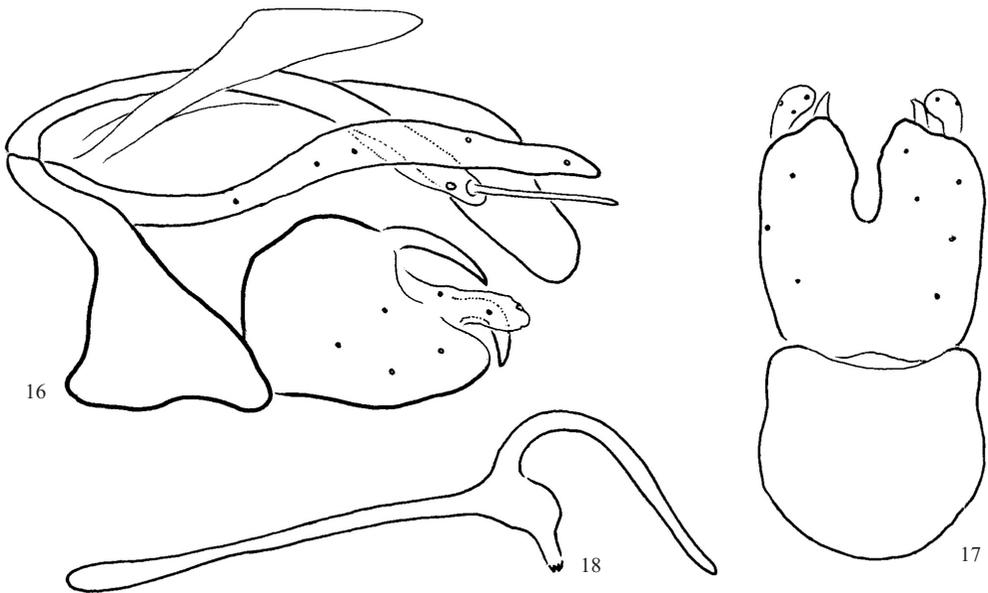
*Etymology* – *Savos*, from “sávós”, banded in Hungarian, refers to the white transversal band on the middle of the dark forewing.

### ***Tinodes simul* Oláh sp. n. (Figs 16–18)**

*Diagnosis* – This new species is most similar to *Tinodes gomboc* Oláh, 2012 described from Batanta Island, but differs by having coxopodite elongated and deeply excised apicomeresad in ventral view. The apical processes on the coxopodite stout, not slim.

*Description* – Male (in alcohol). Small castaneous brown animal. Sclerites medium brown, setal warts both on head and thorax lighter. Maxillary palp formula I-IV-(II,III)-V. Forewing length 2.8 mm, forewing median cell closed. Spur formula 244.

Male genitalia. IXth abdominal segment represented by sternite and tergite, both elongated subtriangular in lateral view; setaless tergite is apron-shaped and more dark due to the finely granulated surface densely packed with microtrichia and roofing directly over phallic apparatus and the dorsal paraproctal processes; sternite tall subtriangular with anterior lobe in lateral view joining high to fulcrum complex where met with tergite IX, cerci and paraproct as well as the median bridge providing sclerous connection between phallic apparatus and the IXth sternite. Vestigial membranous segment X present and fused to the tergum IX. Cerci filiform with constricted basal third, strongly setose. Paraproct represented by a pair of short digitiform setose processes with 2 megasetae each. Coxopodites with trifid apex; all the three processes lying recumbent; harpago is probably the setiferous middle capitate lobelike arm, the two processes without setae, the longer dorsal process and the shorter more curved process belong to coxopodite; the basal plate of gonopods composed of long anterior apodeme and a tapering and curving distal process; the middle is attached to gonopods by lateral wings. Phallic apparatus composed of the aedeagus with dilated dorsum, subapicad.



**Figs 16–18.** *Tinodes simul* sp. n. Holotype: 16 = male genitalia in left lateral view; 17 = male genitalia in ventral view; 18 = basal plate of gonopods in left lateral view

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (male, OPC). Paratype: West Papua, Batanta Island, valley of Kalijakut River, S00°52'49.1", EE130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

*Etymology* – *Simul*, from “simúl”, fits in Hungarian, refers to the abbreviated and low-lying, recumbent processes on the gonopods.

*Tinodes topor* Oláh, 2014 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Kalisamsem River, S00°53'25.0", E130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (3 male, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 male, OPC).

#### POLYCENTROPODIDAE Ulmer, 1903

*Nyctiophylax bunk* Oláh, 2012 – Batanta Island, Kalijakut River, S00°52'49.1", E130°38'4.9", 16.02.2015, UV light-trap, T. Kovács, P. Juhász, K. Sauyai (3 males, OPC); S00°52'52.0", E130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Sauyai (16 males, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (11 males, OPC); S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (6 males, OPC); S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (2 males, OPC). Batanta Island, valley of Waridor River, S00°52'09.66", E130°32'11.54", 03.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC); S00°51'50.1", E130°33'47.4", 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (2 males, OPC); S00°51'51", E130°33'41", 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (5 males, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

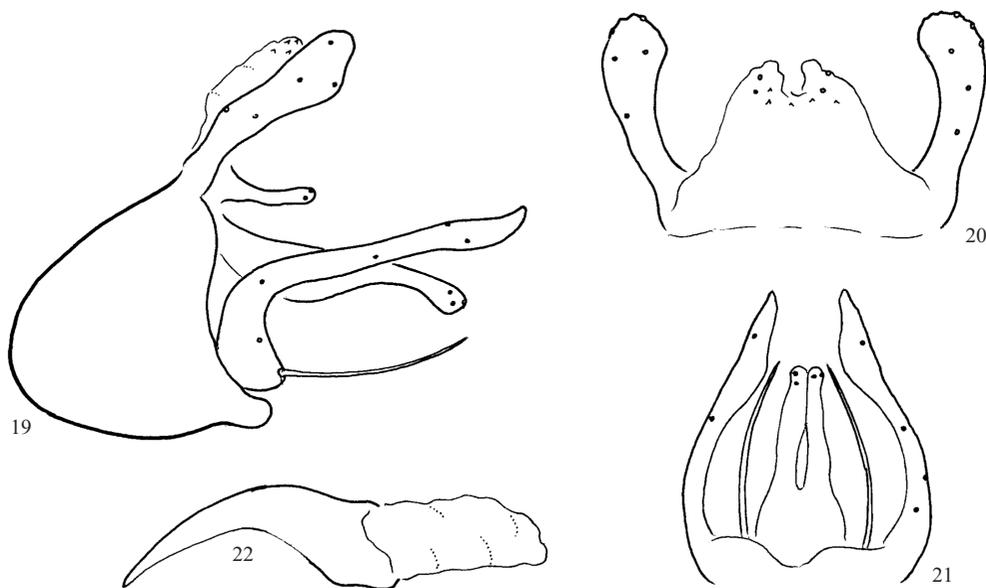
*Nyctiophylax egyes* Oláh, 2014 – Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (2 males, OPC). Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (18 males, OPC). Batanta Island, valley of Kalisamsem River, S00°53'25.0", E130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (9 males, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (2 male, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC). Batanta Island, valley of Warai stream, S00°50'51.0", E130°35'14.0", 11.02.2015, at light, T. Kovács & P. Juhász (1 male, OPC); S00°51'11.6", N130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC); S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (5 males, OPC). Batanta Island, valley of Waridor River, S00°51'51", E130°33'41", 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 males, OPC).

#### *Nyctiophylax (Paranyctiophylax) sotet* Oláh sp. n. (Figs 19–22)

*Diagnosis* – This new species differs from all the known species of Batanta Island by its black colour. All the *Nyctiophylax* species on the Batanta Island is pale coloured, light yellowish. The shape of paraproct is different and there is a pair of ventrobasal digitate processes fused to cerci lacking at the other species.

*Description* – Male (in alcohol). The entire body is rather uniformly dark, almost black. Antennae rather stout. Maxillary palp formula II-I-IV-III-V, third segment inserted mesosubapical on the second. Spur formula 344. Forewing dark; forewing length 4.5 mm. Discoidal cells both on forewing and hindwing closed, median cell on forewing open unlike to most species. Forewing with apical forks 2, 3, 4, 5, hindwing with apical forks 2, 5 present. In forewing A1, A2 and A3 looped.

Male genitalia (Figs 25–29). Segment IX is represented by ovoid sternite, with a short blunt apicoventral mesal lobe; tergite IX small, almost indiscernible. Segment X membranous bilobed in dorsal view with some small discernible setae. Setose cerci elongated broadening



**Figs 19–22.** *Nyctiophylax (Paranyctiophylax) sotet* sp. n. Holotype: 19 = male genitalia in left lateral view; 20 = male genitalia in dorsal view; 21 = male genitalia in ventral view; 22 = phallic organ in lateral view

apicad in dorsal view and supplied with a pair of digitate processes ventrobasad. Paraproctal subphallic plate digitate and capitate. Gonopods elongated slender, straight L-forming in lateral and slightly S-forming in ventral view; ventrobasal elbow well developed. Basal plate of gonopods elongated. The phallic apparatus located dorsad, fixed and guided by the paraproct; the tube forming phallosome less developed; phallobase modified into an arching long and narrow dorsal apodeme; the aedeagus membranous without discernible spines.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (male, OPC).

*Etymology* – *Sotet*, from “sötét”, dark in Hungarian, refers to the dark pigmentation of the entire animal; both the body and the wings remained dark, almost blackish in the alcohol.

HYDROPSYCHIDAE Curtis, 1835

Macronematinae Ulmer, 1905

Macronematini Ulmer, 1905

*Baliomorpha barna* Oláh, 2012 – Batanta Island, right side stream of Forum River, S00°52'22.7", E130°27'45.1", 19.02.2016, T. Kovács, R. Horváth, P. Juhász (1 male, OPC). Batanta Island, valley of Kalisamsem River, S00°53'27.54", E130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (5 males, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, singled, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (1 male, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

Batanta Island, valley of Warai stream, S00°51'11.6", N130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC); S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

***Baliomorpha mariannae*** Oláh, 2012 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (4 males, 4 females, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (4 males, OPC).

