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

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Abstract – New species of caddisflies from Batanta Island of West Papua, Indonesia are described and illustrated, belonging to the families Philopotamidae (15 species), Ecnomidae (3), Hydropsychidae (7), Glossosomatidae (2), Hydroptilidae (7). 31 new species records of recently described Batanta species are presented together with two *Anisocentropus* species new to the island: *Anisocentropus dilucidus* McLachlan, 1863 described from the nearby Island of Misool and *Anisocentropus illustris* McLachlan, 1863 from the nearby Island of Salawati. With 144 figures.

Key words – Batanta, caddisflies, New Guinea, new species, Trichoptera

INTRODUCTION

Batanta is the fourth largest island (with the area of 453 km^2) of the Raja Ampat Archipelago in West Papua province, Indonesia. My second study on the Trichoptera of this island is also based on material collected by Róbert Horváth along streams on Batanta Island by installing UV light traps at sunset and recollecting at sunrise with the coming high tide (see Oláh 2012).

MATERIAL AND METHODS

The specimens including all holotypes and paratypes are preserved in 70–80% alcohol and deposited in the collection of the author (Oláh Private Collection, OPC) presently under protection of the Hungarian Natural History Museum, Budapest that will be the permanent depository of the material.

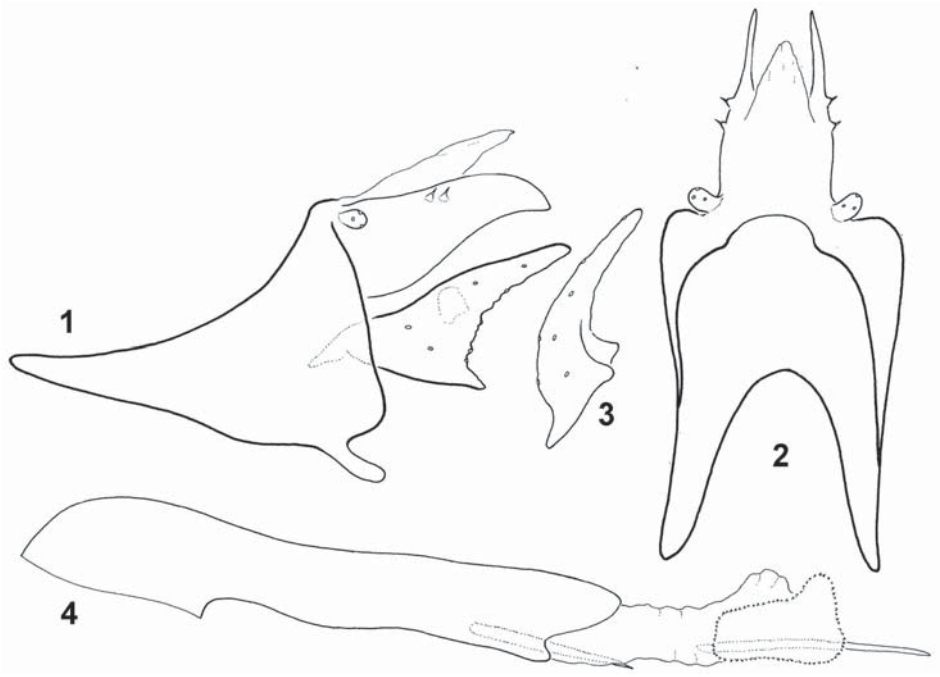
TAXONOMIC PART

Philopotamidae

Chimarra abeli sp. n.
(Figs 1–4)

Diagnosis – Similar to *Chimarra kanala* Oláh, 2012, but differs by having segment IX with anterad elongate slender pleuron; gonopod with rounded tapering apex, not spatulate; membranous segment X longer; endophallus with much longer pair of spines.

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 144. Wing membrane brown; forewing length 5 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 discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed



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

present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing 2A diagnostic looping to join 1A forming a closed cell; 3A reduced.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII produced in a triangular ventral process. Segment IX synsclerotised, its dorsum reduced to a short bridle; anterior margin produced long triangular, posterior margin straight vertical; ventroapical keel modified into a long process with slightly dilated apex in lateral view. Segment X membranous, long. Cerci small rounded ovoid. Paraproctal lateral vertical plate liguliform with 2 sensillae, styloconica located close to each others. Gonopods produced, pointed basoventrad in lateral view with tapering apex in ventral view; posterior margin irregularly serrated; mediomesal surface with double dark triangular humps. Phallic organ with a single pair of straight long black spines; apex of ejected membranous endophallus bearing microtrichia tube.

