FOLIA HISTORICO-NATURALIA MUSEI MATRAENSIS
2016 40: 95–135

On the Trichoptera of Batanta Island (Indonesia, West Papua, Raja Ampat Archipelago) V.

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ABSTRACT: This paper, the fifth in the Batanta Island series on Trichoptera, presents new species records and describes new species in the families of Philopotamidae: *Chimarra kampa* sp. n., *C. kapcos* sp. n., *C. nurga* sp. n., *C. rokona* sp. n., *C. sukula* sp. n., Dipseudopsidae: *Hyalopsyche batanta* sp. n., *H. maganka* sp. n., and Hydroptilidae: *Orthotrichia feltuna* sp. n., *O. foruma* sp. n., *O. gorbek* sp. n., *O. hanulva* sp. n., *O. kalisa* sp. n., *O. kerekded* sp. n., *O. nehega* sp. n., *O. sivka* sp. n. *O. tabala* sp. n., *Chrysotrichia vagot* sp. n., *C. vaskos* sp., *Niuginitrichia bogos* sp. n., *N. haromsog* sp. n., *N. ives* sp. n., *N. kesken* sp. n., *N. kover* sp. n., *N. negsog* sp. n., *Scelotrichia batanta* sp. n., *S. kurta* sp. n., *S. vekonul* sp. n. We have applied the fine structure analysis of the non-neutral, adaptive primary reproductive traits to differenciate among closely related incipient sibling species: *Hyalopsyche haplotes* Neboiss, 1989 stat. restit., *Hydroptila darda* sp. n., *H. dumoga* sp. n., *H. explicata* Wells, 1984 stat. restit., *H. obscura* Wells, 1979.

Introduction

This fifth taxonomic paper on the Trichoptera of Batanta Island indicates an increasing level of concentrated effort to explore and understand the magnitude and structure of the caddisfly biodiversity on a single tropical island in the Papua Faunal Region. We believe that biodiversity research needs a rethink, a paradigm shift of the taxonomy revival! We have already briefly discussed, in European biodiversity context, the processes leading to the present collapse of taxonomy induced by the "Modern Synthesis" (OLÁH et al. 2015). However to realise the reality again, that is to experience the lack of any sign of focused research on the biodiversity of tropical islands is especially painful. In the slogan saturated biodiversity industry occasional and accidental collecting activities seem to dominate the taxonomic scenario in scientific research both in general and especially on tropical islands. Previous collecting activity is also sporadic and very scattered in this faunal region (KOVÁCS et al. 2015).

Alfred Russel Wallace, a British naturalist was the first to collect caddisflies in the year of 1858 on the Birdshead Peninsule including Waigeo and Salawati islands. Predated Charles Darwin he has formulated first the theory of evolution by natural selection. Sámuel Fenichel was the first Hungarian collector in New Guinea during the years of 1891–1893. He has collected over 25 thousands insects. Lajos Bíró, a Hungarian entomologist, was the most effective insect collector in New Guinea, collecting over 200 thousands insects for the Hungarian Natural History Museum between the years of 1896–1902. The first specialised caddisfly collector, Miss Lucy Evelyn Cheesman, a British veterinarian collected 51 new caddisfly species on Waigeo Island and in the Cyclops and Snow Mountains of the main island (KIMMINS 1962).

In recent years we have devoted special concentrated effort to collect caddisflies in various aquatic habitats on the Batanta Island of New Guinea. Between the years of 2010 and 2016 we have organised 9 field collecting expeditions financed by Sakertour Eastern Europe, Birdwatching

and Hide Photography Company and by the Nature Discovery Fund (Kisar-Hungary). Field collections were carried out by specialized team effort of Róbert Horváth, Tibor Kovács, and Péter Juhász with local help. R. Horváth initiated this Batanta Island biodiversity project, ensured general plus local logistics and T. Kovács elaborated as well as implemented specialized professional field collecting team activities to explore all the available island habitats. One additional expedition to the Arfak and Snow Mountains, West Papua was organised, financed and realised by Róbert Horváth from the Papua Paradise EcoResort (Birie Island, Raja Ampat, Papua, Indonesia) and Nature Discovery Fund (Kisar-Hungary).

The material for the present paper was collected in Batanta Island during several field expeditions (Oláh 2016). Field collections have been realised by UV light-traps, or on white sheets illuminated either by Honda generator or by battery powered lamps. The material including all holotypes and paratypes is preserved in 70-80% ethanol and is deposited in the collection of the author (Oláh Private Collection) under protection of the Hungarian Natural History Museum, Budapest, if not stated otherwise: Museum for Natural History of the Humbolt University of Berlin, Germany (ZMB), Swedish Museum of Natural History, Stockholm, Sweden (NHRS).

Taxonomical part

Philopotamidae Stephens, 1829

Chimarra agasa Oláh, 2013 – Batanta Island, Kalijakut River, 0°52’52.0”, 130°38’8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (4 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53’25.0”, 130°33’32.6”, 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52’22.7”, 130°27’45.1”, 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Forum River, 00°52’26.5”, 130°27’45.4”, 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, valley of Waridor River, 00°52’09.66”, 130°32’11.54”, 03.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (16 ♂, OPC). Batanta Island, valley of Waridor River, 00°51’51”, 130°33’41”, 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (4 ♂, OPC). Batanta Island, valley of Waridor River, 0°51’50.1”, 130°33’47.4”, 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Chimarra bobita Oláh, 2012 – Batanta Island, Kalijakut River, 0°52’52.0”, 130°38’8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC). Batanta Island, valley of Kalijakut River, 00°52’49.1”, 130°38’04.9”, 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52’22.7”, 130°27’45.1”, 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (8 ♂, OPC). Batanta Island, valley of Forum River, 00°52’26.5”, 130°27’45.4”, 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (4 ♂, OPC). Batanta Island, valley of Weras Stream, 00°49’51.2”, 130°38’00.0”, 300 m, 08.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC).

Chimarra bogos Oláh, 2013 – Batanta Island, Kalijakut River, 0°52’52.0”, 130°38’8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC). Batanta Island, valley of Kalijakut River, 00°52’49.1”, 130°38’04.9”, 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53’25.0”, 130°33’32.6”, 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (14 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53’27.54”, 130°33’31.62”, 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (2 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53’42.0”, 130°35’49.1”, 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (21 ♂, OPC). Paratypes: Batanta Island, valley of Warai stream, 00°51’11.6”, 130°35’20.0”, 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Waridor River, 00°51’51”, 130°33’41”, 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Chimarra elvala Oláh, 2013 – Batanta Island, right side stream of Forum River, 0°52’22.7”, 130°27’45.1”, 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Chimarra erzek Oláh, 2013 – Batanta Island, valley of Kalijakut River, 00°52’49.1”, 130°38’04.9”, 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53’25.0”, 130°33’32.6”, 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).

Batanta Island, valley of Kaliselatan River, 00°53’42.0”, 130°35’49.1”, 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).
Chimarra fehera Oláh, 2012 – Batanta Island, right side stream of Forum River, 0°52’22.7”, 130°27’45.1”, 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC).
Chimarra felkora Oláh, 2012 – Batanta Island, right side stream of Forum River, 0°52’22.7”, 130°27’45.1”, 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).
Chimarra fogas Oláh, 2013 – Batanta Island, right side stream of Forum River, 0°52’22.7”, 130°27’45.1”, 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°50’51.0”, 130°35’14.0”, 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC).
Chimarra holda Oláh, 2012 – Batanta Island, Kalijakut River, 0°52’52.0”, 130°38’8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (7 ♂, 1 ♂ and 1 ♀ in copula, OPC). Batanta Island, valley of Kalijakut River, 00°52’49.1”, 130°38’04.9”, 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (31 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53’25.0”, 130°33’32.6”, 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (7 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53’27.54”, 130°33’31.62”, 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (6 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53’42.0”, 130°35’49.1”, 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (11 ♂, OPC). Batanta Island, valley of Forum River, 00°52’26.5”, 130°27’45.4”, 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’11.6”, 130°35’20.0”, 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (6 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’16.6”, 130°35’24.3”, 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’23.8”, 130°35’23.6”, 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (5 ♂, OPC). Batanta Island, valley of Warai stream, 00°50’51.0”, 130°35’14.0”, 11.02.2015, at light, T. Kovács, P. Juhász (4 ♂, OPC). Batanta Island, valley of Weras Stream, 00°49’51.2”, 130°38’00.0”, 300 m, 08.02.2015, at light, T. Kovács, P. Juhász (8 ♂, OPC). Batanta Island, valley of Waridor River, 00°52’09.66”, 130°32’11.54”, 03.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (136 ♂, OPC). Batanta Island, valley of Waridor River, 00°51’51”, 130°33’41”, 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (22 ♂, OPC). Batanta Island, valley of Waridor River, 0°51’50.1”, 130°33’47.4”, 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (3 ♂, OPC).
Chimarra horgoka Oláh, 2012 – Batanta Island, valley of Warai stream, 00°51’11.6”, 130°35’20.0”, 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (5 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’16.6”, 130°35’24.3”, 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (10 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’23.8”, 130°35’23.6”, 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (28 ♂, OPC). Batanta Island, valley of Waridor River, 0°51’50.1”, 130°33’47.4”, 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Chimarra kampa sp. n. (Figs 1–4)

Diagnosis – This new species has a rather special combination of characters, closest to *Chimarra fogas* Oláh, 2013, but differs by having gonopods falcated lunuliform, slightly sigmoid; paraproct short and blunt; gonopod apex pointed.

Description – Male (in alcohol). Pale brown animal with darker wings. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 4 mm; on forewing discoidal cell as long as median cell, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly sinuate, Rs sinuous with thickening before the discoidal cell, whose veins are also thickened at the base; hyaline window pattern present as lack of pigmentation on cross-veins r-m, m, m-cu, on the arculus and on the basal stem of M; on hindwing 2A diagnostic looping to join 1A icomplete; 3A present.

Male genitalia. Tergite and sternite VIII distinct. Segment IX synsclerotized, its dorsum as long as sternum; anterior margin concave, posterior margin triangular convex; ventroapical keel lost. Segment X membranous, indistinct. Cerci small. Paraproctal lateral vertical plate short, and blunt in dorsal view; sensillae styloconica no discernible due to the heavily sclerotized black background of the paraproctal process. Gonopods broad based, slightly

S-shaped in lateral view with slender downward and mesad turning apical half. Phallic organ with a ventral hook on the phallic apex and two black spines in the endotheca.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Paratypes: Batanta Island, valley of Warai stream, 00°51'11.6", 130°35'20.0", 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (4 ♂, OPC).

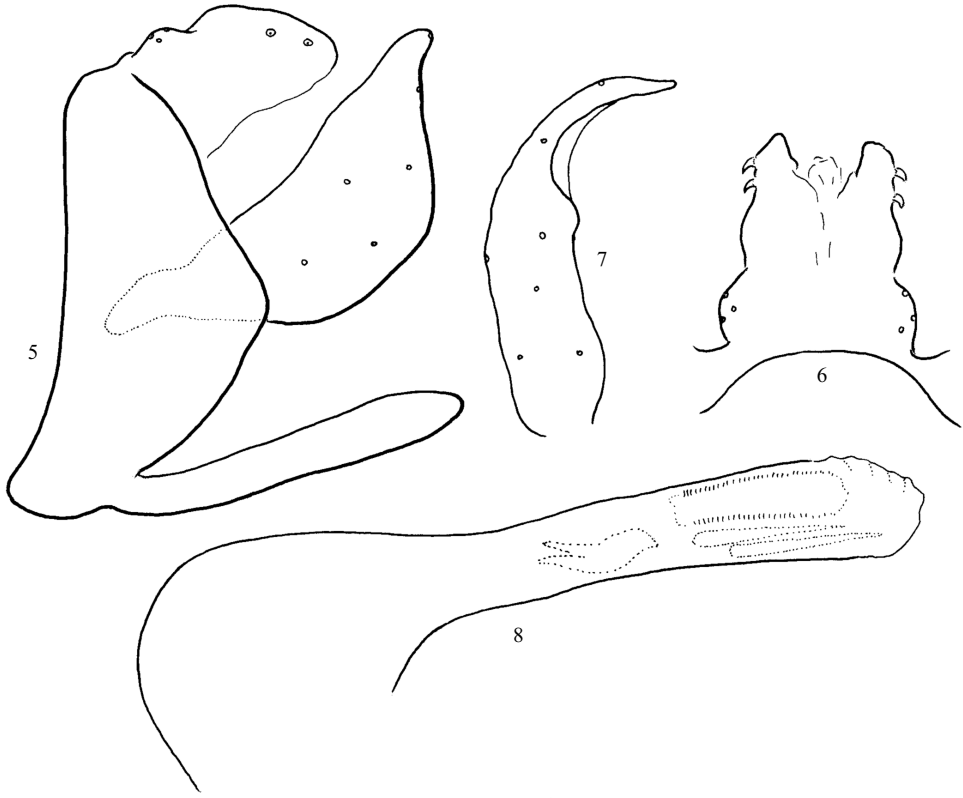
Etymology – kampa from "kampó" hook in Hungarian refers to the downward and anterad turning ventrum of the phallic head.

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

Chimarra kanala Oláh, 2012 – Batanta Island, valley of Warai stream, 00°51'11.6", 130°35'20.0", 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (21 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'16.6", 130°35'24.3", 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'23.8", 130°35'23.6", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (11 ♂, OPC).

Chimarra kapcos sp. n. (Figs 5–8)

Diagnosis – This new species with long drumming ventral process on the ventrum of segment IX from the Warai stream of the northern coast is diverged from *Chimarra sukula* sp. n. of the Kalijakut River in the southern cost. They form a species cluster together with *C. guentheri* Mey, 2006, described from Papua New Guinea (West Sepik) and *C. eltuna* Oláh, 2015, described



Figs 5–8. *Chimarra kapcos* sp. n. holotype male: 5 = genitalia in left lateral view; 6 = genitalia in dorsal view; 7 = left gonopod in ventral view; 8 = phallic organ in left lateral view

from Indonesia (Papua), Arfak Mts and probably with many more unknown siblings. As sister species most close to *C. sukula* sp. n. but differs by having drumming process not constricted midway, paraproct and gonopods with modified shape and the sensillae of paraproct differently shaped and positioned.

Description – Male (in alcohol). Pale brown animal with darker wings. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 7 mm; on forewing discoidal cell half as long as the median cell, but discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly sinuate, Rs sinuous with thickening before the discoidal cell, whose veins are also thickened at the base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on cross-veins 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 produced in a small triangular ventral process. Segment IX synsclerotized, its dorsum as long as sternum; anterior margin straight vertical, posterior margin rounded convex; ventroapical keel modified into a very long process. Segment X membranous, indistinct. Cerci sfused to the basal region of the paraprocts. Paraproctal lateral vertical plate short, and blunt; two sensillae styloconica distinct, modified

into a pair of small pointed anterad directed spine-like hook or clasper. Gonopods broad based with slender downward and mesad turning apical half. Phallic organ with two black spines and a dark walled endothecal pocket.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, 00°51'11.6", 130°35'20.0", 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Etymology – kapcos from "kapcsos" clasp or small locket in Hungarian refers to the pair of modified sensillae on both paraproct forming small anterad turning pointed spine-like miniaturized claspers certainly having function in early reproductive isolation.

Chimarra kerka Oláh, 2013 – Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (23 ♂, 1 ♂ and 1 ♀ in copula, OPC). Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (43 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'25.0", 130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (11 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (2 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (41 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (59 ♂, 3 copula, OPC). Batanta Island, valley of of Forum River, waterfall, 00°52'35.5", 130°27'40.1", 19.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (32 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'23.8", 130°35'23.6", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Batanta Island, valley of Waridor River, 00°51'51", 130°33'41", 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Waridor River, 0°51'50.1", 130°33'47.4", 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (4 ♂, OPC).