***Leptopsyche kormos*** Oláh & Kovács, 2015 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Kalisamsem River, S00°53'27.54", E130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (5 males, 7 females, OPC); S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (2 females, OPC).

***Leptopsyche vilagos*** Oláh & Kovács, 2015 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Kalisamsem River, S00°53'27.54", E130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, 1 female, OPC). Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (3 males, 2 females, OPC); S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (2 males, 2 females, OPC).

***Macrostemum warmon*** Oláh, 2013 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Warai stream, S00°51'11.6", N130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC); S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC); S00°50'59.3", E130°35'18.0", 27.02.2018, singled, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

#### Dipletroninae Ulmer, 1951

***Dipletrona szalma*** Oláh, 2013 – Batanta Island, valley of Kalisamsem River, S00°53'27.54", E130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

#### Hydropsychinae Curtis, 1835

***Batantapsyche juhaszi*** Oláh & Kovács, 2015 – Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC). Batanta Island, valley of Warmon stream, upper waterfall, S00°50'23.25", E130°42'35.18", 24.02.2018, singled, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

**Remarks.** This species was known only from the single holotype collected at the Warmon stream of the Batanta Island. This is the second specimen of this beautiful yellow-black coloured monotypic genus from the Warmon stream and the first specimen collected in the valley of Warai stream.

***Hydropsyche sabronensis*** (Kimmins, 1962) – Batanta Island, valley of Kalisamsem River, S00°53'27.54", E130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (8 males, OPC).

***Hydropsyche sotet*** Oláh & Kovács, 2015 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

***Hydropsyche tuskes*** Oláh, 2013 – Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (4 males, OPC).

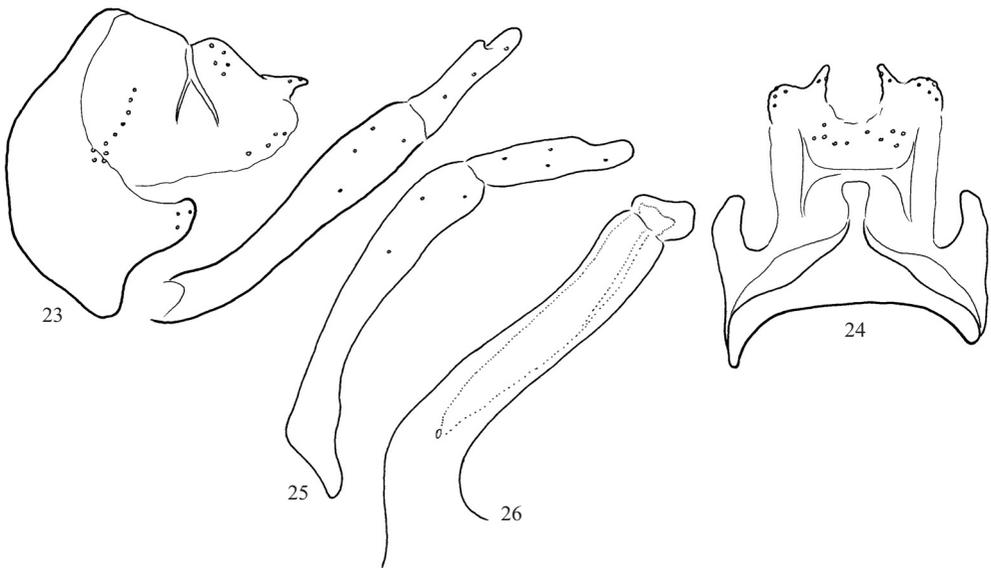
***Cheumatopsyche tarka*** Oláh, 2012 – Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (7 males, OPC).

***Abacaria kevera* Oláh sp. n. (Figs 23–26)**

**Diagnosis** – This beautiful dark brown hydropsychid species has the wing venation of the *Abacaria* genus, but has the setose wart on proepisternum similar to that of *A. caledona* Oláh & Johanson, 2006 from New Caledonia, *A. beroni* (Kumanski, 1979) from New Guinea and *A. kovacsi* Oláh from Batanta Island. In most species of the genus *Abacaria* the plesiomorphic proepisternal setose wart has been lost. At the same time *A. kevera* sp. n. has asymmetric tarsal claws present on all legs, as is the case of most members of the *Abacaria* genus. A few species, *A. caledona*, *A. kovacsi* have symmetrical tarsal claws. The genital structure has resemblance to *A. kovacsi* Oláh, 2014, but differs in specified divergences in each units, especially the phallic organ is highly diverged.

**Description** – Male (in alcohol). Body and wings dark brown. Maxillary palp formula I-(II,III,IV)-V. Proepisternal setal wart present. Tarsal claw asymmetric on all legs with setal bundle present. Spur formula 244. Forewing length 8 mm; hind wing median cell open; hind wing with forks 2,3,5.

**Male genitalia.** Segment IX fused annular and short; its median keel like an open transparent capitate gap; apical lobe on posterolateral margin elongated triangular, slightly upward arching. Intersegmental profile between the ninth and tenth segments simple horizontal. Segment X robust in lateral view and rounded quadrangular in dorsal view; suture pattern H-shaped in dorsal and inverted Y-shaped in lateral view; ventroapical lobes small digitate shifted upward; cerci fused dorsad as setose region. The coxopodit of the gonopod almost straight longer than the apex of segment X, harpago with narrow apical third in ventral view. Phallic organ almost with equal diameter along the down-curving basal and the horizontal sections of the phallosome; horizontal section with slightly upward curving apex; endothecal and phallosomal sclerite complex movable; sclerotized endothecal processes longer ventrad and phallosomal sclerites smaller.



**Figs 23–26.** *Abacaria kevera* sp. n. Holotype: 23 = male genitalia in left lateral view; 24 = male genitalia in dorsal view; 25 = left gonopod in ventral view; 26 = phallic organ in lateral view

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (male, OPC). Paratypes: West Papua, Batanta Island, valley of Kalisamsem River, S00°53'27.54", E130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, 2 females, OPC).

*Etymology* – *Kevera*, from “kever”, “kevert”, mixed in Hungarian, refers to the presence of both the proepisternal setose wart and the asymmetry of tarsal claws.

*Abacaria sima* Oláh, 2013 – Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

*Remarks.* In the Hydropsychinae subfamily the generic diagnosis is based mostly on the venation characters supported by combination of other body and genital characters. The *Abacaria* genus is characterised with open median cell on the hindwings. The specimen collected in the valley of Forum River has closed median cell on the hindwing. Although its crossvein *m* is not pronounced, but clearly discernible. After a careful re-examination, in alternating light angles, of the hindwing of holotype, paratype and an additional male specimen from the Kalijakut River there was not any crossvein *m* discernible, that is, the median cell is open. A careful re-examination of other *Abacaria* species in alternating light angles we have found also the hindwing crossvein *m-cu* present (Table 1). Except the closed median cell on the hindwing of the specimen from the Forum River, the genital structure is almost identical with the holotype and with the other specimens. On the original drawing of the phallic organ the movable endothelial process of the holotype is turned in the transversal direction (Oláh, 2013). In the other specimens it is located in various positions between transversal and sagittal directions that are variously exposed and visible in lateral view.

**Table 1.** Generic characters in the Hydropsychinae subfamily: 1 = cerci, 2 = forewing median cell, 3 = hindwing discoidal cell, 4 = hindwing median cell, 5 = hindwing crossvein *m-cu*, 6 = hindwing forks, 7 = distance between crossveins *m-cu* to *cu* on forewing

	1	2	3	4	5	6	7
<b><i>Hydromanicus</i> cluster</b>							
<i>Hydromanicus</i>	present	closed	closed	open	present	1,2,3,5	distant
<i>Calosopsyche</i>	present	closed	closed	open	present	1,2,3,5	distant
<b><i>Cheumatopsyche</i> cluster</b>							
<i>Cheumatopsyche</i>	present	closed	closed	open	present	1,2,3,5	close
<i>Potamyia</i>	present	closed	closed	open	absent	1,2,3,5	close
<b><i>Hydropsyche</i> cluster</b>							
<i>Hydropsyche</i>	reduced	closed	closed	closed	absent	1,2,3,5	distant
<i>Orthopsyche</i>	reduced	closed	closed	open	absent	1,2,3,5	distant
<i>Batantapsyche</i>	reduced	closed	open	open	present	1,2,3,5	distant
<i>Schmidopsyche</i>	reduced	open	open	open	present	1,2,3,5	distant
<i>Hydronema</i>	reduced	closed	closed	closed	present	2,3,5	distant
<i>Abacaria</i>	reduced	closed	closed	open	present	2,3,5	distant
<i>Abacaria sima</i>	reduced	closed	closed	closed	present	2,3,5	distant
<i>Caledopsyche</i>	reduced	closed	closed	open	present	2,5	distant