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, 27.I.2012, light trap, leg. R. Horváth (1 male, OPC).

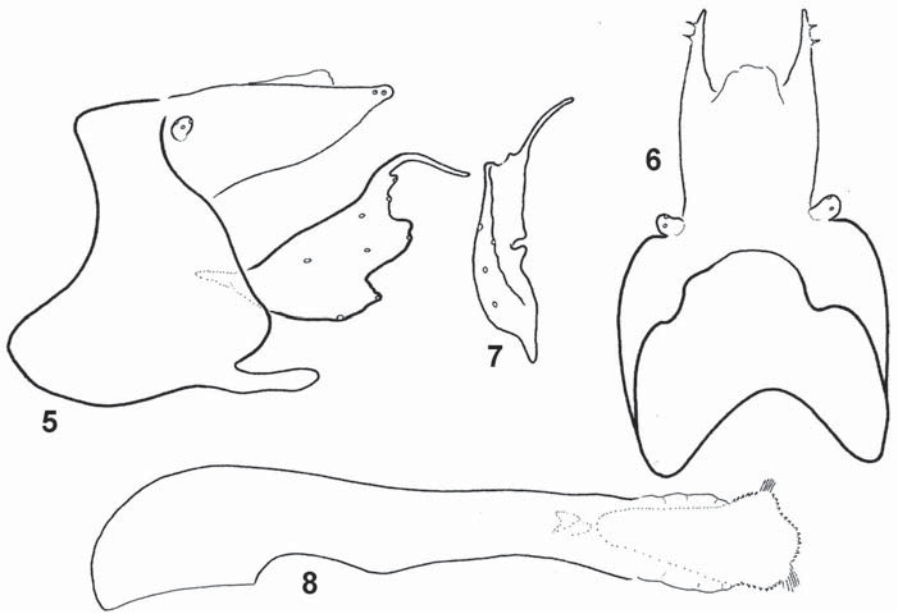
Etymology – Abeli named after Ábel, the son of the painter who has painted the rainforest stream of the Batanta Island with birds and caddisflies on the certificate we release to our supporters in our biodiversity sampling, species description and naming processes.

Chimarra agasa sp. n.
(Figs 5–8)

Diagnosis – Belongs to species with long filiform dorsoapical process on gonopods: *C. papuana* Kimmins, 1962, *C. bobita* Oláh, 2012, *C. kozela* Oláh et Mey, 2013, C. *tompa* sp. n., but differs from all by having gonopods of subdivided branches and arms.

Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown; forewing length 3.8 mm; discoidal, median and thyridial cells on forewing having similar length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strongly sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing diagnostic looping of 2A to join 1A present, 3A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII with ventral process. Segment IX synsclerotised, long ventrum shorter dorsum; ventroapical keel developed into a long process. Segment X membranous, indistinct. Cerci



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

reduced to small setose knot. Paraproctal lateral vertical plates tapering with 2 closely positioned sensillae styloconica on apex. Gonopods with filiform dorsal stalk and irregular apical margin. Phallic organ with slender horizontal phallotheca; internal structure of endotheca dark, indistinct, due to microtrichia covered short tube.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86492°, E 130.52206°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratypes: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC).

Etymology – *Agasa*, from "ágas", full of branches and arms in Hungarian, refers to shape of gonopods.