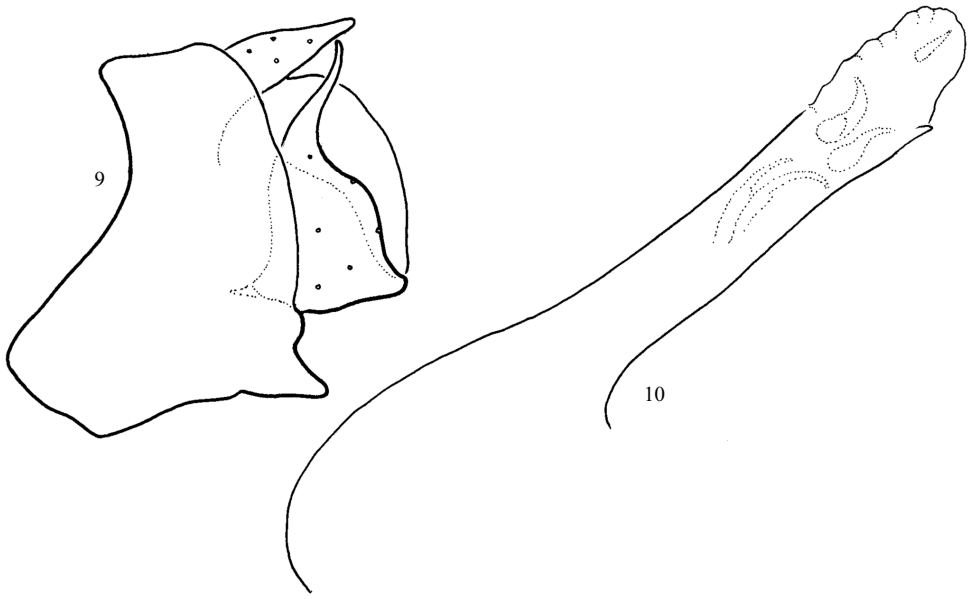
Chimarra mrsale Oláh, 2013 – Batanta Island, valley of Warai stream, 00°51'11.6", 130°35'20.0", 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC).

Chimarra nurga sp. n. (Figs 9–10)

Diagnosis – A sister species of *Chimarra vegsem* Oláh, 2013, but lives together in the right side stream of Forum River on the northwestern region of Batanta island. This sympatry is probably secondary as a result of migration after reproductive isolation established. Ventroapical keel present, not absent. The sclerotized structures in the endotheca have been modified: both the endothecal sclerites and the pair of rounded plate significantly elongated. The new species differs also by divergences in periphallic organs: (1) cerci elongated, pointed, (2) gonopods with S-shaped apical margin, not with concave as well as the dorsal digitate process very slender.

Description – Male (in alcohol). Small brown animal, abdomen white below. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 4 mm; discoidal, median and thyridial cells on forewing having similar length, but discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly sinuate, Rs sinuous with thickening before the discoidal cell, whose veins are also thickened at the base; 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 forming a closed cell; 3A reduced.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII without triangular ventral process. Segment IX synsclerotized, its dorsum short, ventrum long; ventroapical keel present. Segment X membranous, with indistinct shape. Cerci elongated pointed triangular in lateral



Figs 9–10. *Chimarra nurga* sp. n. holotype male:
9 = genitalia in left lateral view; 10 = phallic organ in left lateral view

view. Paraproctal lateral vertical plate with donward directed ends; with 2 sensillae styloconica, one middle, other apicad. Gonopods with S-shaped apical margin and slender dorsal digitate process in lateral view. Rounded endothecal plates elongated.

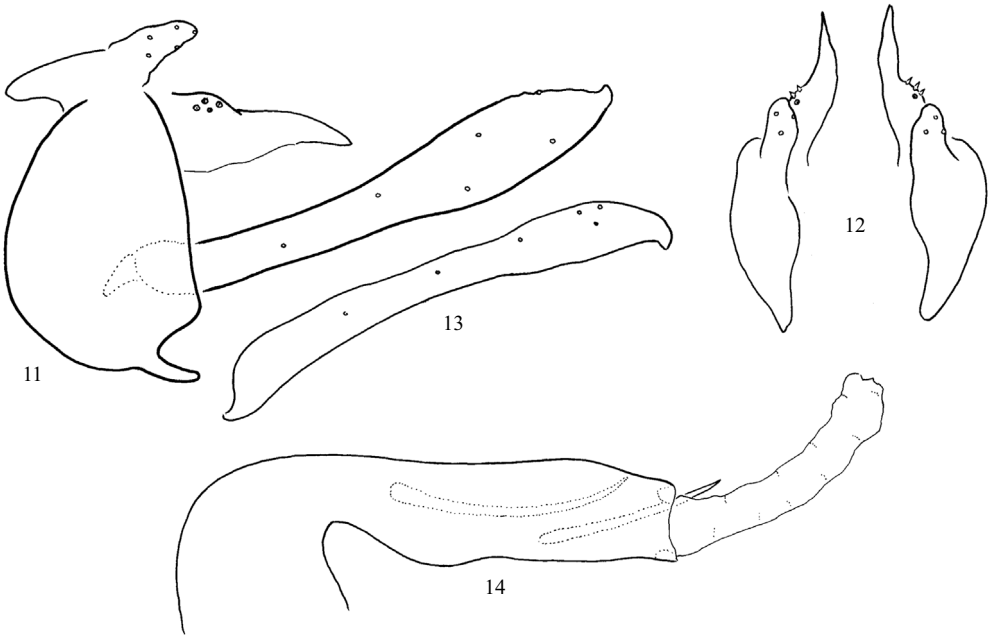
Type material – Holotype: **Indonesia**, West Papua, Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Paratype: Batanta Island, right side stream of Forum River, 0°52'09.6", 130°27'42.3", 13.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'11.6", 130°35'20.0", 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (8 ♂, OPC).

Etymology – nurga from "nyurga" elongated in Hungarian, refers to the elongated cerci and elongated endothecal sclerites.

***Chimarra rokona* sp. n. (Figs 11–14)**

Diagnosis – This new species with extremely elongated gonopods is a close relative of *Chimarra cyclopica* Kimmins, 1962, described from the Cyclops Mts of Papua (Indonesia), but differs by having abbreviated cerci and elongated gonopods. Paraproctal plates low, not high and the sensilae moved basad.

Description – Male (in alcohol). Pale brown animal with darker wings. Maxillary palp formula: I-IV-III-V-II. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 7 mm; on forewing discoidal cell longer than median cell, and discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly sinuate, Rs sinuous with thickening before the discoidal cell, whose veins are also thickened at the base; hyaline window pattern (reduced pigmentation) less developed present



Figs 11–14. *Chimarra rokona* sp. n. holotype male: 11 = genitalia in left lateral view; 12 = genitalia in dorsal view; 13 = left gonopod in ventral view; 14 = phallic organ in left lateral view

as lack of pigmentation on cross-veins 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 mostly fused. Segment IX synsclerotized with visible suture separating low tergite and high sternite; tergite elongated anterad; sternite more developed, its dorsum as long as ventrum; its anterior margin convex, posterior margin straight; ventroapical keel elongated digitiform, upward curving. Segment X membranous, indistinct. Cerci fused to tergite IX forming a setose lobe. Paraproctal lateral plate pointed; 4 sensillae styloconica discernible on basal humps. Gonopods elongated. Phallic organ with 2 megaspines.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, 00°51'16.6", 130°35'24.3", 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Paratype: same as holotype (1 ♂, OPC).

Etymology – rokona from "rokona" its relative in Hungarian refers to the close relation to *C. cyclopica*, a very specialised species in the genus having rather unique modifications on the periphallic organs.

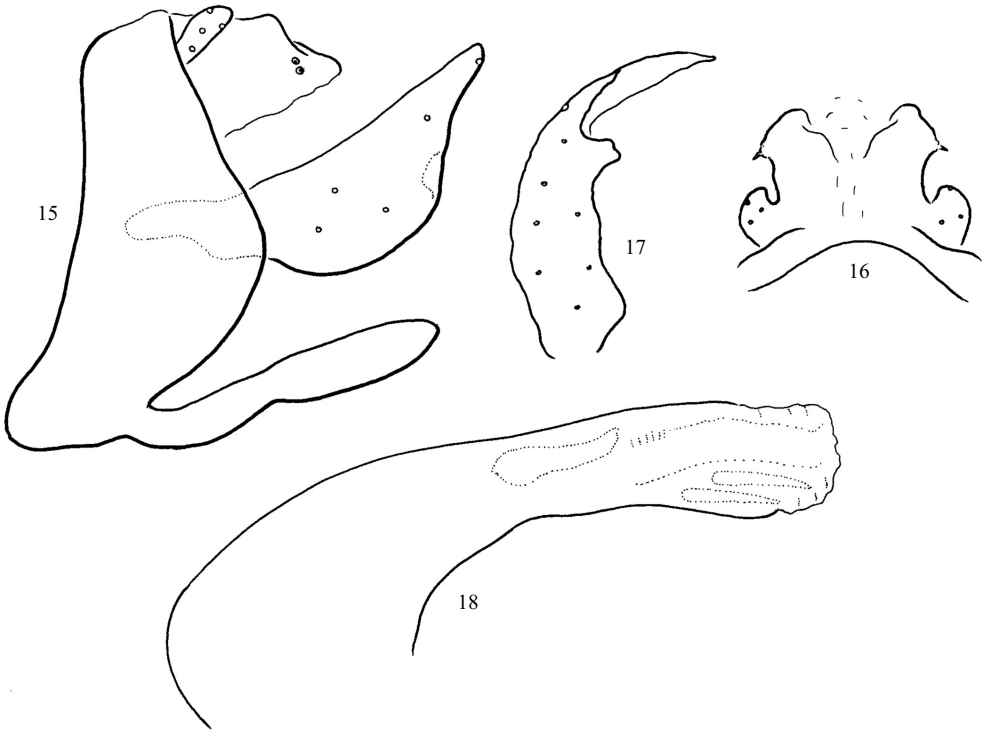
Chimarra sarkos Oláh, 2013 – Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (2 ♂, OPC). Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (2 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'25.0", 130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (3 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'09.6", 130°27'42.3", 13.02.2015, UV light-trap, T. Kovács, R. Horváth,

P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'11.6", 130°35'20.0", 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (7 ♂, OPC). Batanta Island, valley of Weras Stream, 00°49'51.2", 130°38'00.0", 300 m, 08.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Batanta Island, valley of Waridor River, 00°51'51", 130°33'41", 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, valley of Waridor River, 0°51'50.1", 130°33'47.4", 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

***Chimarra sukula* sp. n. (Figs 15–18)**

Diagnosis – This remarkable new species with a very long drumming ventral process on the ventrum of segment IX forms a species cluster together with *Chimarra guentheri* Mey, 2006, described from Papua New Guinea (West Sepik) and *C. eltuna* Oláh, 2015, described from Indonesia (Papua), Arfak Mts and probably with many more unknown siblings. Most close to *C. guentheri*, but differs by having paraproct and gonopods with modified shape as well as there are only two endothecal spines, not three and shorter; there is also an endothecal pocket with dark wall. The very long drumming process is constricted midway, this distinguishes clearly from the two relatives.

Description – Male (in alcohol). Pale brown animal with darker wings. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 7 mm; on forewing discoidal cell half as long as the median cell, but discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly sinuate, Rs sinuous with thickening before the discoidal cell, whose veins are also



Figs 15–18. *Chimarra sukula* sp. n. holotype male: 15 = genitalia in left lateral view; 16 = genitalia in dorsal view; 17 = left gonopod in ventral view; 18 = phallic organ in left lateral view

thickened at the base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on cross-veins 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 produced in a triangular ventral process. Segment IX synsclerotized, its dorsum as long as sternum; anterior margin straight vertical, posterior margin rounded convex; ventroapical keel modified into a very long process with constricted midway in lateral view. Segment X membranous, indistinct. Cerci small. Paraproctal lateral vertical plate short, and blunt; two sensillae styloconica distinct. Gonopods broad based with slender downward and mesad turning apical half. Phallic organ with two black spines and a dark walled endothecal pocket.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC). Paratypes: same as holotype (1 ♂, OPC). Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).

Etymology – sukula from "szűkülő" narrowing in Hungarian refers to the constricted middle of the long process in lateral view on the ventrum of segment IX.

Chimarra tompa Oláh, 2013 – Batanta Island, valley of Kalisamsem River, 00°53'25.0", 130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'11.6", 130°35'20.0", 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (3 ♂, OPC).

Chimarra tulok Oláh, 2013 – Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (6 ♂, OPC). Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (3 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'25.0", 130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (14 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (12 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (4 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'09.6", 130°27'42.3", 13.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'16.6", 130°35'24.3", 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Weras Stream, 00°49'51.2", 130°38'00.0", 300 m, 08.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC).

Chimarra ujjka Oláh, 2012 – Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Chimarra vegsem Oláh, 2013 – Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (5 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (2 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'16.6", 130°35'24.3", 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, valley of Warai stream, 00°51'23.8", 130°35'23.6", 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Chimarra vekon Oláh, 2013 – Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (5 ♂, OPC). Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (38 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'25.0", 130°33'32.6", 15.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (16 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (32 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0",

130°35’49.1”, 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (31 ♂, OPC). Batanta Island, valley of Forum River, 00°52’26.5”, 130°27’45.4”, 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’11.6”, 130°35’20.0”, 09.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (21 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’16.6”, 130°35’24.3”, 09.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, valley of Warai stream, 00°51’23.8”, 130°35’23.6”, 10.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (18 ♂, OPC). Batanta Island, valley of Warai stream, 00°50’51.0”, 130°35’14.0”, 11.02.2015, at light, T. Kovács, P. Juhász (11 ♂, OPC). Batanta Island, valley of Waridor River, 00°51’51”, 130°33’41”, 04.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Chimarra waridora Oláh, 2013 – Batanta Island, valley of Forum River, 00°52’26.5”, 130°27’45.4”, 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, valley of Waridor River, 00°52’09.66”, 130°32’11.54”, 03.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Dipseudopsidae Ulmer, 1904

Hyalopsyche Ulmer, 1904

The unique genus of *Hyalopsyche* was described as polycentropodid caddisfly with strongly reduced mouthparts. The five segmented maxillary palp is highly reduced in length, that is every segment short; usually adpressed upward to the face; fifth segment entire, not annulated, not flagellate. Labial palp completely lost. Dark eyes are large, more enlarged at males. Forewing with thyridial cell separated from the base of the median cell. In female the abdominal segment IX-X-XI developed into an ovipositor.