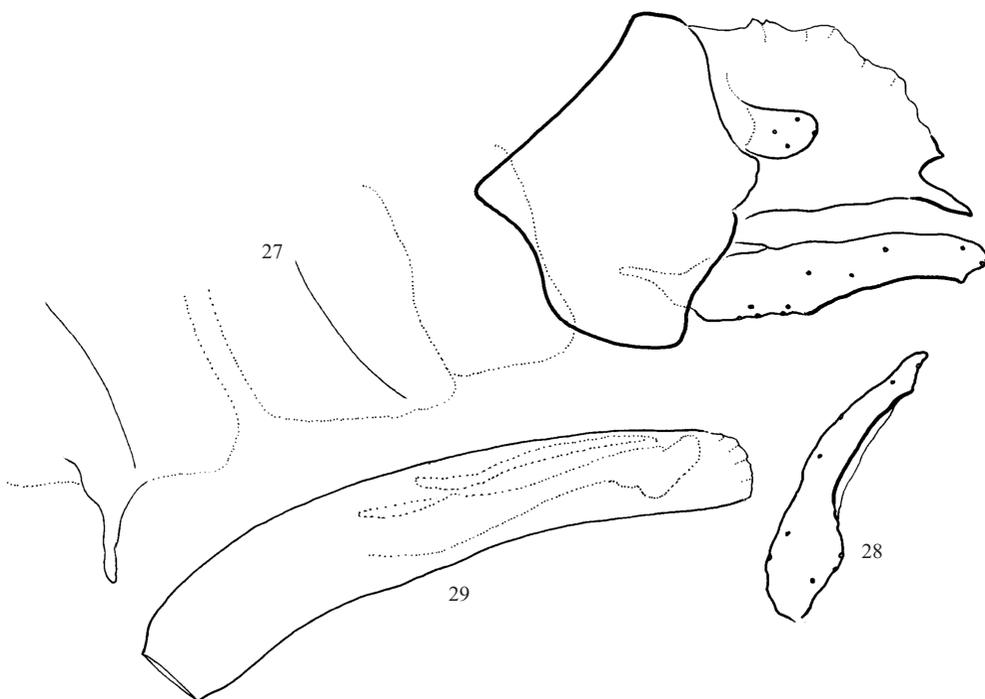
*Agapetus fogaska* Oláh, 2013 – Batanta Island, valley of Kalijakut River, S00°52'52.0", E130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Sauyai (9 males, OPC); S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 14.02.2016, at light, T. Kovács, R. Horváth P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 males, OPC). Batanta Island, valley of Warai stream, S00°51'16.6", N130°35'24.3", 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (16 males, OPC); S00°51'11.6", N130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (3 males, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC); waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (5 males, OPC).

*Agapetus kivagot* Oláh, 2012 – Batanta Island, valley of Warai stream, S00°50'51.0", E130°35'14.0", 11.02.2015, at light, T. Kovács & P. Juhász (2 males, OPC).

***Agapetus perem* Oláh sp. n. (Figs 27–29)**

*Diagnosis* – Its characteristic gonopods with black ventromesal rim differentiate this species from all the known Australasian members of this genus.

*Description* – Male (in alcohol). Dark brown animal, with legs and venter slightly lighter. Maxillary palp formula I-II-IV-V-III, second segment with globular mesolateral projection. Wing membrane brown; forewing length 2.8 mm; fork I on hindwing lost. Blister-like protuberance on the dorsal margin of sternite V present detached from the ridge; ventral process on sternite VI short.



**Figs 27–29.** *Agapetus perem* sp. n. Holotype: 27 = male genitalia with abdominal segments VI–VIII in left lateral view; 28 = left gonopod in ventral view; 29 = phallic organ in lateral view

Male genitalia. Segment IX synsclerotized with convex anterior and posterior margin in lateral view. Segment X less pigmented, high. Cerci short and high. Paraproctal lateral vertical plates (lateral lobe of segment X) with bifid apex. Gonopods elongated in lateral view; ventromesal margin with black rim. Aedeagus with unpaired imbedded sclerites.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, Kalijakut River, S00°52'52.0", E130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Sauyai (male, OPC).

*Etymology* – *Perem* from “perem” edge, verge in Hungarian, refers to the black ventromesal rim of gonopods.

HYDROPTILIDAE Stephens, 1836

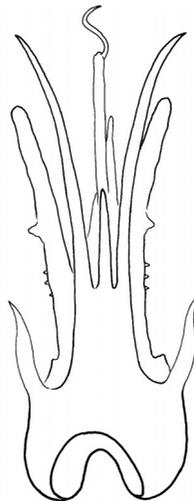
Hydroptilini Stephens, 1836

*Helyethira sarina* Oláh, 2012 – Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.02.2018, at light, T. Kovács, R. Horváth (2 males, OPC).

***Hydroptila batanta* Oláh sp. n. (Fig. 30)**

*Diagnosis* – A sibling species of *Hydroptila furcula* Wells, 1984 described from the Kokoda Mts of South-East New Guinea, but differs in having elongated posterolateral lobes of segment IX, abbreviated mesal lobe of segment X and gonopods with lateromesal tooth.

*Description* – Male (in alcohol). Ocelli lacking. Postoccipital setal warts pronounced, concealing eversible globular scent organ. Tentorium not discernible. Each antennal flagellum with 17 flagellomeres; each scape curved, each pedicel half as long as each scape; flagellomeres cube-shaped. Maxillary palp formula I-II-IV-III-V, first two segments shorter than wide. Mesoscutellum subtriangular with anterior margin evenly convex, wide; transversal suture absent; metascutellum triangular. Tibial spurs 0,2,4. Forewing length 1.3 mm. Sternum VII with small, setaless, pointed apicommesal process.



**Fig. 30.** *Hydroptila batanta* sp. n. Holotype male genitalia in dorsal view

Male genitalia. Segment IX synsclerotized; half ovoid, both dorsum and ventrum deeply excised anteromesad; posterolateral lobes present, setaless and long; Segment X (dorsal plate) with a fused basal portion as long as the posterolateral lobes on segment IX and trilobed distally; mesal lobe short lateral lobes very slender and elongate. Paraprocts (subgenital plates) fused into an elongated slender structure. Gonopopds cylindrical elongated rod-shape structure with a lateromesal tooth. Phallic organ forming a long, straight tube with a strap-like subapical process twisting beyond apex.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47", E130°42'29.16", 22.01.2013, light trap, R. Horváth (male, OPC).

*Etymology* – This species is named from Batanta to emphasise that it was diverged from its sibling *H. furcula* from Kokoda Mts in allopatric isolation in the Batanta Island.

*Hydroptila explicata* Wells, 1984 – Batanta Island, Northern coast, Ron stream, S00°49'18.03", E130°49'26.03", above hut, 15.10.2010, light trap, R. Horváth (1 male, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.02.2018, at light, T. Kovács, R. Horváth (9 males, OPC).

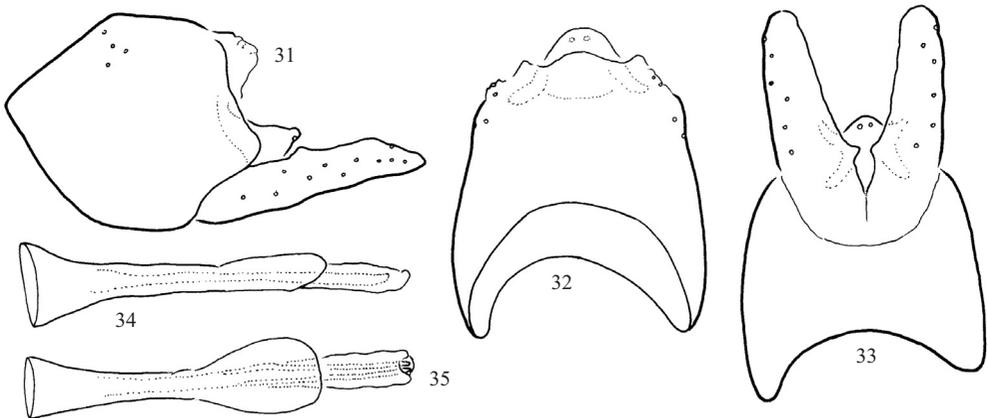
*Hydroptila nemtompa* Oláh, 2012 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.02.2018, at light, T. Kovács, R. Horváth (9 males, OPC).

*Missitrichia kunkora* Oláh, 2012 – Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47", E130°42'29.16", 22.01.2013, light trap, R. Horváth (1 male, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.02.2018, at light, T. Kovács, R. Horváth (3 males, OPC).

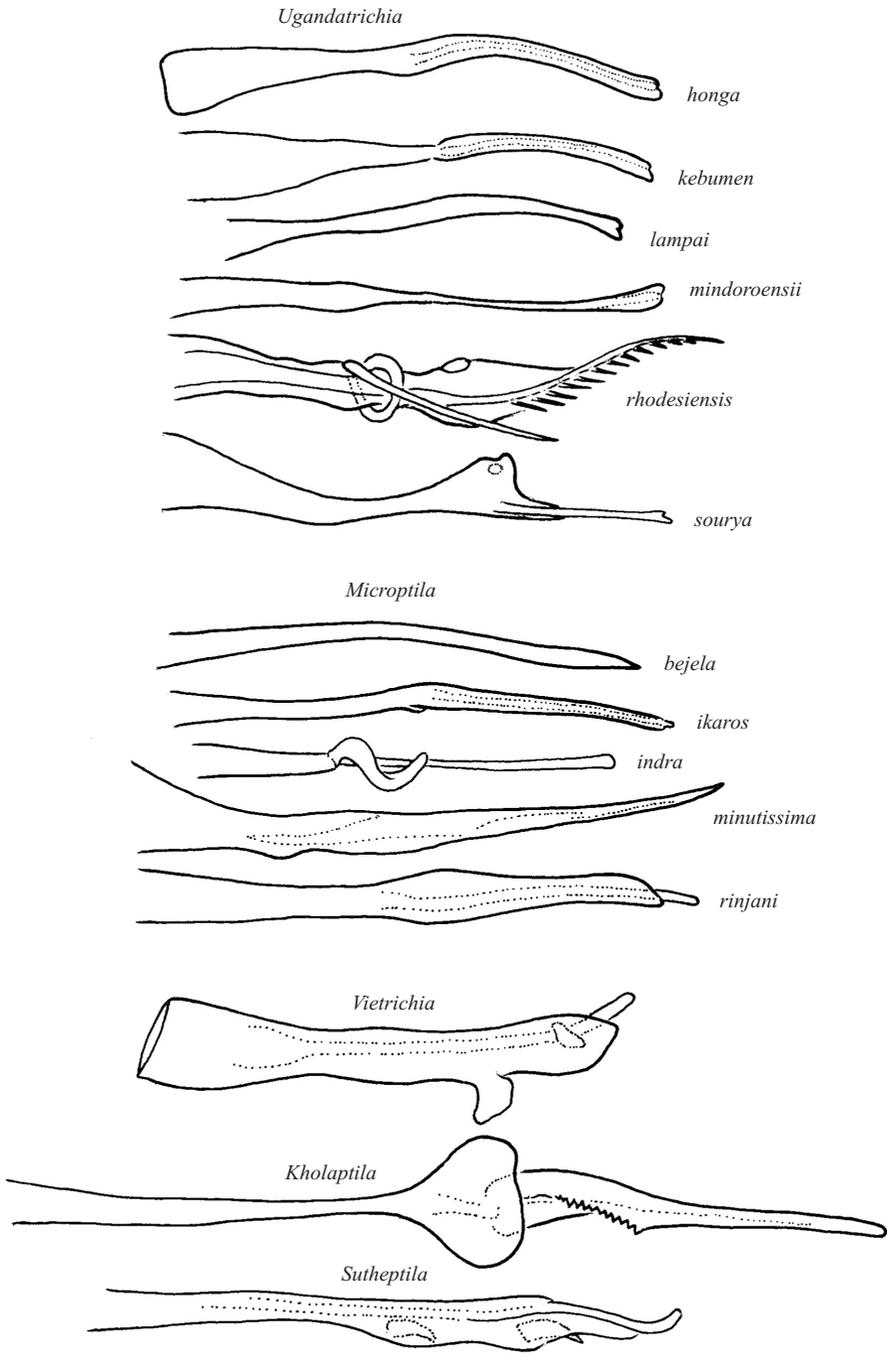
*Saranganotrichia oldalra* Oláh, 2012 – Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47", E130°42'29.16", 22.01.2013, light trap, R. Horváth (4 males, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.02.2018, at light, T. Kovács, R. Horváth (2 males, OPC).