Chimarra bobita Oláh, 2012

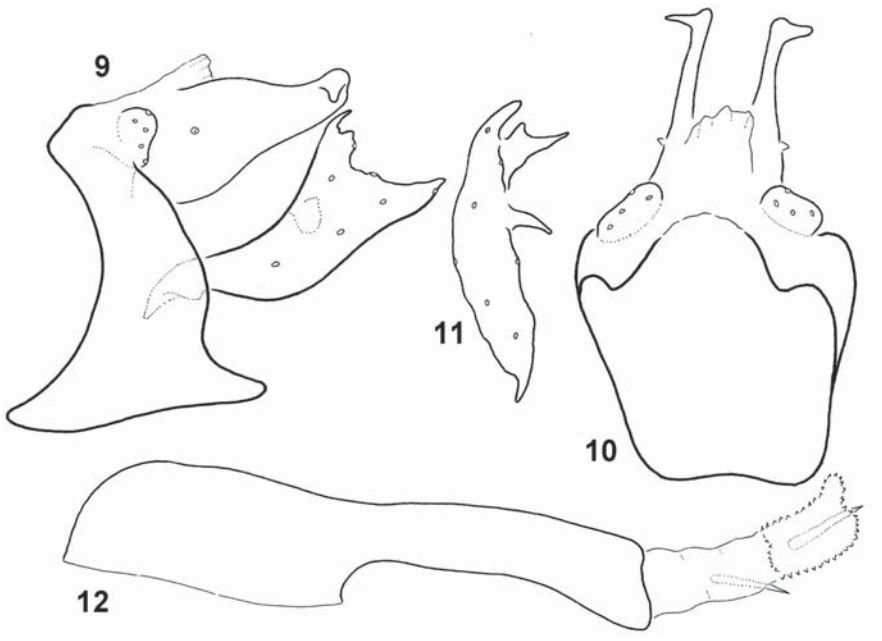
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°,

22.I.2013, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E 130.51968°, under great clearing, 6.II.2012, light trap, leg. R. Horváth (3 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (6 males, OPC). Same locality and data, but 30.I.2012 (3 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 600 m from the mouth, 7.IX.2011, leg. R. Horváth (6 males, OPC).

Chimarra bogos sp. n.
(Figs 9–12)

Diagnosis – Similar to *C. agasa* sp. n. but differs by having paraproct plates with laterad directed subapical branch; gonopods with more developed ventroapical arm.

Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown; forewing length 4.5 mm; discoidal, median



Figs 9–12. *Chimarra bogos* sp. n., holotype, male genitalia: 9 = left lateral view, 10 = dorsal view, 11 = left gonopod in ventral view, 12 = phallic organ in left lateral view

and thyridial cells on forewing having similar length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strongly sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed, present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing diagnostic looping of 2A to join 1A present, 3A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII without ventral process. Segment IX synsclerotised, long ventrum shorter dorsum; ventroapical keel developed into a long apicomesal process. Segment X membranous, indistinct. Cerci medium-sized with setose surface. Paraproctal lateral vertical plates with laterad directed subapical arm. Gonopods ramose with more developed apicoventral lobe. Phallic organ with slender horizontal phallotheca; endotheca with two spines, endothecal apex covered with microtrichiae.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC). Paratypes: Same as holotype (5 males, OPC). Same as holotype, but 30.I.2012 (3 males, OPC).

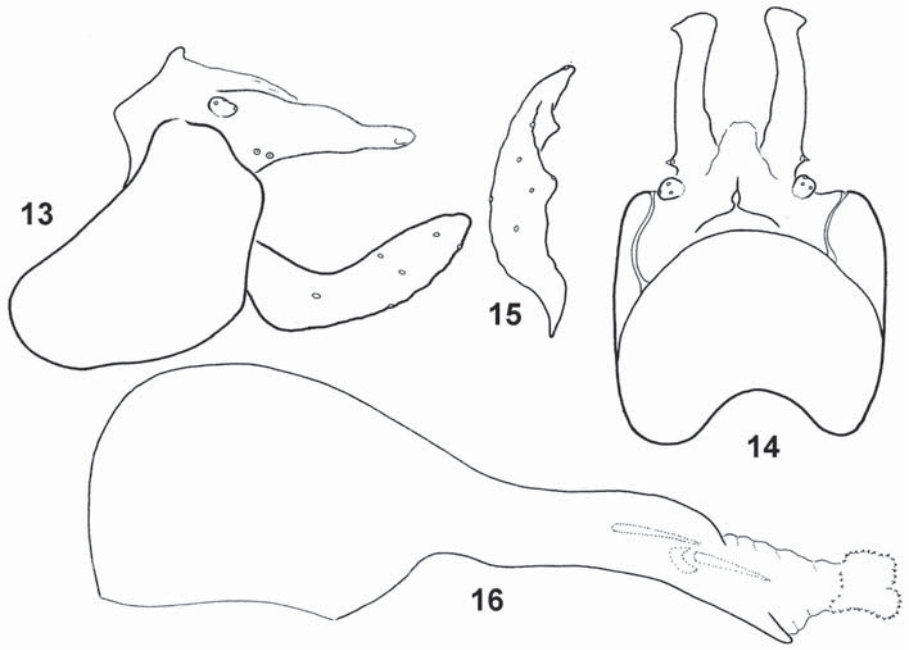
Etymology – *Bogos*, from "bogos", full of burls in Hungarian, refers to shape of gonopods.