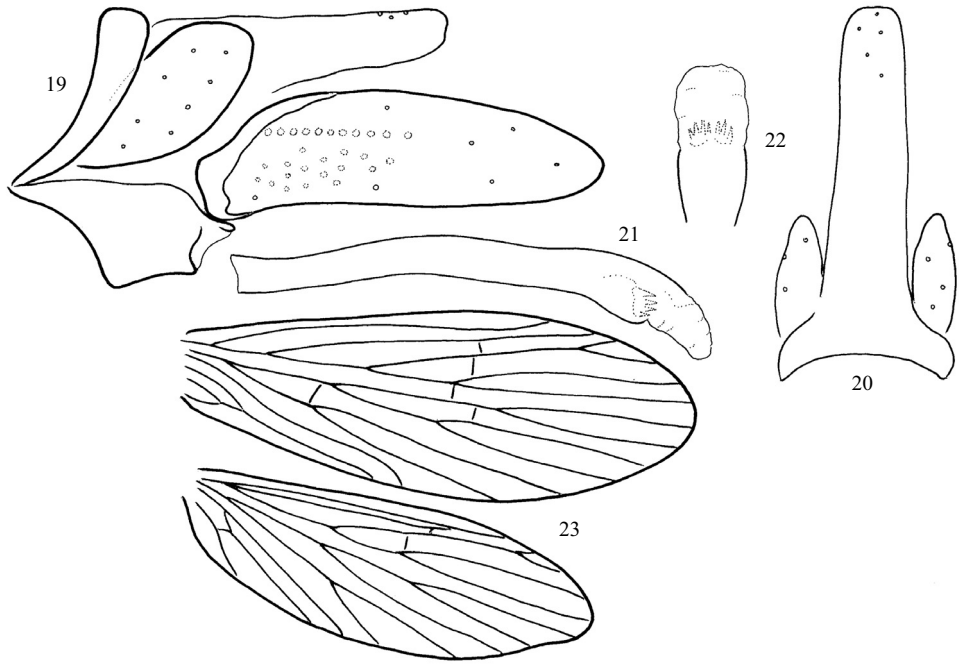
This ancient genus distributed in Afrotropical, West Palearctic, Oriental and Australasian major biogeographic regions has rather stable, monotonous genitalia as regards the periphallic structures of segment X, cerci and diverging mostly in setal (spine) microstructure pattern on the phallic head and on the mesal surface of the gonopods. These structures directly involved in sensory and stimulatory contacts during the copulatory processes are qualified recently (Oláh et al. 2015) as primary barrier traits in the realisation of reproductive isolation. Females are similar to males in general features, including reduced maxillary palpi and warts on the mesothorax (Wells & Cartwright 1993). Venation is also identical at both sexes in all the species with known males and females. However both forewing and hindwing venation is rather variable among the different species. Type species *H. palpata*, has medium long discoidal cell, closed median cell and apical forks 1,2,3,4,5 on forewing and apical forks 2,3,5 on hindwing. *H. rivalis*, *H. sachalinica*, *H. orissa*, *H. batanta* sp. n. have medium long discoidal cell, closed median cell and apical forks 1,2,3,4,5 on forewing and apical forks 1,2,3,5 on hindwing. *H. trunga* has long discoidal cell, closed median cell and apical forks 1,2,3,4,5 on forewing and apical forks only 2,5 on hindwing. *H. winkleri* and *H haplotes* have short discoidal cell, closed median cell and apical forks only 2,3,4,5 on forewing, and apical forks only 2,5 on hindwing. *H. disjuncta*, has medium long discoidal cell, open median cell and apical forks 1,2,3,4,5 on forewing and apical forks 1,2,3,5 on hindwing. *H. maganka* sp. n., has medium long discoidal cell, open median cell and apical forks 1,2,3,4,5 on forewing and apical forks 2,3,5 on hindwing. This highly stochastic irregularity in specific wing venation pattern accompanied with almost permanent genital shape evolved in neutral, non-selective speciation processes, inspired already Martynov (1914) to synomyse *Hyalopsychodes* Betten, 1909 and also us to synonymise *Hyalopsychella* Ulmer, 1930 (Oláh & Johanson 2010) with *Hyalopsyche*.

Hyalopsyche species are extremely rare and difficult to collect. We have operated light-traps in the marsh habitats of *H. orissa* in India during 5 years and collected altogether only

2 males and 5 females. We were lucky to collect 6 males and 4 females of *H. sachalinica* in daylight during a short effort of one hour in Vietnam from the bare riparian zone of Red River in Hanoi by picking hiding specimens from soil crevices (Oláh & Johanson 2010).

Hyalopsyche haplotes Neboiss, 1989 **stat. restit.**
The accumulated knowledge on the increased taxonomic value of the primary reproductive traits detected in fine structure analysis inspired us to re-examine and compare again the original drawings of *H. winkleri* and *H. haplotes*, and here we reconsider our position about synonymy (Oláh & Johanson 2010). Here we accept Neboiss's original position (1989) that the differences in the microstructure of setal pattern on gonopod mesal surface and the apical shape of the phallic organ are sufficiently distinct, and we reinstate the specific status of *Hyalopsyche haplotes* Neboiss, 1989 stat. restit. Unfortunately, no further hope remained to examine any type material of *H. winkleri*. The three syntype males from Borneo (Ulmer 1930) had been burnt during World War II as well as the designated neotype from Sumatra (Ulmer 1951) is also lost (Neboiss 1989). Here we have re-examined the male specimen from Borneo, but it was clearly *H. haplotes* and not *H. winkleri* (Oláh & Johanson 2010) according to the fine structure of the primary reproductive traits.

Hyalopsyche batanta **sp. n. (Figs 19–23)**
Diagnosis – Most similar to *Hyalopsyche disjuncta* Neboiss, 1980, described from Australia, but differs by forewing venation having median cell closed, not open; sternum VIII elongated, not short; gonopod elongated, not short; dorsomesal line of capitate long setae on gonopod



Figs 19–23. *Hyalopsyche batanta* sp. n. holotype male: 19 = genitalia in left lateral view; 20 = genitalia in dorsal view; 21 = phallic organ in left lateral view; 22 = apex of phallic organ in dorsal view; 23 = male wing venation

long and clearly horizontal, not oblique and sloping posterad; ventromesal patch of peg-like short setae on gonopod basad located, not middle; lobes on the head of phallic organ less developed, endothecal spine cluster without sclerotized plate.

Description – Male (in alcohol). Medium sized species with forewing length of 7 mm. Body and body appendages brownish yellow. Head with dark eyes wider than dorsum of interocular space; maxillary palp short, adpressed upwards to the face, formula III-II-I-IV-V; labial palp absent. Wing venation has medium long discoidal cell, closed median cell and apical forks 1,2,3,4,5 on forewing and apical forks 1,2,3,5 on hindwing.

Male genitalia. Tergit and sternite VIII well separated, directed to an anteromesal pivotal hinging. Segment X elongated parallel-sided with rounded apex at holotype, more triangular apex at paratype. Cerci broad foliform in lateral view and narrow elongated in dorsal view. Gonopod elongated, with deep depression laterobasad demarcated basomarginal rim with longer dorsal and shorter ventral extensions, mesal surface of gonopod with horizontal subdorsal ridge accompanied by a horizontal line of long setae with specialised capitate head; mesoventral patch of peg-like seate located on the basal half of the gonopod. Differs from all the known species by the shape of gonopods, mesal setal pattern and the setal structure of the phallic head.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warmon stream, between the lower and upper waterfall, 37–150 m a.s.l., 00º50'04.50", 130º42'54.01"-00°50'23.25", 130°42'35.18", 21.01.2014, singled by sweep netting, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Paratype: same as holotype (1 ♂, OPC).

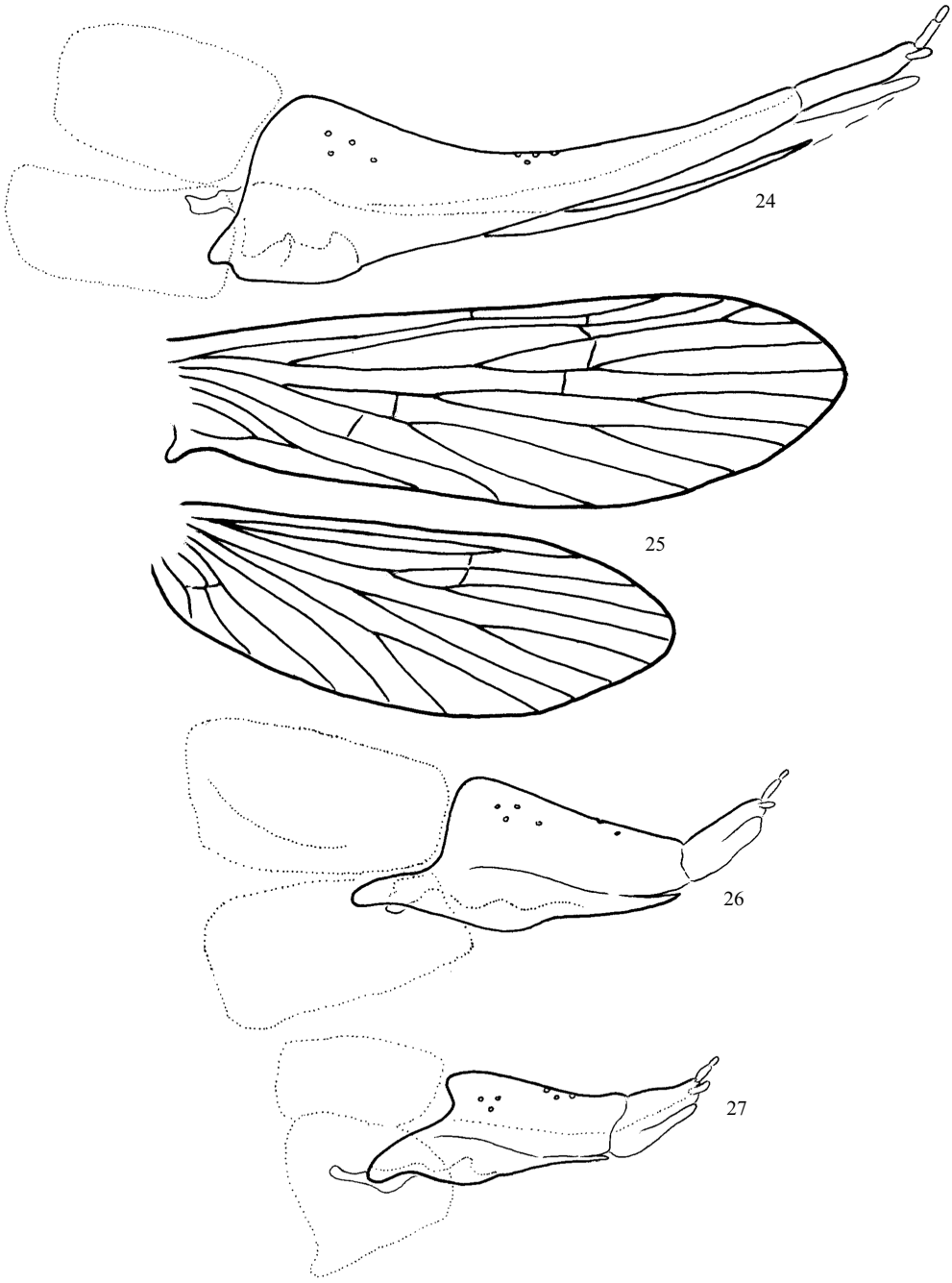
Etymology – One rarity species of this ancient genus from our Batanta Island of Indonesia, therefore named after its type locality.

***Hyalopsyche maganka* sp. n. (Figs 24–25)**

Diagnosis – Both the holotype and paratype females of this new species have been collected in the Warridor River in different year. First we have associated the two females from the Warridor River with the two males of the *Hyalopsyche batanta* sp. n. collected in the Warmon Stream. However there is no sexual dimorphism detected in the wing venation of *Hyalopsyche* genus. All of the species with known male and female the wing venation is identical. *H. maganka* sp. n. has different forewing and hindwing venation compared to *H. batanta* sp. n. The median cell is open on the forewing, not closed; fork 1 is absent on hindwing, present at *H. batanta* sp. n. *H. maganka* sp. n. is most close to female of *H. disjuncta* described from Australia, but the lobe pattern on segment X is clearly distinct.

Association of *Hyalopsyche* males and females is uncertain. The type species *H. palpata* Ulmer, 1904 and *H. rivalis* Betten, 1909 have been described from females and associated later with males collected from different regions far from the locus typicus. Male and female association of *H. disjuncta* is based on specimens collected from the same habitat (Wells & Cartwright 1993). Here we present the female drawings of *H. sachalinica* Martynov, 1910 (Fig. 26) and *H. orissa* Oláh & Johanson, 2010 (Fig. 27) associated with the males by collecting in the same habitats.

Description – Female (in alcohol). Medium sized species with forewing length of 8 mm. Female exhibit some brachyptery at least forewings end at about the ovipositor of the rather voluminous abdomen. Discoidal cell closed on both forewing and hindwing; on forewing discoidal cell as long as thyridial cell, median cell open, 1,2,3,4,5 apical forks present; on hindwing only 3 and 5 apical cell present, 3 apical cell lost.



Figs 24–27. *Hyalopsyche maganka* sp. n. holotype female: 24 = genitalia in left lateral view; 25= female wing venation. 26 = *Hyalopsyche sachalinica* Martynov, 1910 female genitalis in left lateral view; 27 = *Hyalopsyche orissa* Oláh & Johanson, 2010 female genitalia in left lateral view

Female genitalia. Genitalia forms an elongate, slender, non-retractile ovipositor, mostly by the elongation of segment IX. Tergite and sternite VIII separated; external gonopod of segment VIII (or vulvar scale) very thin, spine-like, elongated and tapered process reaching to the tip of segment IX (or to the fused segment IX+X according to Schmid); this long process fits and closes the elongated ventral groove with anovaginal opening; however on paratype the groove and the modified gonopod embedded in some flexible soft tissue; segment X (or segment XI of Schmid) with a pair of apical remarkably subdivided, two-segmented cerci (a condition present in *Agapetus*) accompanied by a pair of apical short rod-like tubercles; an additional pair of transparent elongated process originate at about the articulation between segment IX and X; this pair of pale process somehow also embedded in some tissue matrix. Vaginal sclerites are not distinct.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, Northern cost, Warridor River, under great clearing, S0°84751", E130°51968", 06.02.2012, light-trap, R. Horváth, (1 ♀, OPC). Paratype: Batanta Island, Northern cost, Warridor River, at mouth of small tributary, S0°85582", E130°52075", 18.01.2013, light-trap, R. Horváth (1 ♀, OPC)

Etymology – maganka, from diminutive of "magányos", "magánka", lonely in Hungarian, refers to the female holotype and paratype without male.

HYDROPTILIDAE Stephens, 1836

Hydroptilini Stephens, 1836

Hellyethira sarina Oláh, 2012 – Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (2 ♂, OPC).

Hydroptila obscura new species complex

Based on a single male and six females, *Hydroptila obscura* was described by WELLS (1979) from Australia (Queensland). A similar species *H. explicata* again represented by only a single male has been described by WELLS (1984) from Papua New Guinea (Morobe Province, Kokoda). Later *H. obscura* was recorded (WELLS 1990) from Sulawesi with slight differences compared to *H. obscura* from Queensland and to *H. explicata* from Papua New Guinea. WELLS (1990) considered all these forms as variants of one morpho-species and *H. explicata* was synonymised with *H. obscura* and the definition of the species was revised. The redefined species of *H. obscura* was recollected in two provinces (Morobe and Central) of Papua New Guinea (WELLS 1991) as well as collected in several locations in East Malaysia (Sabah) (WELLS & HUISMAN 1992) and recorded from Philippines (WELLS & MEY 2002). Recently we have collected numerous male and female specimens from Indonesia (Papua, Batanta Island) sufficient enough for surveying trait stability in order to examine at least at one sibling species the variability range of the putatively speciation trait, that is the head of the intromittent organ in population level.

Applying our speciation trait approach with fine structure analysis (OLÁH et al. 2015) and re-examining our material from Australia (Queensland) and Papua New Guinea we have

recorded consistent and stable differences between specimens from Australia, Papua New Guinea, Philippines and the Sulawesi drawings. The apex of phallic organ proved to be greatly diverged between populations from Australia, New Guinea, Sulawesi and Philippines, presumably in sexual selection processes establishing reproductive barrier in isolation of early speciation processes. The divergence seems rapid, stable and subtle. Subtle is only at stake in observation limits of our human level. However what is subtle for us certainly have giant effect in reproductive processes on microcaddisfly level. The tip of the elongated phallic organ diverged into various shape formations of strong and heavily sclerotized spine-like microstructures at the very opening of ejaculatory duct. Based on this speciation trait in the *Hydroptila obscura* new species complex and on the available materials here we have distinguished four incipient sibling species. The Philippines species *H. darda* sp. n. has spear-shaped phallic head; Sulawesi species *H. dumoga* sp. n. has phallic head of notched triangular apex; New Guinea species *H. explicata* Wells, 1984 stat. restit. has phallic head of twisted apical spine-like and hook-shaped pointed process and Australian nominate species *H. obscura* Wells, 1979 has barbed spear, gaff-shaped configuration on the apical region of the phallic organ. We presume that specimens from Malaysia listed under the name of redefined species of *H. obscura* also represent new independent incipient sibling species of the *Hydroptila obscura* new species complex waiting to examine and describe.

Diagnosis – Hydroptila obscura new species complex is characterized by gonopods distally dilated with dorsoapical constriction and having paired short stout setae on a mid-ventral tubercle. Segment X and paraproct membranous, badly discernible in cleared genitalia, broad based almost as long as gonopods and tapering apicad. There are slight differences in the basal and apical formation of these periphallic organs, but their diagnostic value is low due to bad visibility as well as to membrane less stability.