***Ugandatrachia batanta* Oláh sp. n. (Figs 31–35, 36)**

*Diagnosis* – This is the first species of the *Ugandatrachia* genus in the Batanta Island and the second species of the genus in the Australasian faunal region. The first Australasian species, *U. cathyae* Wells, 1991, was described from Papua New Guinea. *Ugandatrachia* is a species-rich



**Figs 31–35.** *Ugandatrachia batanta* sp. n. Holotype: 31 = male genitalia in left lateral view; 32 = male genitalia in dorsal view. 33 = male genitalia in ventral view; 34 = phallic organ in lateral view; 35 = phallic organ in dorsal view



**Fig. 36.** Phallic organ of some representatives of *Ugandatrichia*, *Microptila* genera as well as the monobasic *Vietrichia*, *Kholaptila* and *Sutheptila* genera in the Hydroptilini tribe

genus in the *Agraylea* group of genera inside the Hydroptilinae subfamily besides the *Hydroptila* and *Oxyethira* genus groups. The male genitalia are rather distinctive with a common primitive basic pattern (MARSHALL 1979). Based on the general form and the rather constant architecture of genitalia, SCHMID (1960) synonymised the African genus *Ugandatrichia* Mosely, 1939 and the Asian genus *Moselyella* Kimmins, 1951 with *Microptila* Ris, 1897. MARSHALL (1979) reinstated *Ugandatrichia* with *Moselyella* as a junior synonym with possibility of future modification. Based on the general form of genitalia she has justified the possible synonymy of *Agraylea* Curtis, 1834 with *Allotrichia* McLachlan, 1880.

*Ugandatrichia batanta* sp. n. has the primitive basic architecture of the genitalia, but the aedeagus is without spiralling titillator (paramere). Most member of the genus group has spiralling titillator present on the aedeagus. However, paramere lost by simplification or incremental subtraction is a common mechanism in integrative organisation (OLÁH et al. 2018), moreover, all extant species are a mix of ancestral and derived character states and not the extant organism itself that is ancestral, primitive, branched early or derived, young, branched off last (OMLAND et al. 2008). Therefore, the loss of paramere at *U. batanta* does not question its position there are several species in the genus group without titillator (Fig. 36).

Most similar to *U. kebumen* Wells & Malicky, 1997 (Indonesia, Java), *U. mindorensis* Mey, 1995 (Philippines) and *U. taiwanensis* Hsu & Chen, 2002 (Taiwan) all with elongated gonopods and without paramere on the phallic organ, but differs from all the three species by having abbreviated frog-shaped paraproct and clearly two-partite phallic organs.

*Description* – Male (in alcohol). Forewing length 2 mm. 3 ocelli present. Antennae partially broken; scapus robust elongated curving, five times length of flagellar segment, pedicel less robust, but with almost similar length, flagellar segments short, broken at 14th; maxillary palp formula I-II-IV-III-V, first two segments extremely short, shorter than wide; postoccipital setal warts prominent, ovoid, not modified as scent organ. Tentorium complete with tentorial bridge. Metascutellum diamond shaped. Spur formula 034. Extrusible processes discernible between abdominal tergite and sternite II discernible retracted.

Male genitalia. Segment IX forming a compact complete ring with triangular anterior and posterior margin in lateral view. Segment X short, paraproct (subgenital plate) short triangular in lateral view, frog-shaped in ventral view with a pair of ventral subapical setae. Gonopods elongated. Phallic organ two-partite, like a “phallobase and aedeagus” without any paramere of titillator.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, Kalijakut River, S00°52'52.0”, E130°38'8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Sauyai (male, OPC).

*Etymology* – The first representative of this genus in Batanta Island of Indonesia, therefore named after its type locality.

Orthotrichiini Nielsen, 1948

*Orthotrichia balra* Oláh, 2012 – Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47”, E130°42'29.16”, 22.01.2013, light trap, R. Horváth (1 male, OPC).

*Orthotrichia eltera* Oláh, 2012 – Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47”, E130°42'29.16”, 22.01.2013, light trap, R. Horváth (1 male, OPC). Batanta Island, valley of Waibin river, S00°50'01.9”, E130°45'24.8”, 01.02.2018, at light, T. Kovács, R. Horváth (20 males, OPC).

*Orthotrichia foruma* Oláh, 2012 – Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1”, E130°38'59.5”, 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

***Orthotrichia fosla* Oláh sp. n. (Figs 37–39)**

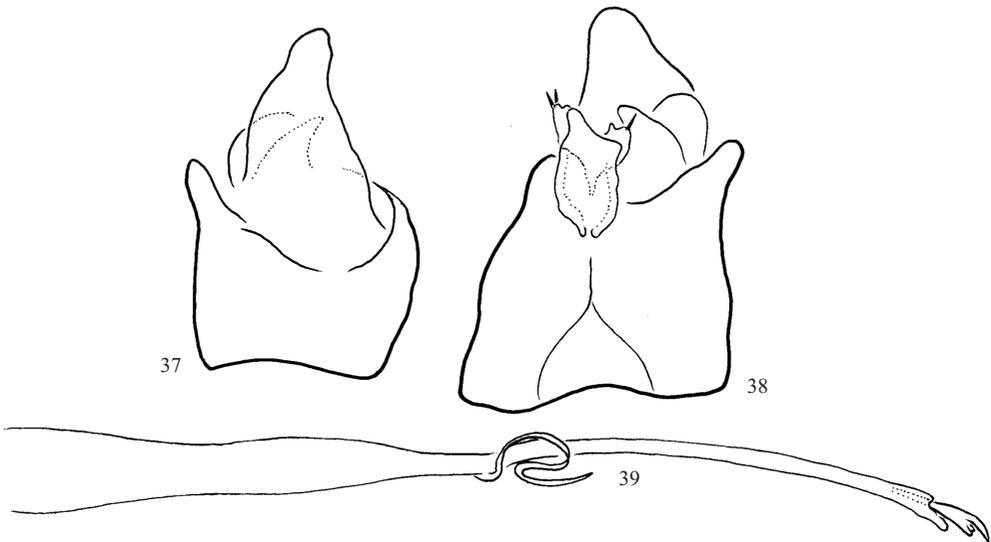
*Diagnosis* – The distinctive shape of the dorsal or ventral profile of segment IX as well as the subdivided apex of the phallic organ differentiate this new species from all the other known Papua species.

*Description* – Male (in alcohol). Forewing length 3 mm. Antennae with 34 segments, scapus double long, curving, pedicel shortest, first flagellar segments short elongating afterwards; flagellar segments double longer than wide; maxillary palp formula I-II-III-IV-V, first two segments extremely short, shorter than wide; postoccipital setal warts prominent, ovoid, not modified as scent organ. Tentorium indiscernible, only anterior arm present. Ocelli lacking. Metascutellum short rectangular. Spur formula 03? (hindlegs detached). Sternum VI with very small pointed apicomeseal process and sternum VII without any process.

Male genitalia. Segment IX asymmetric apicad, anteriorly more or less symmetric. Segment X (dorsal plate) present as an inconspicuous less-pigmented lobe with left-side turning apex. Paraproct indiscernible. Gonopods small, fused, subrectangular. The basal plate of the gonopods with asymmetric arms and with short fused anterior basal process. Phallic organ forms a long tube with broader basal half delimited by titillator having complex turning; apex subdivided.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (male, OPC).

*Etymology* – *Fosla*, from “foszló”, subdividing in Hungarian, refers to the head of the phallic organ.