***Hydroptila darda* sp. n. (Figs 42–45)**

Undescribed species. WELLS 1984: 264. An undescribed species from Philippines sharing the unusual character states of distally dilated inferior appendages with paired short stout setae in a midventral tubercle, and sharply tapered subgenital and dorsal plates has been recognised.

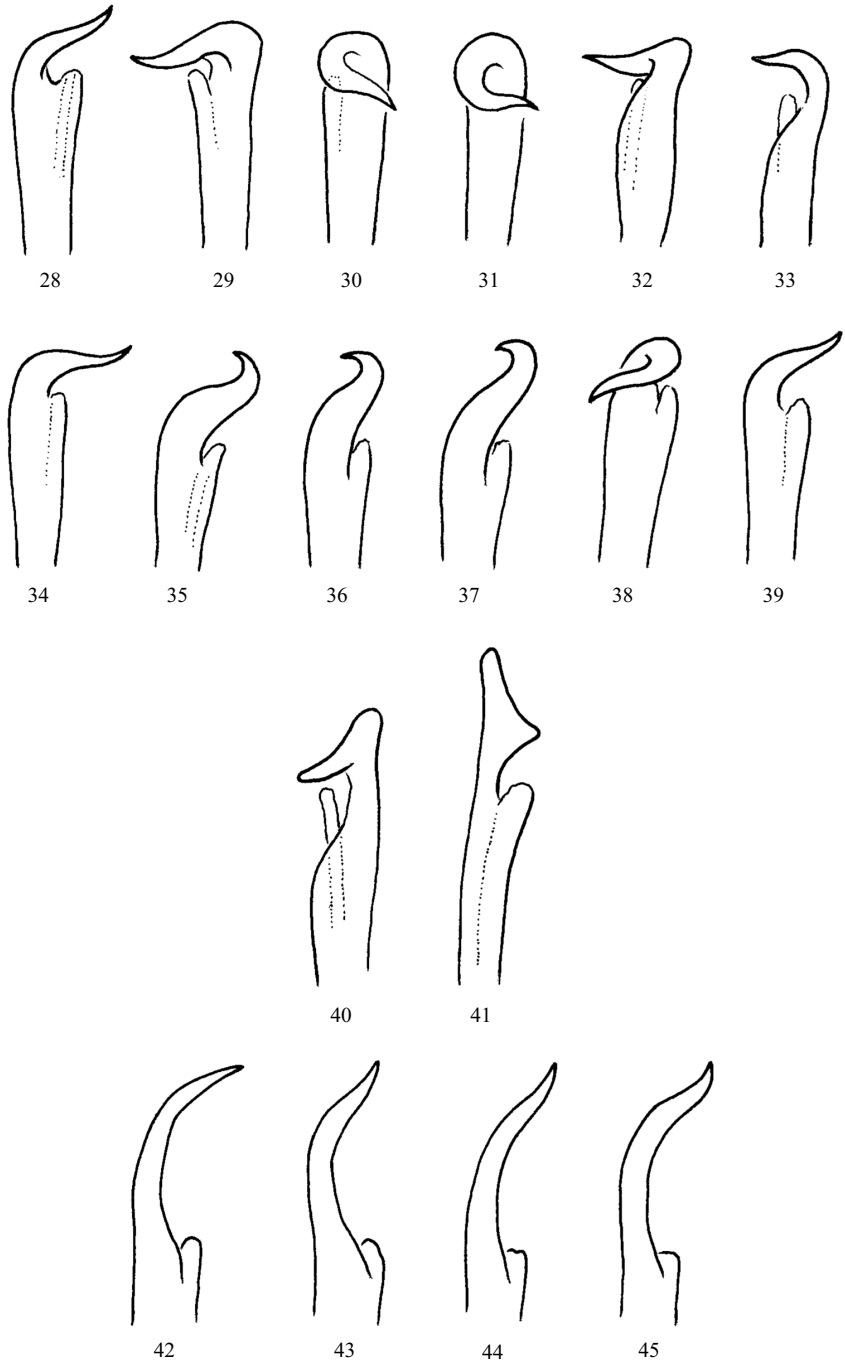
Slightly variable form of Hydroptila obscura. WELLS 1990: 382. Specimens from Phillippines considered as a variant of one morpho-species, *Hydroptila obscura* Wells, 1979.

Hydroptila obscura Wells, 1979. WELLS & MEY 2002: 128. Specimens collected in Philippines (Busuanga Is., Misamis Or., Negros Is.) were determined as *Hydroptila obscura*.

Diagnosis – The examined four male specimens from Negros Island are over cleared, however the overall character state of is discernible: dilated gonopods with dorsoapical constriction with pair of short stout setae on midventral tubercle; membranous segment X tapering towards slightly notched apex; apical notch is narrow and very shallow, not deep and wide like at *H. obscura* and *H. dumoga* or not very deep but narrow like at *H. explicata*. The spear-shaped head of the aedeagus is very distinctly differs from all the sibling species of the complex.

Type material – Holotype: **Philippines**, Negros, Patag NR, 750 m, 20-25.05.1996, W. Mey (1 ♂, ZMB). Paratypes: same as holotype (2 ♂, ZMB; 1 ♂, OPC).

Etymology – darda, from "dárda" spear or lance in Hungarian, refers to the spear-shaped head of the aedeagus.



Figs 28–45. Apex of phallic organ in dorsal view: 28–39 = *Hydroptila explicata* Wells, 1984; 40 = *Hydroptila obscura* Wells, 1979; 41 = *Hydroptila dumoga* sp. n.; 42–45 = *Hydroptila darda* sp. n.

***Hydroptila dumoga* sp. n. (Fig. 41)**

Hydroptila obscura Wells, 1979. WELLS 1990: 382–384. Several hundred specimens were taken at lights, in malaise traps, and in pyrethrin fogging trials during Feb., May, June, Aug., Sept., Oct., Nov. in the Dumoga-Bone N. P. Sulawesi. Specimens from Sulawesi with very characteristic apex of the phallic organ were identified as *H. obscura* described from Australia (Queensland). Misidentification!

Diagnosis – The species is described in details by WELLS (1990). There are slight differences in the fine structure of the periphallic organs between *H. obscura* Wells, 1979, described from Australia and the specimens from Sulawesi. However the periphallic organs of segment X and paraproct are less sclerotized, hard to discern. The most reliable difference diverged in the shape formation of the phallic head. *H. dumoga* sp. n. has a triangular apex notched and not barbed spear, gaff-shaped apex of *H. obscura* or hook-shape apex of *H. explicata*.

Type material – Holotype: Several hundred specimens were taken at lights, in Malaise traps, and in pyrethrin fogging trials during Feb., May, June, Aug., Sept., Oct., Nov. in the Dumoga-Bone N. P. Sulawesi. Specimens were not available; species description is based on the published drawings.

Etymology – dumoga refers to the name of locus typicus.

Hydroptila explicata Wells, 1984 **stat. restit.** (Figs 28–39)

Hydroptila explicata Wells, 1984. WELLS 1984: 264. Described from a single male from Kokoda, Morobe Province, Papua New Guinea.

Hydroptila obscura Wells, 1979. *H. explicata* was synonymised with *H. obscura* by WELLS 1990: 382.

Hydroptila obscura Wells, 1979. WELLS 1991: 504. Recorded form Morobe and Central provinces of Papua New Guinea. Synonymy confirmed.

Hydroptila obscura Wells, 1979. OLÁH 2012a: 49. Recorded from Indonesia, Papua, Batanta Island. Misidentification!

Hydroptila obscura Wells, 1979. OLÁH 2012b: 113. Registered in the taxonomic list of Trichoptera described and recorded from New Guinea region.

Hydroptila obscura Wells, 1979. OLÁH 2013: 66. Further records from Indonesia, Papua, Batanta Island. Misidentification!

Diagnosis – In the original description, the single male was distinguished from the Australian *H. obscura* Wells by a twisted subapical process on the aedeagus and by a narrowly V-shaped apical cleft on segment X (dorsal plate). We have re-examined specimens from Papua New Guinea (Morobe Province) and from Indonesia (Papua, Batanta Island). The twisted, hook-shaped spine-like apical process was clearly detectable and that is greatly differing from the triangular (*H. dumoga*) or gaff-shaped (*H. obscura*) configurations of the phallic head.

The presence of the twisted spine-like process at *H. explicata* is very stable; however its concrete shape and its reproduced drawings are rather individualistic. Like to human ear there are no even two phallic tips exactly identical. But variation is inside the range of twisted configuration; it is never similar to the triangular (*H. dumoga*) or gaff-shaped (*H. obscura*) configurations. Individuality of the phallic tips is the result of natural genetic processes characterizing the quantitative trait loci and the developmental instability both responsible for shape production. Beside real natural individual variation we have listed 11 artefacts producing processes responsible for individuality of our drawings (OLÁH et al. 2015b). In the very small *Orthotrichia*, *Hydroptila*

or *Neotrichia* genera it is almost impossible to fix the tiny tip of the phallic organ in identical drawing planes to document the diverged tips in permanent view. Moreover probably such a fixed plane does not exist even *in vivo*, the long phallic organ has no sclerotic connection to any periphallic organ, it is almost freely or flexibly suspending in the last abdominal segments and the copulation process may have dramatic effect on the particular plane position of the phallic tip.

Material examined – **Papua New Guinea**, Central Province, Iomari Creek, on Bereima-Port Moresby Road, S9°04', E147°064', 23.06.1986, A. Wells, J. W. Ismay (1 ♂, 1 ♀, OPC). **Indonesia**, West Papua, Raja Ampat, Batanta Island, Ron creek, S0°49'18.03", E130°49'26.03", 15.10.2010, light-trap, R. Horváth (6 ♂, 8 ♀, OPC). Batanta Island, Sarinam River, S0°50'04.24". E130°47'59.22", 17.10.2010, light-trap, R. Horváth (2 ♂, OPC). Batanta Island, S0°50'04.03", E130°42'54.14", 10.06.2010, light-trap, R. Horváth (4 ♂, OPC). Batanta Island, Wilson stream, 12.05.2011, light-trap, R. Horváth (3 ♂, 6 ♀, OPC). Batanta Island, Northern Cost, Warmon stream, below first waterfall, S0.83570°, E130.71400°, 22.01.2013, light-trap, R. Horváth (1 ♂, OPC). Batanta Island, Northern cost, Waridor River, S0.85582°, E130.52075°, at mouth of small tributary, 22.01.2013, light-trap, R. Horváth (6 ♂, OPC). Batanta Island, Northern cost, Waridor River, S0.86840°, S130.52516°, 22.01.2013, light-trap, R. Horváth (4 ♂, OPC). Batanta Island, Northern cost, Waridor River, S0.84373°, S130.52457°, shipable endpoint, 06.02.2012, light-trap, R. Horváth (11 ♂, OPC). Batanta Island, Northern cost, Waridor River, S0.84373°, S130.52457°, shipable endpoint, 09.09.2011, light-trap, R. Horváth (1 ♂, OPC). Batanta Island, Northern cost, Ron stream, 0°49'16.37"S, 130°49'23.72"E, at hut, 08.09.2011, light-trap, R. Horváth (26 ♂, OPC). Batanta Island, Northern cost, Ron stream, 0°49'18.03"S, 130°49'26.03"E, above hut, 08.09.2011, light-trap, R. Horváth (49 ♂, OPC). Batanta Island, Northern cost, Ron stream, 0°49'16.34"S, 130°49'23.72"E, below hut, 08.09.2011, light-trap, R. Horváth (14 ♂, OPC). Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (18 ♂, OPC). Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (2 ♂, OPC).

Hydroptila obscura Wells, 1979 (Fig. 40)

Hydroptila obscura Wells, 1979. Wells 1979: 758–759. Described from a single male specimen accompanied by 6 females collected in Queensland, Australia.

Material examined – **Australia**, Queensland, Davies Creek NP, Davies Creek, 20 m upstream Davies Creek Falls, 595 m, 17°00.490'S, 145°34.808'E, 01.04.2006, light-trap, loc. 49, N. Jönsson, T. Malm, D. Williams (1 ♂, NHRS; 1 ♂, OPC). Queensland, Carnarvon Gorge NP, Carnarvon Creek, 300 m upstr crossing near Visitor Centre, 398 m, 25°03.588'S, 148°13.773'E, 15.03.2006, light-trap, loc. 33, N. Jönsson, T. Malm, D. Williams (1 ♂, NHRS).

Diagnosis – Segment X membranous, broad based, tapered to narrow neck and dilated towards notched apex. Paraproct broad based and tapered to long, narrow, finger-like process, pair of stout mesal setae present at the base. Phallic organ characterized by a small notch at apex forming a barbed spear, gaff-shaped configuration, diagnostic for the species.

Hydroptila nemtompa Oláh, 2012 – Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (4 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).
Missitrichia vagot Oláh, 2013 – Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (2 ♂, OPC).

Orthotrichiini Nielsen, 1948

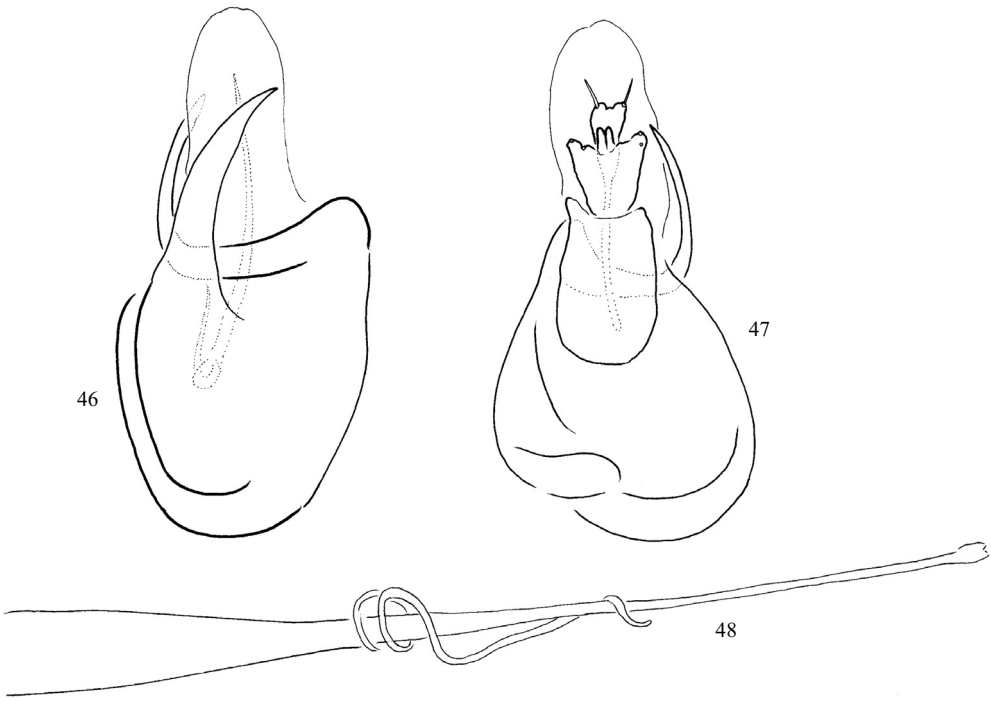
Orthotrichia eltera Oláh, 2012 – Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0",

130°35’49.1”, 14.02.2016, at light T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (2 ♂, OPC). Batanta Island, valley of Warai stream, 00°50’51.0”, 130°35’14.0”, 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Batanta Island, Kalijakut River, 0°52’52.0”, 130°38’8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (3 ♂, OPC).

***Orthotrichia feltuna* sp. n. (Figs 46–48)**

Diagnosis – The specific pattern of the left and right spine-like process on the dorsoapical corner of segment IX differentiate this new species from all the other known Papua species.

Description – Male (in alcohol). Forewing length 2 mm. Antennae broken, scapus double long, pedicel shorter than flagellar segments; flagellar segments quadratic; 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 apicomesal process and sternum VII without any process.