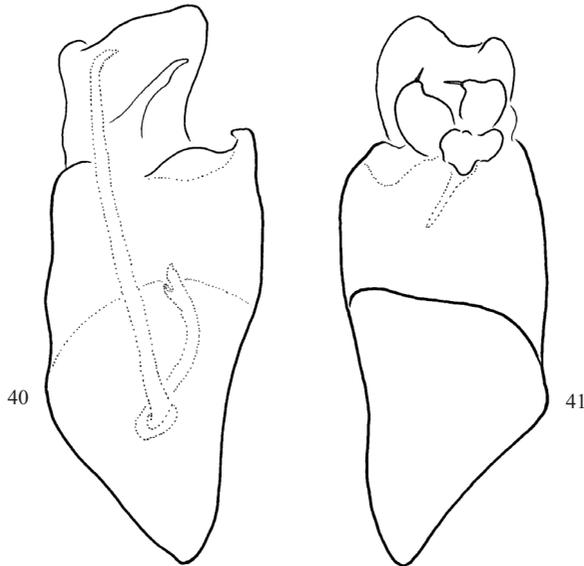
**Figs 37–39.** *Orthotrichia fosla* sp. n. Holotype: 37 = male genitalia in dorsal view; 38 = male genitalia in ventral view; 39 = phallic organ in lateral view

*Orthotrichia gorbek* Oláh, 2016 – Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47", E130°42'29.16", 22.01.2013, light trap, R. Horváth (1 male, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

***Orthotrichia holaga* Oláh sp. n. (Figs 40–41)**

*Diagnosis* – The unique shape of the dorsal or ventral profile of segment IX as well as the extremely enlarged arms of the basal plate of gonopods differentiate this new species from all the other known Papua species.

*Description* – Male (in alcohol). Forewing length 1.6 mm. Antennae broken, scapus double long, pedicel shorter than flagellar segments; flagellar segments quadratic, slightly longer than wide; maxillary palp formula I-II-III-IV-V, first two segments extremely short, shorter than wide; postoccipital setal warts prominent, ovoid, not modified as scent organ. Tentorium indiscernible, only anterior arm present. Ocelli lacking. Metascutellum short rectangular. Spur formula 034. Sternum VI with very small pointed apicomeseal process and sternum VII without any process.



**Figs 40–41.** *Orthotrichia holaga* sp. n. Holotype: 40 = male genitalia in dorsal view; 41 = male genitalia in ventral view

Male genitalia. Segment IX asymmetric, dorsum produced, double longer than ventrum. Segment X (dorsal plate) present as an inconspicuous less-pigmented lobe. Paraproct present as robust longer straight spine with curved apex and a smaller rather robust elongated sclerite with bifid apex. Gonopods small, but its exact shape is almost indiscernible. The basal plate of the gonopods extremely enlarged blister or bladder shaped pair of arms. Phallic organ forms a long tube with broader basal half delimited by long titillator having complex multiple turning; apex dilated bifid.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47", E130°42'29.16", 22.01.2013, light trap, R. Horváth (male, OPC).

*Etymology* – *Holaga*, from “hólyag”, blister in Hungarian, refers to the enlarged arms of the basal plate of gonopods.

*Orthotrichia nehega* Oláh, 2016 – Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

*Remarks.* Due to triangular ventral view of the gonopods the specimen was compared with the more rounded gonopods of the holotype. With slight alteration of the viewing angle the rounded drawn gonopods of the holotype had a dorsal tapering margin giving a triangular shape.

*Orthotrichia olelo* Oláh, 2013 – Batanta Island, valley of Kalisamsem River, S00°53'25.0", E130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

*Orthotrichia para* Oláh, 2012 – Batanta Island, Northern coast, small stream, S00°48'47.08", E130°38'18.91", 250 m from the mouth, 07.09.2011, light trap, R. Horváth, (1 male, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.02.2018, at light, T. Kovács, R. Horváth (13 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (6 males, OPC).

*Orthotrichia warmona* Oláh, 2012 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

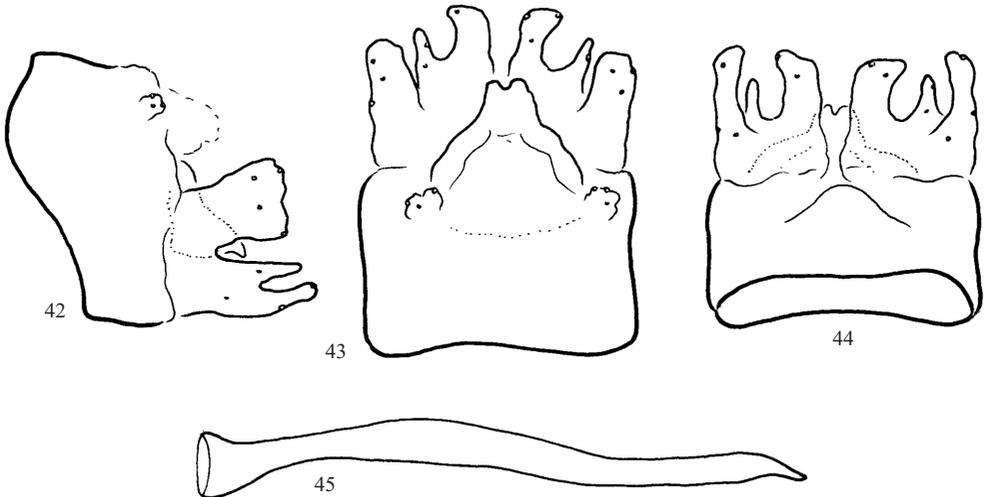
Stactobiini Botosaneanu, 1956

*Chrysotrichia vaskos* Oláh, 2016 – Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (1 male, OPC).

*Niuginitrichia harmas* Oláh sp. n. (Figs 42–45)

*Diagnosis* – Having tripartite/trilobed gonopods differs from all the known species of this tiny elegant stactobiine genus.

*Description* – Male (in alcohol). Small dark animal with forewing length of 1 mm. Ocelli lacking. Anterior tentorial arms present, very thin posterior arm and bridge indiscernible. Antennae with 19 segments, scapus and pedicel almost equal length; flagellar segments shorter, not elongate. Maxillary palp formula I-II-IV-V-III, first two segments extremely short, shorter than broad. Metascutellum short and wide. Spur formula 024.



Figs 42–45. *Niuginitrichia harmas* sp. n. Holotype: 42 = male genitalia in lateral view; 43 = male genitalia in dorsal view; 44 = male genitalia in ventral view; 45 = phallic organ in lateral view

Male genitalia. Segment IX forms a complete ring, shorter ventrad, longer dorsad without any anterolateral apodeme; dorsal margin indiscernible. Segment X (dorsal plate) membranous, almost indiscernible on the cleared genitalia. Paraproct elongated medially with basal lateral processes. Gonopods forming a tripartite lobe structure. Basal plate of the gonopods indiscernible. Phallic organ developed into a short tube with tapering ending.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.02.2018, at light, T. Kovács, R. Horváth (male, OPC).

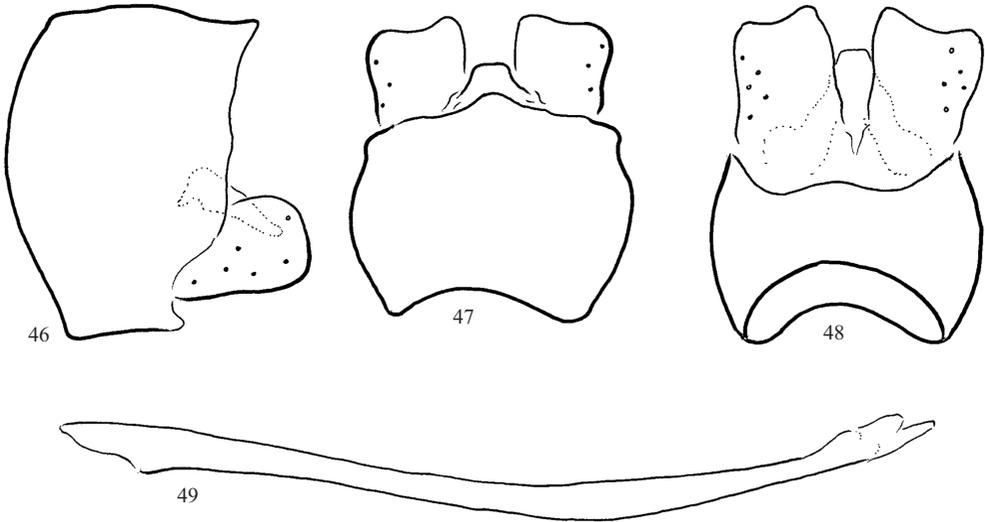
*Etymology* – *Harmas* from “hármas” tripartite in Hungarian, refers to the trilobed apex of the gonopods.

***Niuginitrichia homora* Oláh sp. n. (Figs 46–49)**

*Diagnosis* – According to the ventral shape of gonopods and the subdivided apex of the phallic organ has resemblance to *Niuginitrichia vagva* sp. n., but differs by the shape of gonopods with concave apex and by the absence of mesal process on segment IX.

*Description* – Male (in alcohol). Small dark animal with forewing length of 1.5 mm. Ocelli lacking. Anterior tentorial arms present, very thin posterior arm and bridge indiscernible. Antennae with 19 segments, scapus and pedicel almost equal length; flagellar segments shorter, not elongate. Maxillary palp formula I-II-IV-V-III, first two segments extremely short, shorter than broad. Metascutellum short and wide. Spur formula 024.

Male genitalia. Segment IX forms a complete ring, shorter ventrad, longer dorsad without any anterolateral apodeme; dorsal margin without mesal tapering process. Segment X (dorsal plate) membranous, indiscernible on the cleared genitalia. Paraproct elongated medially with basal lateral processes. Gonopods forming a pair of quadrangular lobes with concave apical margin. Basal plate of the gonopods indiscernible. Phallic organ forms a short tube with subdivided spine-like apical ending.



**Figs 46–49.** *Niuginitrichia homora* sp. n. Holotype: 46 = male genitalia in lateral view; 47 = male genitalia in dorsal view; 48 = male genitalia in ventral view; 49 = phallic organ in lateral view

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (male, OPC).

*Etymology* – *Homora* from “homorú” concave in Hungarian, refers to the slightly concave apex of the gonopods.

*Niuginitrichia huzva* Oláh, 2013 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 males, OPC).