Figs 46–48. *Orthotrichia feltuna* sp. n. holotype male: 46 = genitalia in dorsal view; 47 = genitalia in ventral view; 48 = phallic organ in lateral view

Male genitalia. Segment IX asymmetric, dorsum produced, longer and broader than ventrum. Segment X (dorsal plate) present as a long less-pigmented lobe with almost symmetric rounded apex. Paraproct present as longer and smaller curving spines. Gonopods fused basally, subtriangular with a pair of mesal digitate processes. The basal plate of the gonopods robust, bilobed slightly asymmetric with long digitiform apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).

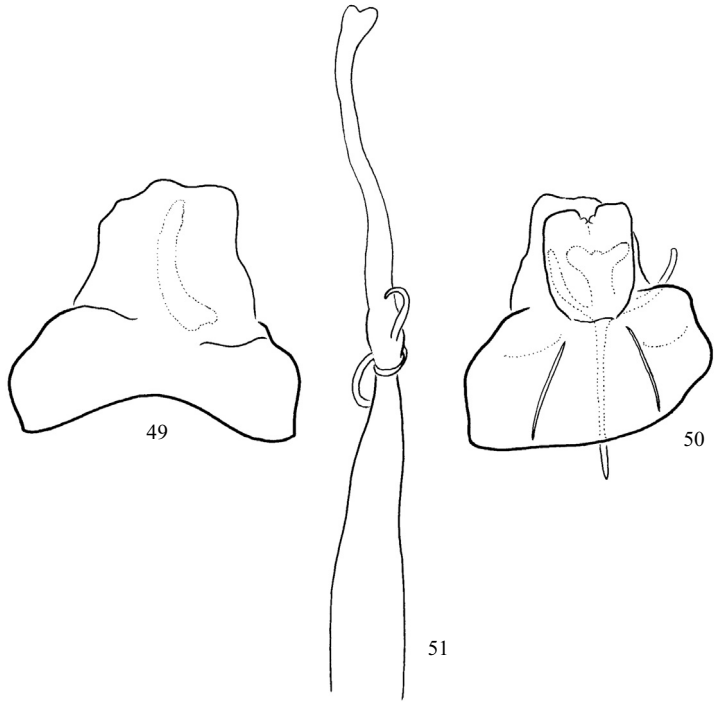
Etymology – feltuna, from "feltűnő", conspicuous in Hungarian, refers to the left dorsoapical corner of segment IX, the produced basement of the curved spine-like processes.

***Orthotrichia foruma* sp. n. (Figs 49–51)**

Diagnosis – Close to *Orthotrichia eltera* Oláh, 2012, but differs by having no setaless lobe and spine like process on the right side of segment IX; quadratic gonopod entirely fused; basal plate of gonopods differently shaped.

Description – Male (in alcohol). Forewing length 2 mm. Antennae 31 segmented, scapus double long, pedicel shorter than flagellar segments; flagellar segments quadratic; 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 indiscernible, only anterior arm present. Ocelli lacking. Metascutellum short rectangular. Spur formula 034. Sternum VI with very small pointed apicomesal process and sternum VII without any process.

Male genitalia. Segment IX asymmetric, dorsum little shorter than ventrum. Segment X (dorsal plate) present as a short less-pigmented lobe with slightly asymmetric apex. Paraproct present as a single robust curving spine. Gonopods fused. The basal plate of the gonopods robust, quadrilobed slightly asymmetric with long digitiform apodeme. Phallic organ forms



Figs 49–51. *Orthotrichia foruma* sp. n. holotype male: 49 = genitalia in dorsal view; 50 = genitalia in ventral view; 51 = phallic organ in lateral view

a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

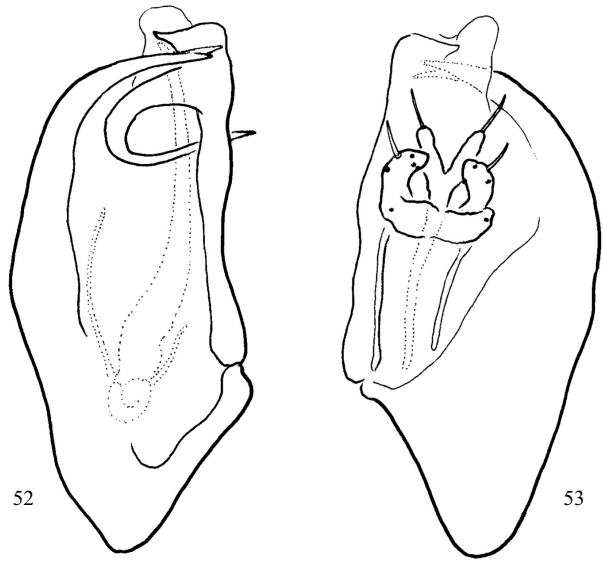
Type material – Holotype: **Indonesia**, West Papua, Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Paratypes: same as holotype (1 ♂, OPC).

Etymology – Named after the locus typicus, Forum River on the north-western cost of the Batanta Island.

***Orthotrichia gorbek* sp. n. (Figs 52–53)**

Diagnosis – The specific pattern of the left and right spine-like process on the dorsoapical corner of segment IX differentiate this new species from all the other known Papua species.

Description – Male (in alcohol). Forewing length 2 mm. Antennae broken, scapus double long, pedicel shorter than flagellar segments; flagellar segments long quadratic; 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 apicomesal process and sternum VII without any process.



Figs 52–53. *Orthotrichia gorbek* sp. n. holotype male: 52 = genitalia in dorsal view; 53 = genitalia in ventral view

Male genitalia. Segment IX asymmetric, dorsum produced, longer and broader than ventrum. Segment X (dorsal plate) present as an inconspicuous less-pigmented lobe. Paraproct present as robust longer and thin smaller curving spines, an additional even smaller filament discernible left side. Gonopods fused basally, with a pair of lateral mesad curving processes. The basal plate of the gonopods robust, bilobed slightly asymmetric with long digitiform apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53’27.54”, 130°33’31.62”, 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Paratype: same as holotype (3 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53’42.0”, 130°35’49.1”, 14.02.2016, at light T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (4 ♂, OPC). Batanta Island, valley of Warai stream, 00°50’51.0”, 130°35’14.0”, 11.02.2015, at light, T. Kovács, P. Juhász (11 ♂, OPC). Batanta Island, valley of Waridor River, 0°51’50.1”, 130°33’47.4”, 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (2 ♂, OPC). Batanta Island, Kalijakut River, 0°52’52.0”, 130°38’8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (14 ♂, OPC).

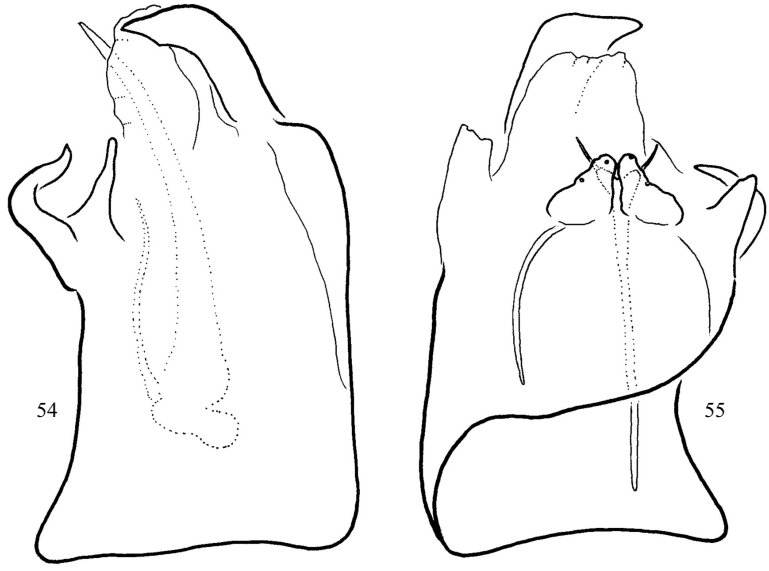
Etymology – gorbek, from “görbék”, curves in Hungarian, refers to the curved spine-like processes present on both the left and right dorsoapical corner of segment IX.

***Orthotrichia hanulva* sp. n. (Figs 54–55)**

Diagnosis – The specific pattern of the left and right spine-like process on the dorsoapical corners of segment IX as well as the sub triangular gonopods with very small head of the basal plate of gonopods differentiate this new species from all the other known Papua species.

Description – Male (in alcohol). Forewing length 1 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 apicomesal process and sternum VII without any process.

Male genitalia. Segment IX asymmetric, dorsum produced, longer than ventrum. Segment X (dorsal plate) present as an inconspicuous less-pigmented lobe. Paraproct present as robust longer and thin smaller curving spines. Gonopods subtriangular. The basal plate of the gonopods has



Figs 54–55. *Orthotrichia hanulva* sp. n. holotype male: 54 = genitalia in dorsal view; 55 = genitalia in ventral view

small head and long digitiform apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

Type material – **Indonesia**, West Papua, Batanta Island, walley of Kalijakut River, 0°52'49.1", 130°38'4.9", 16.02.2015, UV light-trap, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC).

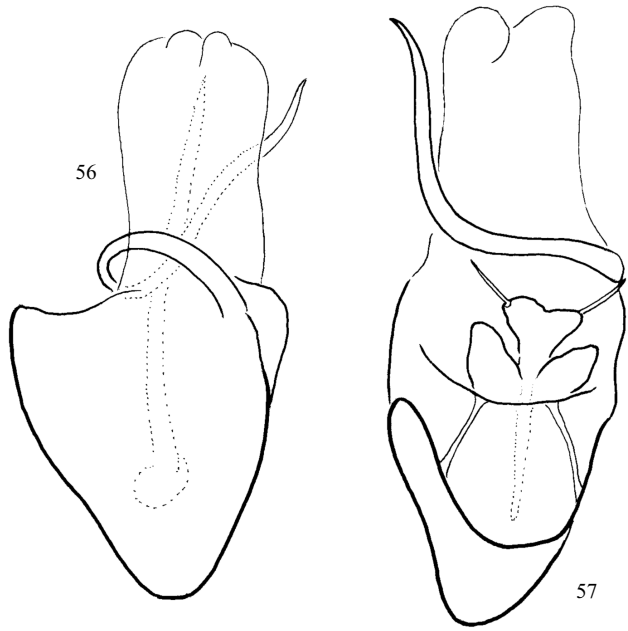
Etymology – hanulva, from "három nyúlvány", three processes in Hungarian, refers to the processes on the left and right dorsoapical corner of segment IX.

***Orthotrichia kalisa* sp. n. (Figs 56–57)**

Diagnosis – This species is unique among all the known *Orthotrichia* species in Papua New Guinea by having particularly curved and from dorsad to ventrad turning long spine-like process on the left apicodorsal corner of segment IX.

Description – Male (in alcohol). Forewing length 1.6 mm. Antennae broken, scapus double long, pedicel shorter than flagellar segments; flagellar segments quadratic; maxillary palp formula I-III-IV-II-V; 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 apicomesal process and sternum VII without any process.

Male genitalia. Segment IX asymmetric, dorsum little longer than ventrum. Segment X (dorsal plate) present as a long less-pigmented lobe with slightly asymmetric bilobed apex. Paraproct present as a single robust curving spine. Gonopods fused basally, subtriangular. The basal plate of the gonopods robust, broad bilobed slightly asymmetric with long digitiform apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.



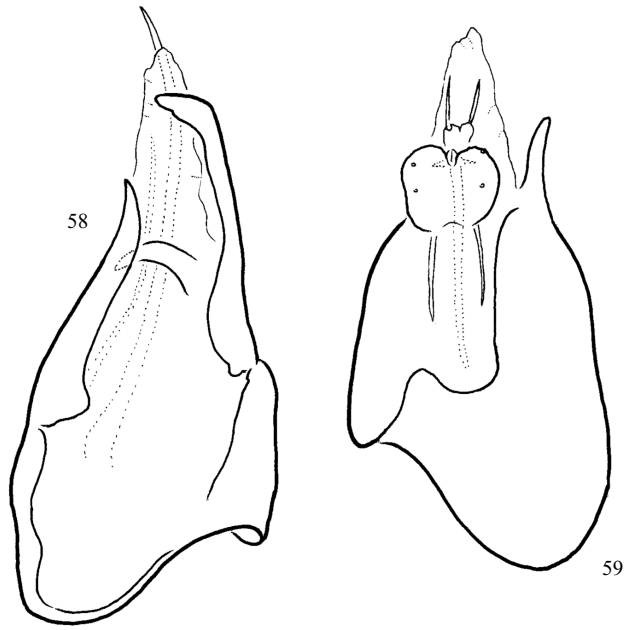
Figs 56–57. *Orthotrichia kalisa* sp. n. holotype male: 56 = genitalia in dorsal view; 57 = genitalia in ventral view

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Paratypes: same as holotype (3 ♂, OPC). Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC).

Etymology – Named after the locus typicus, Kalisamsem River on the south-western cost of the Batanta Island.

***Orthotrichia kerekded* sp. n. (Figs 58–59)**

Diagnosis – The specific pattern of the left and right spine-like process on the dorsoapical corner of segment IX as well as the rounded fused gonopods differentiate this new species from all the other known Papua species.



Figs 58–59. *Orthotrichia kerekded* sp. n. holotype male: 58 = genitalia in dorsal view; 59 = genitalia in ventral view

Description – Male (in alcohol). Forewing length 1.2 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 apicomesal process and sternum VII without any process.

Male genitalia. Segment IX asymmetric, dorsum produced, longer and broader than ventrum. Segment X (dorsal plate) present as an inconspicuous less-pigmented lobe. Paraproct present as robust longer and thin smaller curving spines. Gonopods fused circular. The basal plate

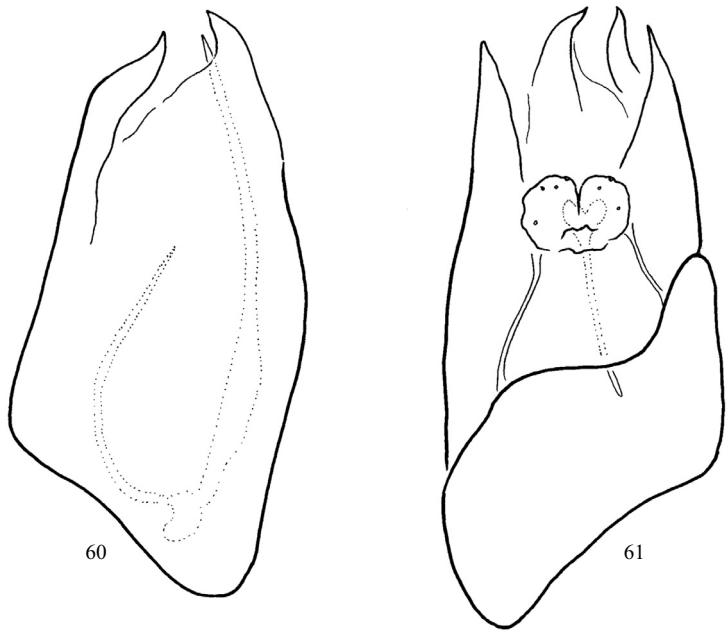
of the gonopods robust, bilobed slightly asymmetric with long digitiform apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC). Paratypes: same as holotype (2 ♂, OPC).

Etymology – kerekded, from "kerekded", rounded in Hungarian, refers circular overall shape of the fused gonopods.

***Orthotrichia nehega* sp. n. (Figs 60–61)**

Diagnosis – Has similarity to *Orthotrichia tobfona* Oláh, 2012, but differs by the specific pattern of the left and right spine-like process on the dorsoapical corners of segment IX, together with the left and right pointed processes on the ventroapical corners. The basal plate of gonopods reduced a small bilobed structure just discernible in the cover of the fused cylindrical gonopods.



Figs 60–61. *Orthotrichia nehega* sp. n. holotype male: 60 = genitalia in dorsal view; 61 = genitalia in ventral view

Description – Male (in alcohol). Forewing length 1 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 apicomesal process and sternum VII without any process.

Male genitalia. Segment IX asymmetric, dorsum produced, longer than ventrum. Segment X (dorsal plate) presents as an inconspicuous less-pigmented lobe, somehow confluent with

the dorsoapical processes. Paraproct present as robust longer and thin smaller curving spines. Gonopods fused circular. The basal plate of the gonopods small bilobed structure with long apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC). Paratypes: same as holotype (1 ♂, OPC).

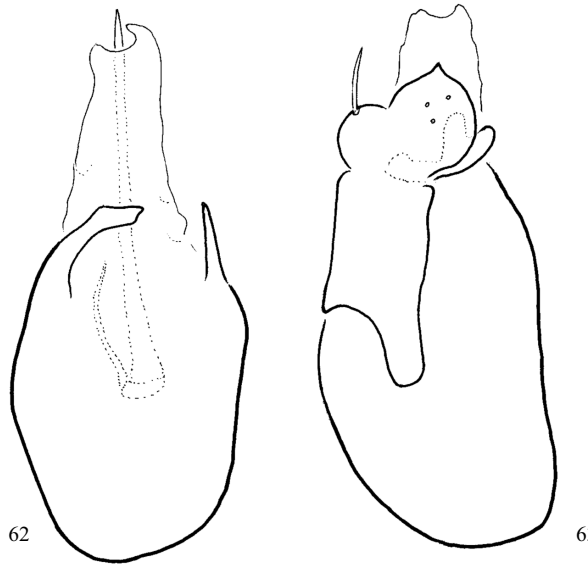
Etymology – nehega, abbreviated from "négy hegy", four pointed tips in Hungarian, refers to the processes on the left and right dorsoapical and ventroapical corners of segment IX.

Orthotrichia olelo Oláh, 2013 – Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC).
Orthotrichia para Oláh, 2012 – Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (8 ♂, OPC).
Orthotrichia savoska Oláh, 2012 – Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (6 ♂, OPC).

Notes – The pair of megasetae on tergite VIII crossed in all the 6 specimens as well as in the holotype and not positioned parallel as drawn mistakenly in the original species description!

Orthotrichia sivka sp. n. (Figs 62–63)

Diagnosis – The unique fused and enlarged gonopod plate has some resemblance to *Orthotrichia bunkosa* Oláh, 2012, described from Batanta Island but plate shape is different, basal plate of gonopods greatly modified asymmetric, not symmetric as well as the shape of left and right dorsolateral apical process on segment IX different and their size small, not large.



Figs 62–63. *Orthotrichia sivka* sp. n. holotype male: 62 = genitalia in dorsal view; 63 = genitalia in ventral view

Description – Male (in alcohol). Forewing length 2 mm. Antennae broken, scapus double long, pedicel shorter than flagellar segments; flagellar segments short quadratic; 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 indiscernible, only anterior arm present. Ocelli lacking. Metascutellum short rectangular. Spur formula 034. Sternum VI with very small pointed apicomesal process and sternum VII without any process.

Male genitalia. Segment IX asymmetric, dorsum produced, much longer and broader than ventrum. Segment X (dorsal plate) present as an inconspicuous less-pigmented lobe. Paraproct present as robust straight longer and thin curving smaller spines. Gonopods fused entirely, heart-shaped. The basal plate of the gonopods robust, highly asymmetric bilobed without discernible apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC).

Etymology – sivka from "szives", supplied with heart in Hungarian, refers to the very characteristic, heart-shaped ventral profile of gonopods.

***Orthotrichia tabala* sp. n. (Figs 64–67)**

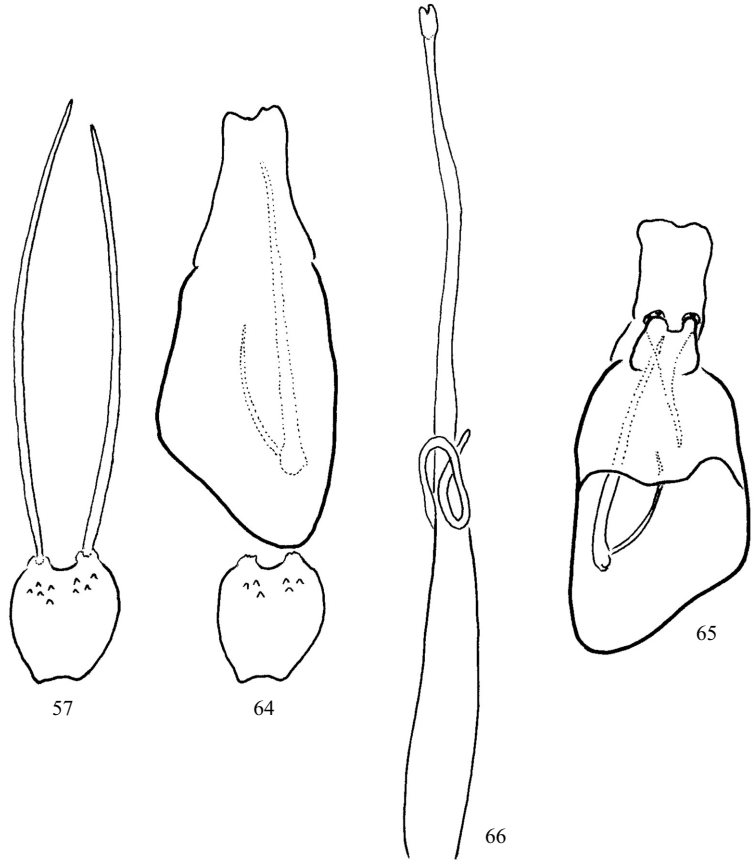
Diagnosis – Close to *Orthotrichia tobfona* Oláh, 2012, but differs by the basic architecture of segment IX without any apicolateral lobes, by the presence of the long stout spine bearing dorsal plate on apical margin of tergite VII and by the elongated shape of the fused gonopods.

Description – Male (in alcohol). Very small animal with forewing length of 1 mm. Antennae with 21 segments, scapus double long, pedicel shorter than flagellar segments; flagellar segments quadratic; maxillary palp broken; postoccipital setal warts prominent, ovoid, not modified as scent organ. Tentorium indiscernible. Ocelli lacking. Metascutellum short rectangular. Spur formula 0234.

Male genitalia. There is a heavily sclerotized plate overhanging the apical margin of tergite VII housing the articulation of a pair of long and stout spines. These spines are present only on the plate of a single paratype. At other specimens including holotype they are lost, broken. Segment IX asymmetric, dorsum elongated, ventrum only half length of the dorsum. Segment X (dorsal plate) present as a long less-pigmented lobe with slightly asymmetric apex. Paraproct present as a long spinelike process on the left side of the phallic organ; fused basally to a small curved spine and producing a long filament curving to the right side and posterad along the right side of phallic organ. Gonopods forming an almost fused elongated quadratic complex, indistinctly divided mesally. The basal plate of the gonopods fused into a median bilobed structure with a very long filiform apodeme. Phallic organ forms a long tube with broader basal half and long titillator having complex multiple turning, apex dilated bifid.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, right side stream of Forum River, 0°52'22.7", 130°27'45.1", 13.02.2015, at light, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC). Paratypes: Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (4 ♂, OPC). Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC).

Etymology – Name was coined with reference to the presence of unique plate on the dorsum between segments VII and VIII; "tábla" plate in Hungarian with additional "a" for euphony.



Figs 64–67. *Orthotrichia tabala* sp. n. holotype male: 64 = genitalia in dorsal view with a dorsal plate on apical margin of tergite VII without megasetae; 65 = genitalia in ventral view, 66 = phallic organ in lateral view; 67 = dorsal plate on apical margin of tergite VII with intact megasetae on paratype

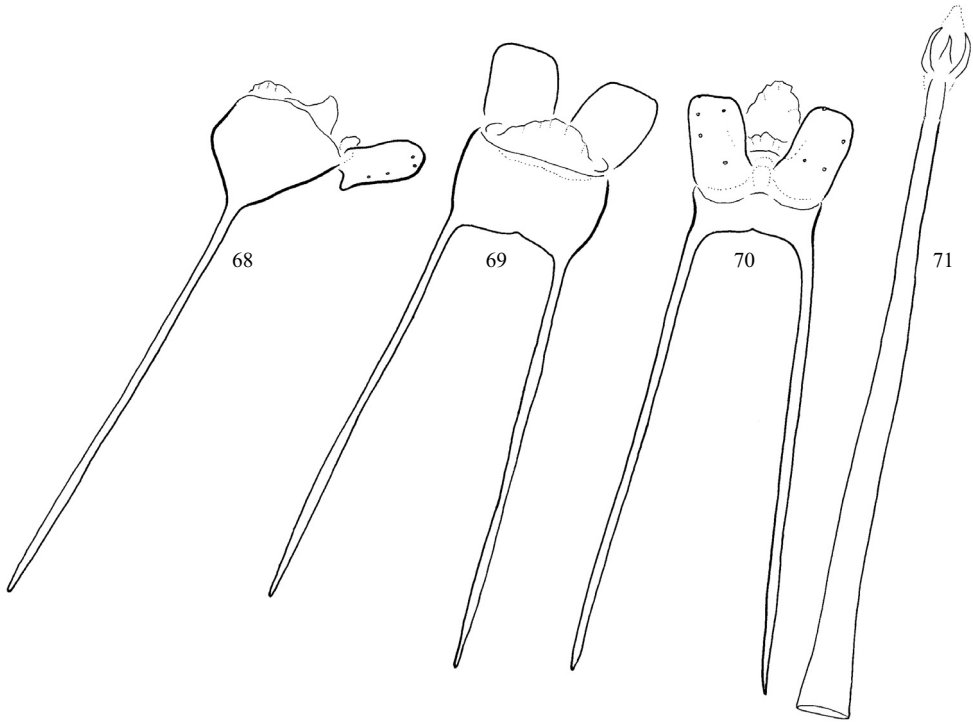
Stactobiini Botosaneanu, 1956

***Chrysotrichia vagot* sp. n. (Figs 68–71)**

Diagnosis – This new species is similar to *Chrysotrichia horgos* Oláh, 2013 from Batanta Island but differs by its truncate quadratic shape of the gonopods.

Description – Male (in alcohol). Small animal with forewing length of 1.1 mm. Tentorium arms complete without posterior bridge. Antennae broken, scapus and pedicel almost equal lenght; flagellar segments shorter. Maxillary palp formula I-II-III-IV-V, first two segments extremely short, shorter than wide. Metascutellum short and wide. Spur formula 024.

Male genitalia. Segment IX open ventrad, pentagonal in lateral view with a pair of extremely long and thin apodeme. Segment X (dorsal plate) present as a broad less-pigmented indistinct lobe. Paraproct (subgenital plate) discernible as a membranous plate below the phallic organ hanging by lateral connections and forming a complete sheath together with segment X.



Figs 68–71. *Chrysotrichia vagot* sp. n. holotype male: 68 = genitalia in lateral view; 69 = genitalia in dorsal view; 70 = genitalia in ventral view; 71 = phallic organ in dorsal view

Gonopods produced as a pair of broad truncate lobes fused basad. Basal plate of the gonopods visible as a more sclerotized rim with mesal and lateral enlargement. Phallic organ forms a long tube, its apex inflated housing three spin-like sclerites as visible in dorsoventral view.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Paratypes: same as holotype (2 ♂, OPC).

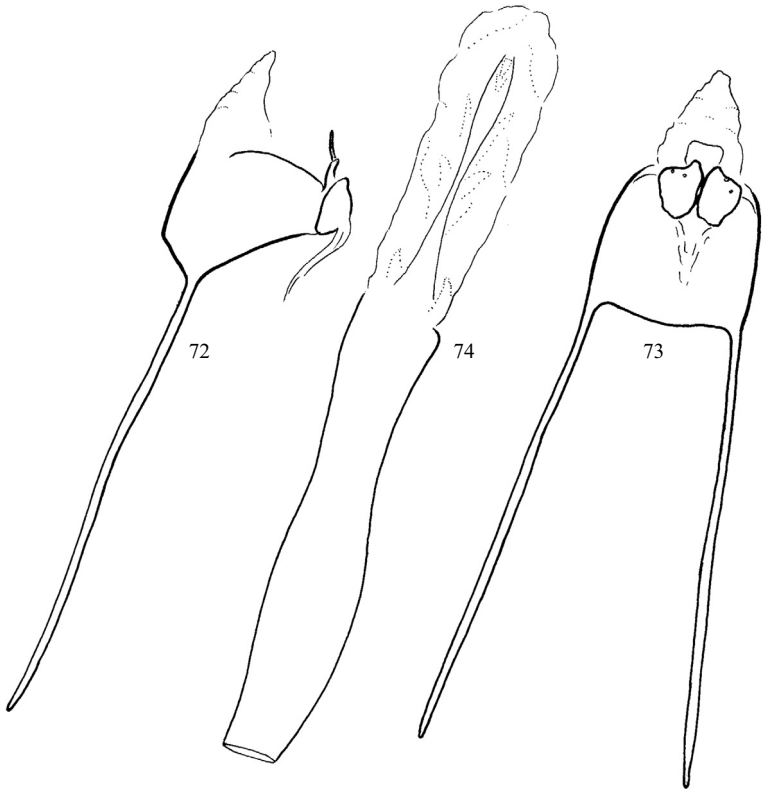
Etymology – vagot from "vágott" truncate in Hungarian, refers to the apical margin of the gonopods.

***Chrysotrichia vaskos* sp. n. (Figs 72–74)**

Diagnosis – Having phallic organ extremely enlarged this new species forms a species group with *Chrysotrichia berduri* Wells, 1990 from Sulawesi, *C. arapela* Wells, 1990 from Papua New Guinea and *C. simplex* Wells & Mey, 2002 from Philippines. Most close to *C. arapela* but differs by having very pronounced sclerotized paraproct of quadratic shape, not membranous and not difficult to see; segment X tapering apicad, not rounded or truncate.

Description – Male (in alcohol). Small animal with forewing length of 1.1 mm. Tentorium arms complete without posterior bridge. Antennae broken, scapus and pedicel almost equal lenght; flagellar segments shorter. Maxillary palp formula I-II-III-IV-V, first two segments extremely short, shorter than wide. Metascutellum short and wide. Spur formula 024.

Male genitalia. Segment IX open ventrad, subpentagonal in lateral view with a pair of extremely long and thin apodeme. Segment X (dorsal plate) present as a broad apicad narrowing, less-pigmented indistinct lobe. Paraproct (subgenital plate) discernible as a quadratic plate enforced by pigmentation below the phallic organ. Gonopods produced as a pair of rounded subquadratic plates. Basal plate of the gonopods visible as a less sclerotized anteromesal elongation. Phallic organ forms an extremely enlarged bipartite tube, its basal half forms a more sclerotized tube and its distal half membranous composed of internal pale pattern, but with a long mesal slit in ventrum; the internal pattern varying among individuals due possibly to the particular state of the organ.



Figs 72–74. *Chrysotrichia vaskos* sp. n. holotype male: 72 = genitalia in lateral view; 73 = genitalia in ventral view; 74 = phallic organ in dorsal view

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53’27.54”, 130°33’31.62”, 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Paratypes: same as holotype (15 ♂, OPC). Batanta Island, valley of Waridor River, 0°51’50.1”, 130°33’47.4”, 04.02.2015, UV light-trap, T. Kovács, R. Horváth, P. Juhász (1 ♂, OPC).

Etymology – vaskos from “vaskos” stout in Hungarian refers to the extremely enlarged phallic organ.