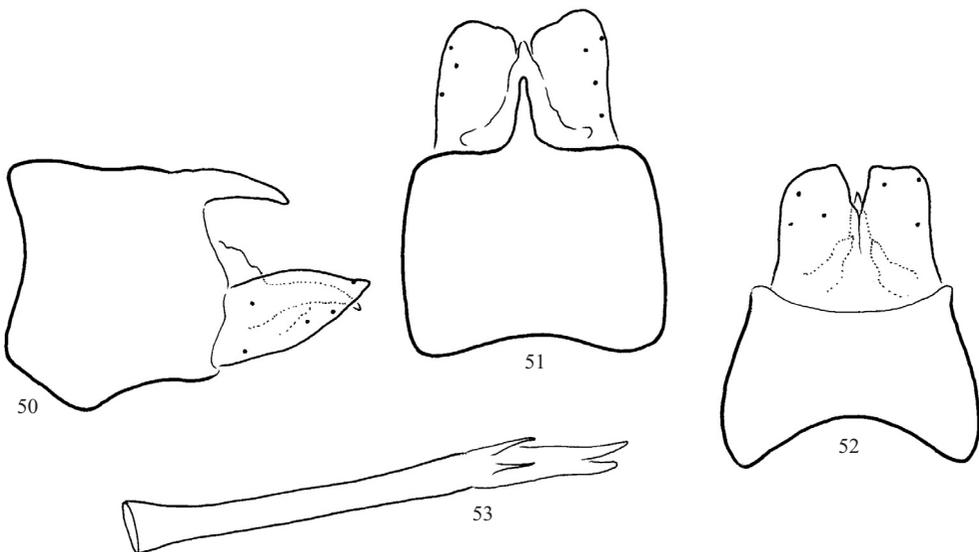
*Niuginitrichia kesken* Oláh, 2016 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

### *Niuginitrichia vagva* Oláh sp. n. (Figs 50–53)

*Diagnosis* – Similar to *Niuginitrichia kover* Oláh, 2016 described from Batanta Island, but differs by the shape of gonopods with truncate apex and by the subdivided ending of the abbreviated phallic organ.

*Description* – Male (in alcohol). Small dark animal with forewing length of 1.5 mm. Ocelli lacking. Anterior tentorial arms present, very thin posterior arm and bridge indiscernible. Antennae with 19 segments, scapus and pedicel almost equal length; flagellar segments shorter, not elongate. Maxillary palp formula I-II-IV-V-III, first two segments extremely short, shorter than broad. Metascutellum short and wide. Spur formula 024.

Male genitalia. Segment IX forms a complete ring, shorter ventrad, longer dorsad without any anterolateral apodeme; dorsal margin produced into a mesal tapering process. Segment X (dorsal plate) membranous, almost indiscernible on the cleared genitalia. Paraproct elongated medially with basal lateral processes. Gonopods forming a pair of truncate lobes. Basal plate



**Figs 50–53.** *Niuginitrichia vagva* sp. n. Holotype: 50 = male genitalia in lateral view; 51 = male genitalia in dorsal view; 52 = male genitalia in ventral view; 53 = phallic organ in lateral view

of the gonopods indiscernible. Phallic organ forms a short tube with subdivided spine-like apical ending.

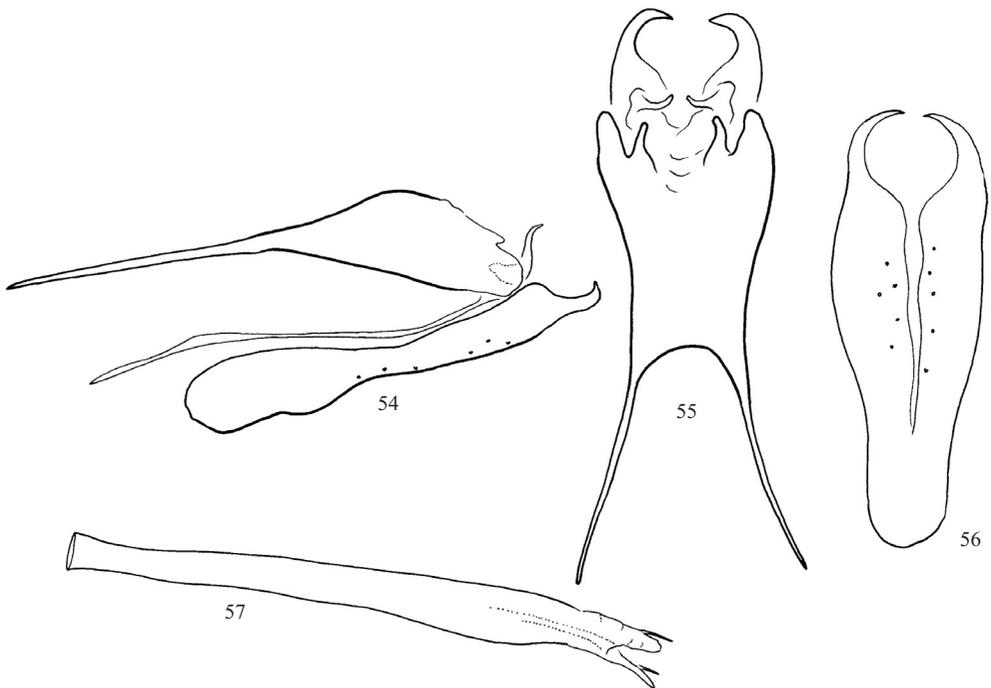
*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (male, OPC).

*Etymology* – *Vagva* from “vágva” cut, truncate in Hungarian, refers to the truncated apex of the gonopods.

***Pseudoxyethira egba* Oláh sp. n. (Figs 54–57)**

*Diagnosis* – Most *Pseudoxyethira* species has the fused elongated gonopods with more or less blunt apical apices. A few species from Malaysia (*P. gerigi*, *P. kait*, *P. pucat*) have mesad directed pointed gonopod endings. Similarly we have described *P. vekonul* Oláh, 2016 with such gonopods from Batanta Island, but the mesad turning is more pronounced compared to species from Malaysia. *P. egba* sp. n. is the second species with strongly mesad turning pointed gonopod endings from Batanta island. *P. egba* differs from *P. vekonul* by having more elongated segment IX, the elongated V-form apical formation of segment IX on *P. vekonul* reduced to a pair of finger-like process

*Description* – Male (in alcohol). Head with 3 ocelli. Postoccipital setal warts pronounced, elongated. Tentorium with anterior and posterior arms forming thin filaments, tentorial bridge (corporotentorium) lacking. Antennae 16 segmented; scape and pedicel equally long; individual



**Figs 54–57.** *Pseudoxyethira egba* sp. n. Holotype: 54 = male genitalia in lateral view; 55 = male genitalia in dorsal view; 56 = gonopods in ventral view; 57 = phallic organ in lateral view

flagellomeres short, cylindrical, about half as long as pedicel. Maxillary palp formula I-II-IV-III-V, first two segments much shorter than wide. Mesoscutellum with transverse suture. Metascutellum narrow, almost as wide as metascutum. Tibial spurs 024. Forewing length 2 mm.

Male genitalia. Sternum of segment VII and segment VIII accommodate the elongated gonopod complex. Segment IX elongated subtriangular in lateral view; anterolateral, thread-like apodeme long; a pair of finger-like process present apicodorsad. Segment X (dorsal plate) membranous. Paraprocts forming a complex sclerotized structures around the phallic organ with a pair of upward directed strongly sclerotized process, S-shaped in lateral view. Gonopod thin spine-like apicolateral arms with mesad turning apices; fused anterior basal part short rounded. Phallic organ forming a straight tube with divided bilobed apex; both lobes superimposed by a single seta.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (male, OPC).

*Etymology* – *Egba* from “égbe” (“ég” sky as well as burn, like the sun on the sky) directed into the sky in Hungarian, refers to the upward directed upper processes of paraproct unique in the genus.

*Pseudoxyethira kurta* (Oláh) 2016 – Batanta Island, valley of Kalijakut River, S00°52'49.1", E130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, OPC).

*Pseudoxyethira vekonul* (Oláh) 2016 – Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (2 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (1 male, OPC).

*Stactobia zarva* Oláh, 2012 – Batanta Island, Northern coast, Warmon stream, above second waterfall, S00°50'29.47", E130°42'29.16", 22.01.2013, light trap, R. Horváth (1 male, OPC).

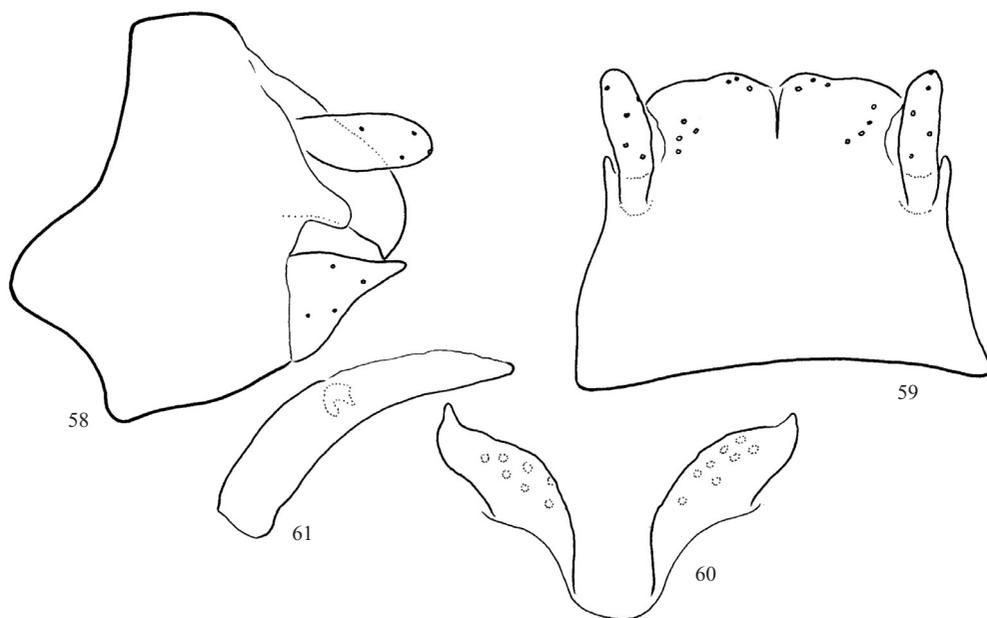
## CALAMOCERATIDAE Ulmer, 1905

### *Anisocentropus arfakensis* Oláh sp. n. (Figs 58–61)

*Diagnosis* – According to the genital structure this species has resemblance to *Anisocentropus batantensis* sp. n., but clearly differs by having distinctly darker forewing membrane and larger body size; *A. arfakensis* sp. n. has brownish forewing without any pattern. *A. batantensis* has yellowish forewing without any pattern. Compared to *A. batantensis* there are divergences also in the genital structure: (1) apex of lateral flank of segment IX is rounded, not bilobed, but downward directed; (2) cerci as long as segment X, not shorter; (3) gonopods are less belly, more arched mesad in ventral view.

*Description* – Male (in alcohol). A large sized species with forewing length of 14 mm. Forewing membrane brown without any pattern.

*Male genitalia*. The basic construct of the male genitalia in the Australasian species is rather similar. *A. arfakensis* sp. n. also has tergite and sternite fused into a complete ring, apicolateral margin produced posteriorly into a rounded lobe superimposed by the lateral flank developed and produced posteriorly between cerci and gonopods. Tergite X and segment X fused extending posterad in a roof-like manner above phallus; lateroapical angles directed downward and terminated into a pointed hook. Cerci low. Gonopod triangular in lateral view with very pronounced mesal belly and with somewhat tapering apex in ventral view. Phallic organ tube-like, curved dorsoventrally.



**Figs 58–61.** *Anisocentropus arfakensis* sp. n. Holotype: 58 = male genitalia in lateral view; 59 = male genitalia in dorsal view; 60 = gonopods in ventral view; 61 = phallic organ in lateral view

*Type material* – Holotype: **Indonesia**, West Papua, Birdshead Peninsula, Arfak Mountains, guesthouse, 1576 m, S01°05'52.50", E133°54'33.06", light trap at resort, 17.05.2014, R. Horváth (male, OPC). Paratype: same place as the holotype, 16-20.05.2014, R. Horváth (1 male, OPC).

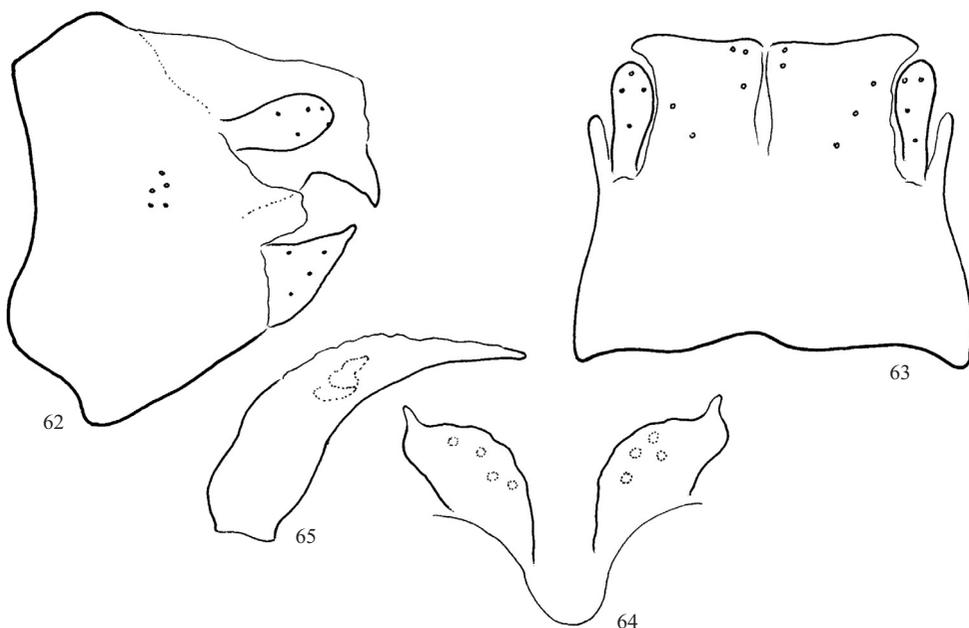
*Etymology* – Named after the locus typicus.

#### ***Anisocentropus batantensis* Oláh sp. n. (Figs 62–65)**

*Diagnosis* – According to the genital structure this species has resemblance to *Anisocentropus arfakensis* sp. n., but clearly differs by having distinctly paler forewing membrane and smaller body size; *A. batantensis* sp. n. has yellowish forewing without any pattern. *A. arfakensis* has brown forewing without any pattern. Compared to *A. arfakensis* there are divergences also in the genital structure: (1) lateral flank of segment IX is slightly bilobed and not downward directed; (2) cerci short, not as long as segment X; (3) gonopods are more belly mesad in ventral view.

*Description* – Male (in alcohol). A medium sized pale coloured species with forewing length of only 7 mm. Forewing membrane is yellowish without any pattern.

*Male genitalia.* The basic construct of the male genitalia in the Australasian species is rather similar. *A. batantensis* sp. n. also has tergite and sternite fused into a complete ring, apicolateral margin produced posteriorly into a rounded lobe superimposed by the lateral flank developed and produced posteriorly between cerci and gonopods. Tergite X and segment X fused extending posterad in a roof-like manner above phallus; lateroapical angles directed downward and terminated into a pointed hook. Cerci low. Gonopod triangular in lateral view with very pronounced mesal belly and with somewhat tapering apex in ventral view. Phallic organ tube-like, curved dorsoventrally.



**Figs 62–65.** *Anisocentropus batantensis* sp. n. Holotype: 62 = male genitalia in lateral view; 63 = male genitalia in dorsal view; 64 = gonopods in ventral view; 65 = phallic organ in lateral view

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Weras Stream, S00°49'51.2", E130°38'00.0", 300 m, 08.02.2015, at light, T. Kovács, P. Juhász (male, OPC).

*Etymology* – Named after the locus typicus.

*Anisocentropus dilucidus* McLachlan, 1863 – Batanta Island, right side stream of Forum River, S00°52'22.7", E130°27'45.1", 19.02.2016, T. Kovács, R. Horváth, P. Juhász (1 female, OPC).

*Anisocentropus horvathi* Oláh, 2012 – Fig. 74, 77. Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 male, 1 female, OPC). Batanta Island, valley of Waibin river, S00°50'01.9", E130°45'24.8", 01.03.2018, at light, T. Kovács, R. Horváth (2 males, OPC). Batanta Island, valley of Warai stream, S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (12 males, OPC); 26.02.2018, at light, T. Kovács, R. Horváth, P. Juhász (7 males, 6 females, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (6 males, 3 females, OPC); waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (4 males, 9 females, OPC).

*Anisocentropus illustris* McLachlan, 1863 – Fig. 75. – OLÁH (2013), OLÁH & KOVÁCS (2015).

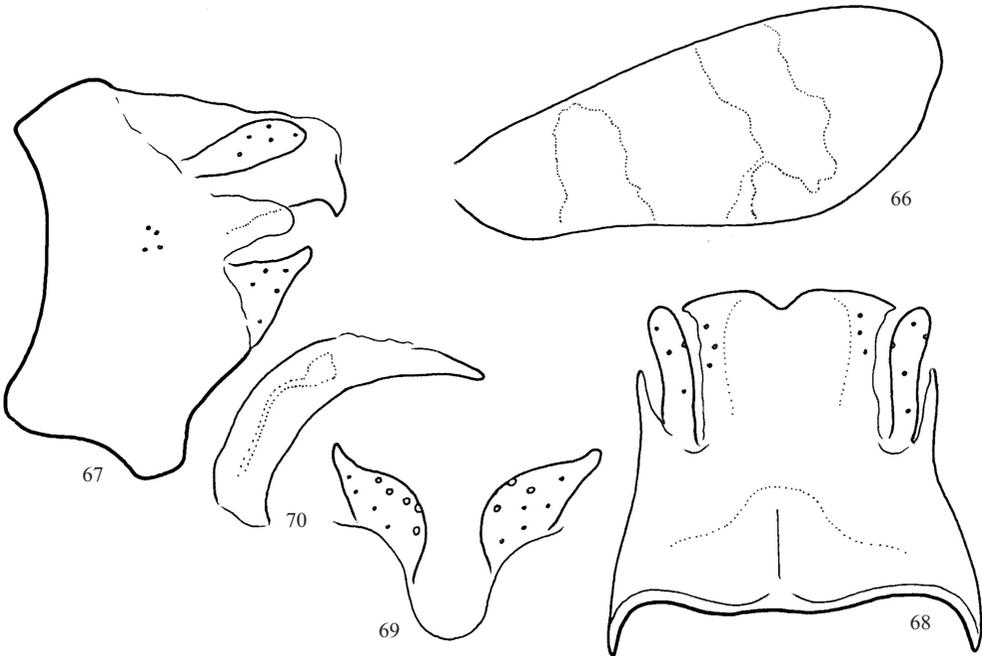
*Anisocentropus immunis* McLachlan, 1863 – **Indonesia**, Papua, Kecamatan Nipsan, Walmak, 1710 m, cultivated area, S04°07', E139°38', 31.01.-09.02.2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN). **Papua New Guinea**, E. Highlands Dist., vic. Kainantu, 10.1972, Donnelly (1 male, NMNH). Madang, Brahman Mission, 200 m, 11-15.10.1992, V. O. Becker Col. (3 males, NMNH; 1 male OPC). Morobe Province, Wau, 1000 m, 17-30.09.1992, V. O. Becker Col. (2 males, NMNH). Morobe Province, Wau, Wau Ecol. Inst., 1200 m, 11-23.07.1983, malaise trap, S. E. Miller, P. M. Miller (1 female, NMNH); 23-31.08.1983, malaise trap, S. E. Miller, P. M. Miller (1 male, 2 female, NMNH). Morobe Province, Wau, Wau Ecol. Inst., 1200 m, secondary montane forest, 12-24.07.1983, S. E. Miller, P. M. Miller (1 male, NMNH).