***Niuginitrichia bogos* sp. n. (Figs 75–78)**

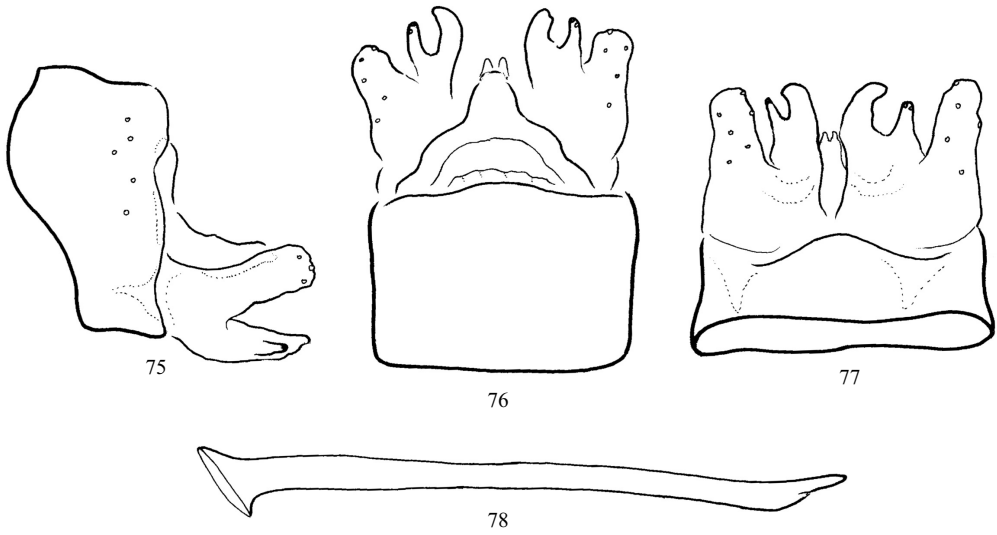
Diagnosis – Similar to *N. eiloga* Wells, 1990, described from Papua New Guinea, the only other known Niuginitrichia species having subdivided gonopods, but differs by the pattern of gonopod arms and by the shape of the paraproct.

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 19 segmented, scapus and pedicel almost equal length; flagellar segments shorter, not elongate. Maxillary palp formula I-II-IV-III-V, 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. Segment X (dorsal plate) membranous, just discernible. Paraproct hanging from dorsolaterad, fused under the phallic organ forming a mesal elongarion. Gonopods composed of lateral setose lobe and a mesal setaless bilobed branches, the outer digitiform arm is smaller armed with a pair of terminal setae. Basal plate of the gonopods indiscernible. Phallic organ forms a short tube with funnel shape basal enlargement and without any apical spine.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, 00°50’51.0”, 130°35’14.0”, 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Paratypes: same as holotype (5 ♂, OPC).

Etymology – bogos from “ágas-bogos” full of arm and branches in Hungarian, refers to the subdivided gonopods having various branches.



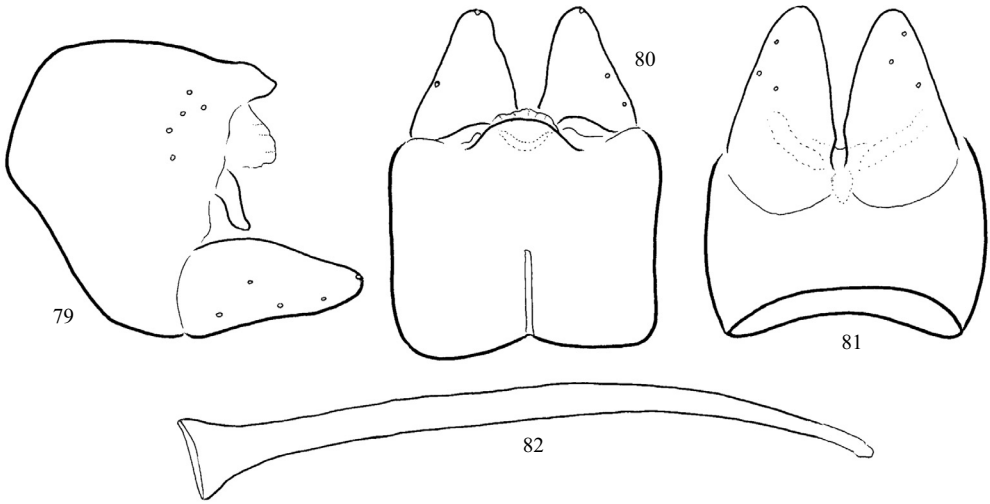
Figs 75–78. *Niuginitrichia bogos* sp. n. holotype male: 75 = genitalia in lateral view; 76 = genitalia in dorsal view; 77 = genitalia in ventral view; 78 = phallic organ in lateral view

***Niuginitrichia haromsog* sp. n. (Figs 79–82)**

Diagnosis – According to the almost regular triangular shape of gonopods this new species is most similar to *Niuginitrichia bukamak* Wells, 1990, described from Papua New Guinea (Central Province), but differs by lacking the darkly sclerotized apicomesal mark on tergite IX; by the

presence of basomesal suture on tergite IX; by the paraproct with strong lateral hangers and by the blunt apex of the 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 19 segmented scapus and pedicel almost equal length, scapus broader and more rounded; flagellar segments elongate, not short like at *N. ives* sp. n. Maxillary palp formula I-II-IV-III-V, first two segments extremely short, shorter than broad. Metascutellum short and wide. Spur formula 024.



Figs 79–82. *Niuginitrichia haromsog* sp. n. holotype male: 79 = genitalia in lateral view; 80 = genitalia in dorsal view; 81 = genitalia in ventral view; 82 = phallic organ in lateral view

Male genitalia. Segment IX forms a complete ring, slightly shorter ventrad, longer dorsad without any anterolateral apodeme; tergite IX characterized by basomesal suture running horizontal to half length of the tergite, apical margin produced a mesal rounded sclerite. Segment X (dorsal plate) very short membranous. Paraproct with lateral hangers met and fused below the phallic organ. Gonopods forming a pair of triangular lobes. Basal plate of the gonopods indiscernible. Phallic organ forms a long tube without paramere; basement enlarged, apex of phallotheca blunt.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kaliselatan River, 00°53’42.0”, 130°35’49.1”, 14.02.2016, at light, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).

Etymology – haromsog from “háromszög” triangular in Hungarian, refers to the regular triangular shape of the gonopods.

Niuginitrichia huzva Oláh, 2013 – Batanta Island, Kalijakut River, 0°52’52.0”, 130°38’8.0”, 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC).

Niuginitrichia ives sp. n. (Figs 83–86)

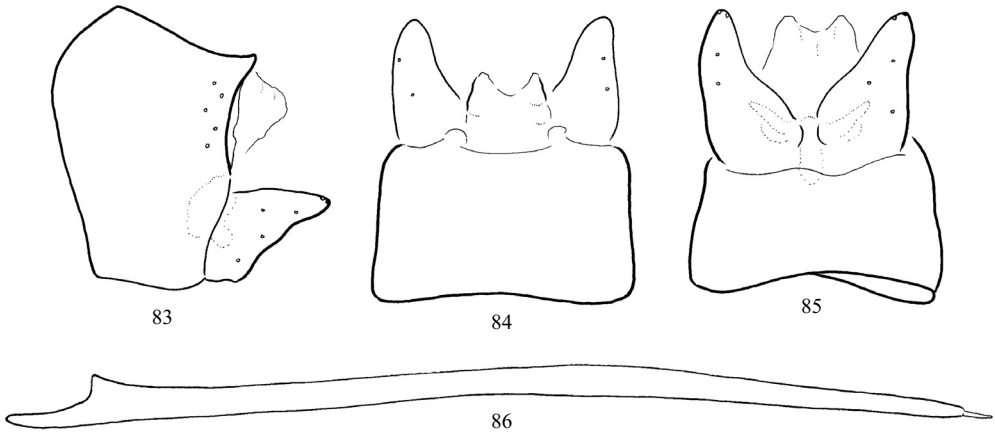
Diagnosis – Similar to *Niuginitrichia huzva* Oláh, 2013, described from Batanta Island, but differs by the shape of gonopods and the apical end of the phallic organ.

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 19 segmented scapus and pedicel almost equal length, scapus broader and more rounded; flagellar segments short, not longer than wide. Maxillary palp formula I-I-V-III-V, 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. Segment X (dorsal plate) membranous, slightly discernible bilobed. Paraproct broadbased, tapering laterad. Gonopods forming a pair of triangular slightly mesad turning lobes. Basal plate of the gonopods indiscernible. Phallic organ forms a long tube without paramere; basement with ventral elongation, apex of phallotheca with tiny apical spine.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Paratypes: same as holotype (13 ♂, OPC). Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC). Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (7 ♂, OPC).

Etymology – ives from "íves" arched in Hungarian, refers to the slightly mesad turning apex of gonopods.



Figs 83–86. *Niuginitrichia ives* sp. n. holotype male: 83 = genitalia in lateral view; 84 = genitalia in dorsal view; 85 = genitalia in ventral view; 86 = phallic organ in lateral view

***Niuginitrichia kesken* sp. n. (Figs 87–90)**

Diagnosis – Having long phallic organ this new species is most close to *Niuginitrichia ives* sp. n. but differs by having terminal spine on phallic organ smaller and disposed asymmetrically; basal pattern of phallic organ modified; membranous segment X truncate, not bilobed; gonopods narrow, not curving mesad; basal plate of gonopods enlarged into a rounded plate in ventral view.

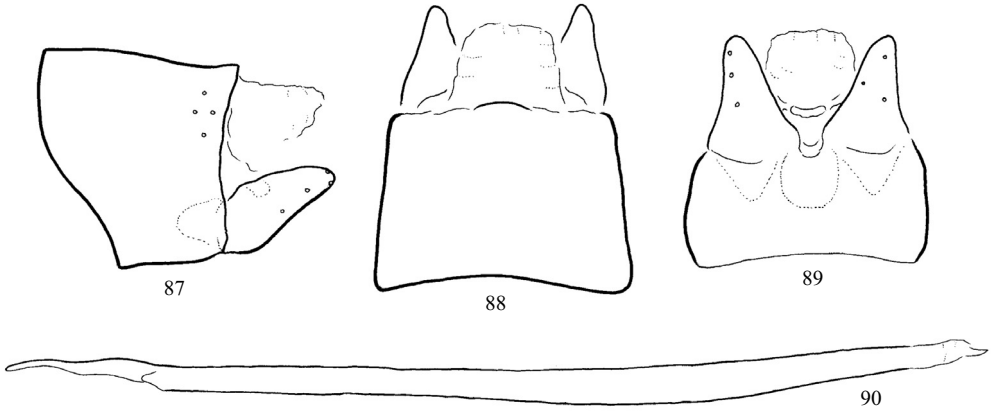
Description – Male (in alcohol). Small dark animal with forewing length of 1.5 mm. Ocelli lacking. Anterior tentorial arms present, very thin posterior arm and bridge indiscernible. Antennae 19 segmented scapus and pedicel almost equal length, scapus broader and more

rounded; flagellar segments short, not longer than wide. Maxillary palp formula I-I-V-III-V, 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. Segment X (dorsal plate) membranous, produced into a large truncate hood. Paraproct hanging from segment X and fused into a small sclerotized plate below phallic organ. Gonopods forming a pair of narrow triangular lobes. Basal plate of the gonopods developed into a large rounded sclerotized plate. Phallic organ forms a long tube without paramere; basement with elongation, apex of phallotheca with tiny laterad disposed apical spine.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, at light T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).

Etymology – *kesken* from "keskeny" narrow in Hungarian, refers to narrow shape of gonopods.



Figs 87–90. *Niuginitrichia kesken* sp. n. holotype male: 87 = genitalia in lateral view; 88 = genitalia in dorsal view; 89 = genitalia in ventral view; 90 = phallic organ in lateral view

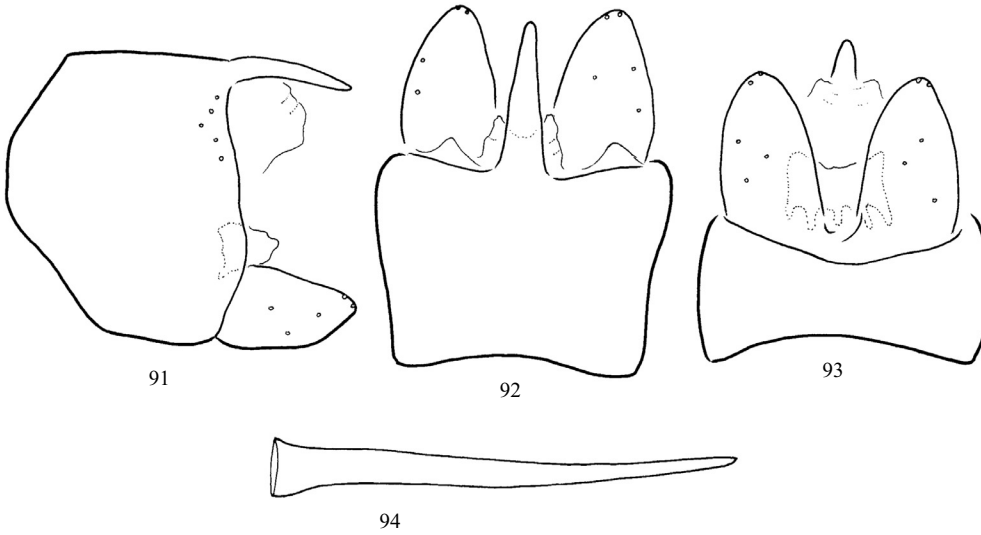
***Niuginitrichia kover* sp. n. (Figs 91–94)**

Diagnosis – Similar to *Niuginitrichia huzva* Oláh, 2013, described from Batanta Island, but differs by the shape of gonopods and by the shape of the extremely 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 broken, scapus and pedicel almost equal length; flagellar segments shorter, not elongate. Maxillary palp formula I-II-IV-III-V, 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 long mesal tapering process. Segment X (dorsal plate) membranous, slightly discernible bilobed. Paraproct subquadratic with five anterioe fingers in ventral view. Gonopods forming a pair of elipsoid lobes. Basal plate of the gonopods indiscernible. Phallic organ forms a short tube without any apical spine.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász,



Figs 91–94. *Niuginitrichia kover* sp. n. holotype male: 91 = genitalia in lateral view; 92 = genitalia in dorsal view; 93 = genitalia in ventral view; 94 = phallic organ in lateral view

K. Saujaj, Roni (1 ♂, OPC). Paratypes: Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (7 ♂, OPC).

Etymology – kover from "kövér" fat in Hungarian, refers to the broad ellipsoid shape of the gonopods.

***Niuginitrichia negsog* sp. n. (Figs 95–98)**

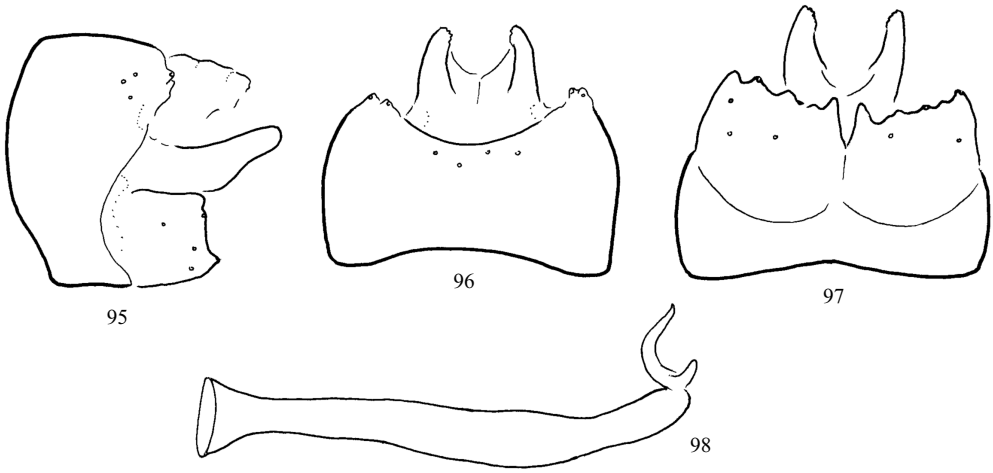
Diagnosis – Similar to *Niuginitrichia eiloga* Wells, 1990, described from Papua New Guinea and *N. haromsog* sp. n. having more complex gonopods, but differs by the pattern of gonopod arms and by the shape of the much produced paraproct.