*Remarks.* *Anisocentropus immunis* McLachlan, 1863 was described without any drawings from a single specimen with unknown sex collected in New Guinea, but lacking any more locality details. The abdomen was lost and therefore NEBOISS (1986) for his atlas of Trichoptera of the

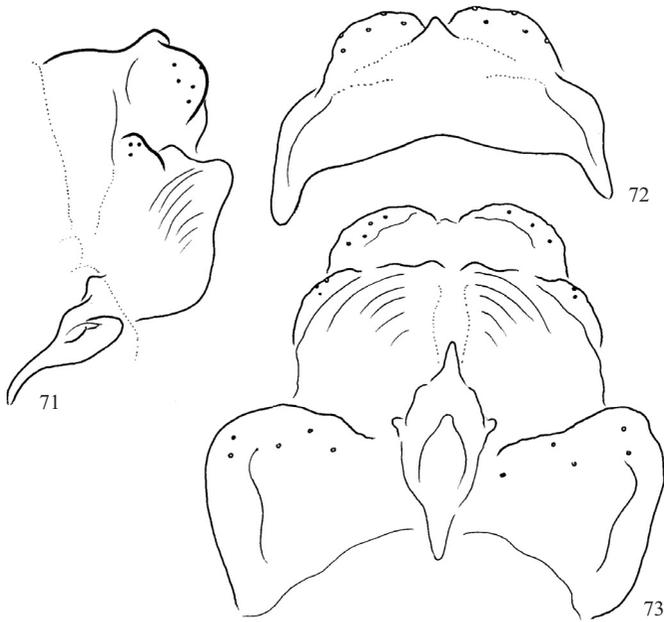
SW Pacific Australian Region selected a likely *A. immunis* male specimen without any pattern on the forewing from New Guinea, unfortunately without locality details and drew the lateral view of the genitalia. BOTOSANEANU (2008) published drawings of *Anisocentropus* sp. from a specimen collected in Indonesia, Papua, Walmak, that was determined as *A. immunis* based on specimen from the same locality (OLÁH 2015). We examined ten male specimens from Indonesia Papua and from Papua New Guinea. All specimens have uniform forewing membrane without any pattern as well as similar genitalic structures as drawn by NEBOISS (1986), by BOTOSANEANU (2008) and by OLÁH & JOHANSON (2010): (1) lateral flank of segment IX broad in lateral view; (2) cerci broad in lateral view and (3) gonopod slender in ventral view compared to related species.

***Anisocentropus susannae* Oláh et Kovács sp. n. (Figs 66–70, 76, 77)**

**Diagnosis** – According to the genital structure this species has resemblance to *Anisocentropus immunis* McLachlan, 1863, but clearly differs by having distinct forewing pattern; *A. immunis* has uniform forewing without any pattern. Two teneral pharate paratypes of *A. susannae* are not fully pigmented; their forewings superficially look uniform, but the forewing membrane has already visible pale contour of the two banded pattern. All the examined specimens of *A. immunis* McLachlan either from Indonesian Papua (western region of New Guinea) and from Papua New Guinea are fully pigmented and their forewing is without any pattern. Compared to *A. immunis* there are divergences also in the genital structure: (1) lateral flank of segment IX is low (narrow), not high (broad); (2) cerci low, not broad; (3) gonopods are more belly mesad in ventral view.



**Figs 66–70.** *Anisocentropus susannae* sp. n. Holotype male: 66 = forewing pattern; 67 = male genitalia in lateral view; 68 = male genitalia in dorsal view; 69 = gonopods in ventral view; 70 = phallic organ in lateral view



**Figs 71–73.** *Anisocentropus susannae* sp. n. Paratype female: 71 = female genitalia in lateral view; 72 = female genitalia in dorsal view; 73 = female genitalia in ventral view

*Description* – Male and female (in alcohol). A medium sized beautifully coloured species with forewing length of 11 mm. Forewing membrane is brown with two transversal light bands in alcohol; the background colour is blackish blue on living animals with yellowish bands.

*Male genitalia.* The basic structure of the male genitalia in the Australasian species is rather similar. *A. susannae* sp. n. also has tergite and sternite fused into a complete ring, apicolateral margin produced posteriorly into a rounded lobe superimposed by the lateral flank developed and produced posteriorly between cerci and gonopods. Tergite X and segment X fused extending posterad in a roof-like manner above phallus; lateroapical angles directed downward and terminated into a pointed hook. Cerci low. Gonopod triangular in lateral view with very pronounced mesal belly and with somewhat tapering apex in ventral view. Phallic organ tube-like, curved dorsoventrally.

*Female genitalia.* Apical margin of segment IX slightly produced posteriorly middle with a small triangle; sternite IX flattened ventrally with broad longitudinal mesal suture, the surface is obliquely striated. Segment X fused to segment IX producing setose rounded dorsal lobes as visible both in dorsal and lateral view. Vaginal sclerite complex narrowing both anteriorly and posteriorly with small lobes midlaterad.

*Type material* – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, S00°50'51.0", E130°35'14.0", 11.02.2015, at light, T. Kovács, & P. Juhász (male, OPC). Paratypes: West Papua, Batanta Island, valley of Kalijakut River, S00°52'52.0", E130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Sauyai (1 female, OPC); S00°53'12.88", E130°38'16.40", 138 m, 23.01.2014, at light, T. Kovács, R. Horváth, P. Juhász (1 female, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light,



**Figs 74–77.** 74 = sub-coloured teneral pharate adult of *Anisocentropus horvathi*;  
75 = fully coloured adult of *A. illustris*; 76 = fully coloured adult of *A. susannae* sp. n.;  
77 = Collecting site of *A. horvathi* and *A. susannae* in the valley of Warai stream

T. Kovács, R. Horváth, P. Juhász, K. Sauyai (2 males, OPC). Batanta Island, valley of Tanjung Lampu, S00°53'43.0", E130°36'38.5", 21.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 female, OPC). Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", Fig. 77, 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (2 males, 1 female, OPC). Batanta Island, valley of Warmon stream, upper waterfall, S00°50'23.25", E130°42'35.18", 150 m, 20.01.2014, at light, T. Kovács, & P. Juhász (1 male, Fig. 76, OPC). Batanta Island, valley of Welebed stream, S00°53'21.9", E130°39'06.5", 19.02.2018, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 female, OPC); waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (3 males, OPC).

*Etymology* – This beautiful animal of the Batanta Island is dedicated to Zsuzsanna (Susanna) Benkó, wife of Tibor Kovács, who has supported insistently her husband's collecting trips both on the Balkan Peninsula and on the Batanta Island.

*Triplectides dombos* Oláh, 2014 – *Triplectides sugaras* Oláh, 2014 (OLÁH 2014: 38–39), described from two females (holotype and paratype), is a new synonym of *Triplectides dombos* Oláh, 2014 due to incorrect female association. The described and figured female paratype of *Triplectides dombos* Oláh, 2014 (OLÁH 2014: 31–33) represents an undescribed species.

*Remarks.* Based on new collectings it is obvious that the female paratype of *Triplectides dombos* was erroneously associated with the male holotype. The association was based on male and female specimens collected from the same habitat, although at different dates. However, *T. dombos* males were collected several times and from several streams together with females of *T. sugaras* (which was described without male). *T. sugaras* is the female of *T. dombos* and the described *T. dombos* female paratype represents an undescribed species. *T. dombos* and *T. sugaras* were described in the same paper (OLÁH 2014). The precedence between simultaneously published names, spells and acts is treated in Article 24 of ICZN (INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE 2000). Since both taxa are described in the same rank, the precedence cannot be fixed automatically. Thus, we as the “First Reviser” fix here the precedence. Due to the positions of the two species in the original paper (OLÁH 2014: pages 31–33 for *T. dombos* and pages 38–39 for *T. sugaras*) and to our present knowledge (the male of *T. sugaras* was not described) we synonymise *T. sugaras*, syn. n. with *T. dombos*.

Batanta Island, valley of Forum River, S00°52'26.5", E130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (2 females, OPC). Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (2 males, OPC); S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (6 males, 2 females, OPC). Batanta Island, valley of Ron River, S00°49'36.5", E130°49'26.3", 19.02.2017, singled, T. Kovács, R. Horváth, P. Juhász (1 female, OPC). Batanta Island, valley of Warai stream, S00°51'11.6", E130°35'20.0", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (5 males, OPC); S00°50'59.3", E130°35'18.0", 24.02.2017, at light, T. Kovács, R. Horváth, P. Juhász (1 female, OPC). Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (6 males, 2 females, OPC).

*Triplectides* sp. – Batanta Island, valley of Welebed stream, waterfall, S00°53'07.1", E130°38'59.5", 28.02.2017, at light, T. Kovács, R. Horváth, P. Juhász, K. Sauyai, R. Sauyai (1 female, OPC).

*Remarks.* A small sized female with genital structure different from all the known females, representing probably a new species. Due to the possibility of erroneous male and females association we wait until more material will be collected.

*Triplectides* sp. mixed – Batanta Island, valley of Kaliselatan River, S00°53'42.0", E130°35'49.1", 27.02.2017, at light, T. Kovács, R. Horváth, P. Juhász & K. Sauyai (3 females, OPC).

*Remarks.* Three females with mixed characters of the erroneously associated *T. dombos* and the probable *T. dombos* described as *T. sugaras*.

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