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 19 segmented, scapus and pedicel almost equal length; flagellar segments shorter, not elongate. Maxillary palp formula I-II-IV-III-V, 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. Segment X (dorsal plate) membranous, just discernible. Paraproct much developed forming a well sclerotized pair of processes guiding the phallic organ. Gonopods quadrangular both in ventral and lateral view, apical margin slightly fringed. Basal plate of the gonopods indiscernible. Phallic organ heavily sclerotized, pronounced black with apical patterned spine .

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (1 ♂, OPC). Paratypes: same as holotype (1 ♂, OPC).

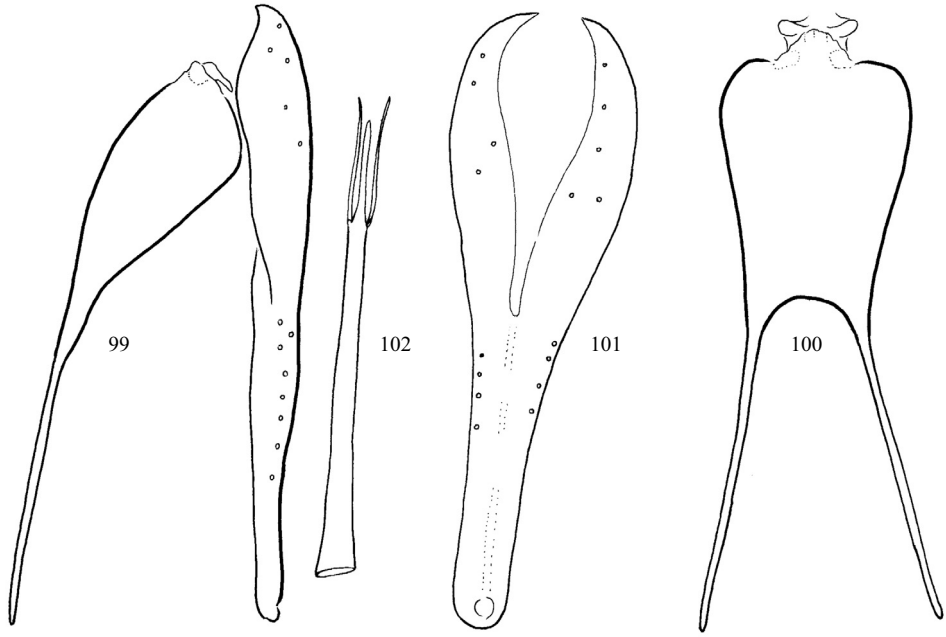
Etymology – negsog from "négyszög" quadrangular in Hungarian, refers to the regular quadrangular shape of the gonopods.



Figs 95–98. *Niuginitrichia negsog* sp. n. holotype male: 95 = genitalia in lateral view; 96 = genitalia in dorsal view; 97 = genitalia in ventral view; 98 = phallic organ in lateral view

Scelotrichia batanta sp. n. (Figs 99–102)

Diagnosis – Has some resemblance to *Scelotrichia kakatu* Wells, 1990, but this species differs from all the described Papua species by scissor shaped gonopods, tripartite head of the phallic organ and by the elaborated sclerotized paraproct wrapping the phallic organ.



Figs 99–102. *Scelotrichia batanta* sp. n. holotype male: 99 = genitalia in lateral view; 100 = genitalia in dorsal view; 101 = genitalia in ventral view; 102 = phallic organ in dorsal view

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

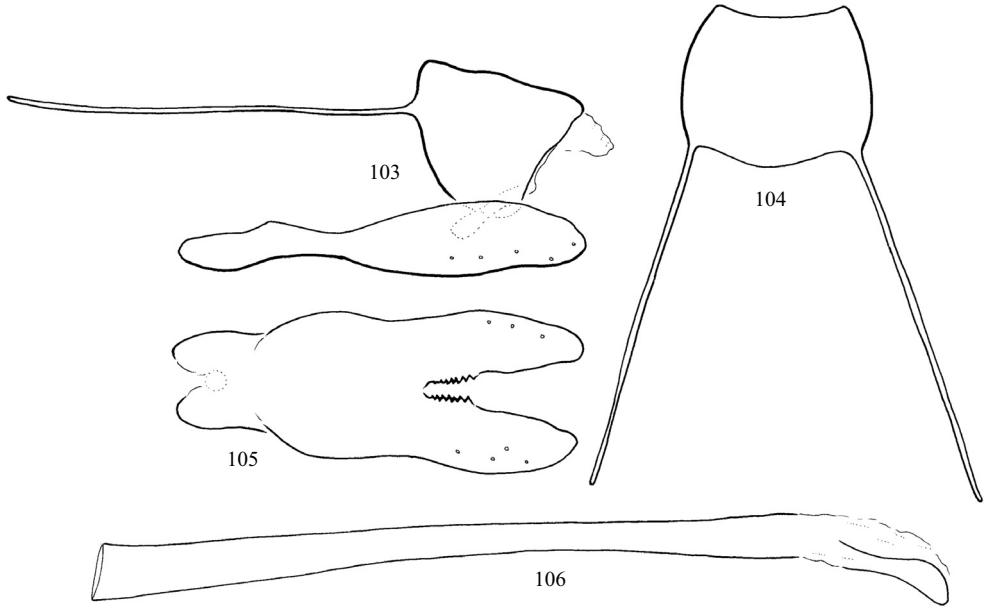
Male genitalia. Sternum of segment VII and segment VIII accommodate the elongated gonopod complex. Segment IX elongated subtriangular in lateral view, with straight, thin, anterolateral, thread-like apodemes. Segment X (dorsal plate) membranous; paraprocts forming pair of vertical, sclerotized structure wrapping the phallic organ. Gonopod complex forming horizontally elongated pair of strongly sclerotized structures with scissor-shaped apices; medially cleft on posterior half in ventral view; fused anterior half rounded, with terminal, internal duct structure sclerotized. Phallic organ forming long, straight tube, with thin, internal ejaculatory duct, its apical portion accompanied by lateral filaments.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Kalisamsem River, 00°53'27.54", 130°33'31.62", 15.02.2016, UV light-trap, T. Kovács, R. Horváth, P. Juhász, K. Saujaj, Roni (1 ♂, OPC).

Etymology – Named after the locus typicus, Batanta Island.

***Scelotrichia kurta* sp. n. (Figs 103–106)**

Diagnosis – Similar to *Scelotrichia kakatu* Wells, 1990, described from Papua New Guinea, but differs by the much shorter gonopods, by the more developed paraproct and the head of the phallic organ without any spines.



Figs 103–106. *Scelotrichia kurta* sp. n. holotype male: 103 = genitalia in lateral view; 104 = genitalia in dorsal view; 105 = genitalia in ventral view; 106 = phallic organ in lateral view

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 17 segmented, scape and pedicel equally long; individul flagellomeres short, cylindrical, about half as long as pedicel. Maxillary palp formula I-II-IV-III-V; first 2 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 subtriangular in lateral view, with straight, thin, anterolateral, thread-like apodeme. Segment X (dorsal plate) membranous. Paraprocts forming a pair of vertical, sclerotized structures fused and wrapping the phallic organ below. Gonopod complex broad elongated pair of strongly sclerotized structures with short serrated medial region; medial cleft on posterior half in ventral view; fused anterior half rounded, with bilobed ending. Phallic organ forming a long, straight tube, with thin, internal ejaculatory duct, its apical portion bilobed in dorsoventral view.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Paratypes: Batanta Island, Kalijakut River, 0°52'52.0", 130°38'8.0", 16.02.2015, at light, T. Kovács, P. Juhász, K. Saujaj (3 ♂, OPC).

Etymology – kurta from "kurta" short, abbreviated in Hungarian, refers to the shorter gonopods.

***Scelotrichia vekonul* sp. n. (Figs 107–110)**

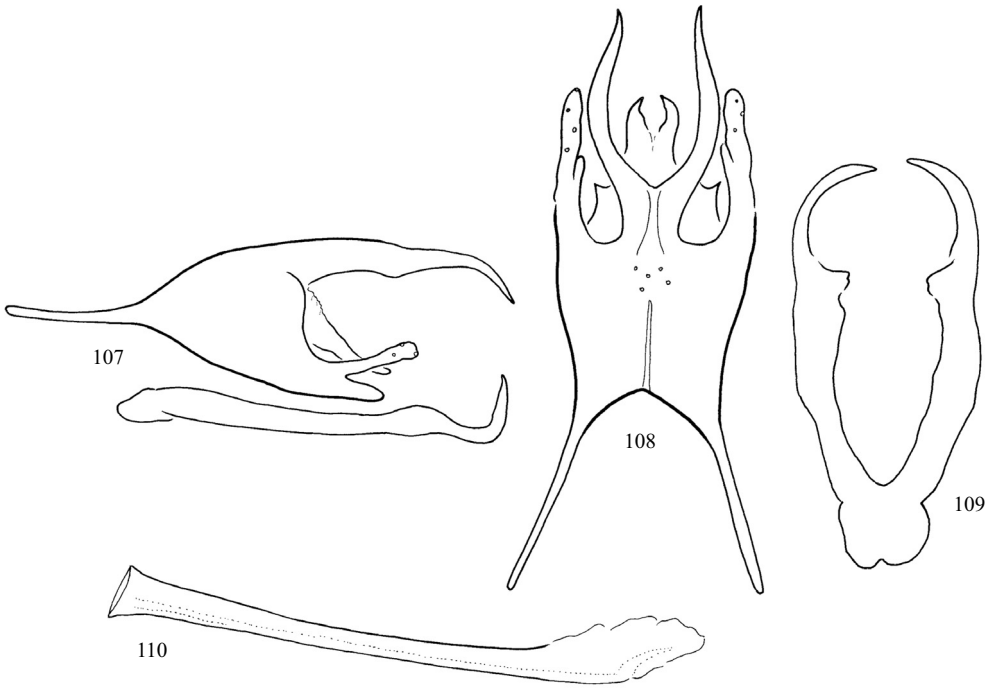
Diagnosis – Similar to *Scelotrichia tuskes* Oláh & Johanson, 2010, described from Malaysia, Sabah, but differs by the more elongated spine like structures on tergum IX and gonopods as well as by the elaborated paraproct.

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 19 segmented, scape and pedicel equally long; individul flagellomeres short, cylindrical, about half as long as pedicel. Maxillary palp formula I-II-IV-III-V; first 2 segments much shorter than wide. Mesoscutellum with transverse suture. Metascutellum narrow, almost as wide as metascutum. Tibial spurs 024. Forewing length 2.2 mm.

Male genitalia. Sternum of segment VII and segment VIII accommodate the elongated gonopod complex. Segment IX subtriangular with V-form apical formation of the elongated structures in lateral view; anterolateral, thread-like apodeme short. Segment X (dorsal plate) membranous. Paraprocts forming a complex sclerotized structures above and below the phallic organ. Gonopod thin spine-like lateral arms with mesad turning apices; fused anterior basal part short rounded, with bilobed ending. Phallic organ forming a straight tube, with thin, internal ejaculatory duct, its apical portion inflated, the ejaculatory duct ending a spine-like structure embedded in the membranous matrix.

Type material – Holotype: **Indonesia**, West Papua, Batanta Island, valley of Warai stream, 00°50'51.0", 130°35'14.0", 11.02.2015, at light, T. Kovács, P. Juhász (1 ♂, OPC). Paraptypes: same as holotype (7 ♂, OPC).

Etymology – vekonul from "vékonyul" getting thin or slim in Hungarian, refers to the elongated spine-like structures both on tergum IX and on the gonopods.



Figs 107–110. *Scelotrichia vekonul* sp. n. holotype male: 107 = genitalia in lateral view; 108 = genitalia in dorsal view; 109 = genitalia in ventral view; 110 = phallic organ in lateral view

References

Kimmins, D. E. (1962): Miss L. E. Cheesman's expeditions to New Guinea. Trichoptera. – Bulletin of the British Museum (Natural History) Entomology, 11(4): 97–187.

Kovács, T., Horváth, R. & Juhász, P. (2015): Szitakötők és tegzesek (Insecta: Odonata, Trichoptera) kutatása Batanta szigeten (Indonézia, Nyugat-Pápua). Study of dragonflies and caddisflies (Insecta: Odonata, Trichoptera) on Batanta Island (Indonesia, West Papua). – Annales Musei historico-naturalis hungarici, 107: 269–288.

Martynov, A. V. (1914): Les Trichopteres de la Siberie et des regions adjacentes. IV-e partie. – Annuaire du Musée Zoologique de l'Académie Imperiale des Scienses, St. Peterburg, 15: 173–285.

Neboiss, A. (1989): Caddis-flies (Trichoptera) of the families Polycentropodidae and Hyalopsychidae from Dumoga-Bone National Park, Sulawesi, Indonesia, with comments on identity of Polycentropus orientalis Mclachlan. – Bulletin Zoölogisch Museum, 12(7): 101–109.

Oláh, J. (2012a): New species and records of Trichoptera from Batanta and Waigeo Islands (Indonesia, Raja Ampat Archipelago, Papua (Irian Jaya). – Braueria (Lunz am See, Austria), 39: 39–57.

Oláh, J. (2012b): Taxonomic list of Trichoptera described and recorded from New Guinea region. – Folia historico-naturalia Musei Matraensis, 36: 105–122.

Oláh, J. (2013): On the Trichoptera of Batanta Island (Indonesia, West Papua, Raja Ampat Archipelago). – Folia entomologica hungarica, 74: 21–78.

Oláh J. (2016): New Australasian and Oriental Triaenodes species (Trichoptera: Leptoceridae). – Opuscula Zoologioca, Budapest, 47(1): 31–63.

Oláh, J. & Johanson, K. A. (2010): Contributions to the systematics of the genera Dipseudopsis, Hyalopsyche and Pseudoneureclopsis (Trichoptera: Dipseudopsidae), with descriptions of 19 new species from the Oriental Region. – Zootaxa, 2658: 1–37.

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

Ulmer, G. (1904): Über westafrikanische Trichopteren. – Zoologischer Anzeiger, 28(10): 353–359.

Ulmer, G. (1930): Trichopteren von den Philippinen und von den Sunda-Inseln. – Treubia, 11(4): 373–498.

Ulmer, G. (1951): Köcherfliegen (Trichopteren) von den Sunda-Inseln (Teil 1). – Archiv für Hydrobiologie, Supplement, 19: 1–528.

Wells, A. (1979): A review of the Australian species of Hydroptila Dalman (Trichoptera: Hydroptilidae) with descriptions of new species. – Australian Journal of Zoology, 26(1978): 745–762.

Wells, A. (1984): Hydroptila Dalman and Orthotrichia Eaton (Trichoptera: Hydroptilidae) from the islands of New Guinea and New Britain, with observation on relationships. – Australian Journal of Zoology, 32(2): 261–282.

Wells, A. (1990): The micro-caddisflies (Trichoptera: Hydroptilidae) of North Sulawesi. – Invertebrate Taxonomy, 3: 363–406.

Wells, A. (1991): The Hydroptilid tribes Hydroptilini and Orthotrichiini in New Guinea (Trichoptera: Hydroptilidae: Hydroptilinae). – Invertebrate Taxonomy, 5: 487–526.

Wells, A. & Huisman, J. (1992): Micro-caddisflies in the tribe Hydroptilini (Trichoptera: Hydroptilidae: Hydroptilinae) from Malaysia and Brunei. – Zoologische Mededelingen, 66(4): 91–126.

Wells, A. & Cartwright, D. (1993): Females and immatures of the Australian caddisfly Hyalopsyche disjuncta Neboiss (Trichoptera), and a new family placement. – Transactions of the Royal society of South Australia, 117(2): 97–104.

Wells, A. & Huisman, J. (1993): Malaysian and Bruneian micro-caddisflies in the tribes Stactobiini and Orthotrichiini (Trichoptera: Hydroptilidae: Hydroptilinae). – Zoologische Mededelingen, 67(7): 91–125.

Wells, A. & Mey, W. (2002): Microcaddisflies of the Philippines (Trichoptera, Hydroptilidae). – Mitteilungen aus dem Museum für Naturkunde in Berlin, Deutsche entomologische Zeitschrift, 49(1): 113–136.

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