Chimarra elvala sp. n.
(Figs 13–16)

Diagnosis – Belongs to the group of species whose tergite IX produced upward into some structure: *C. fehera* Oláh, 2012, *C. felholda* Oláh et Mey, 2013, *C. holda* Oláh, 2012, *C. horgoka* Oláh, 2012, but differs by having unique suture separating segment IX from tergite IX or segment X.

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

Male genitalia. Tergite and sternite VIII distinct, sternite VIII without ventral process. Segment IX synsclerotised, triangular in lateral view; ventroapical keel lacking. Segment X membranous, indistinct. Cerci reduced to small setose knot. Paraproctal lateral vertical plates tapering apicad with laterad curving



Figs 13–16. *Chimarra elvala* sp. n., holotype, male genitalia: 13 = left lateral view, 14 = dorsal view, 15 = left gonopod in ventral view, 16 = phallic organ in left lateral view

point in dorsal view; 2 sensillae styloconica moved basad. Gonopods arching ventrad in lateral view and with two teeth I n ventral view. Phallic organ with large spherical basal section; endotheca with one straight and one curved spine.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E 130.51968°, under great clearing, 6.II.2012, light trap, leg. R. Horváth (1 male, OPC).

Etymology – *Elvala*, from "elválás", separation in Hungarian, refers to the unique suture separating segment IX from the complex of tergite IX and segment X.

Chimarra erzek sp. n.
(Figs 17–20)

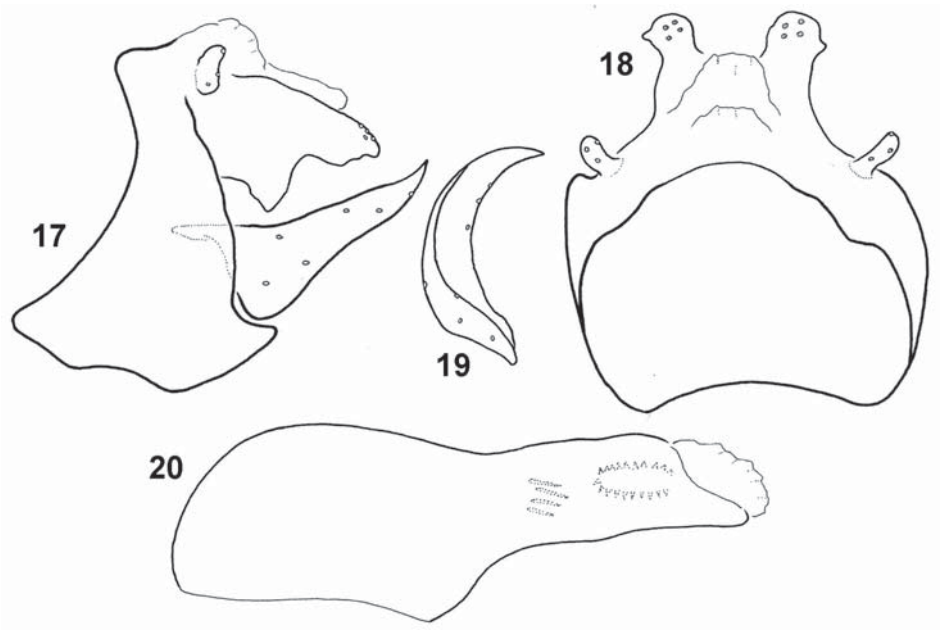
Diagnosis – Close to *Chimarra erzekela* Oláh et Mey, 2013, from New Britain, but differs by having ventroapical keel on segment IX differently shaped; sensory surface on the paraproct shifted apicad from middle; phallotheca with circular basal region, not flat.

Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown; forewing length 4 mm; discoidal, median and

thyridial cells on forewing having similar length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strongly sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing diagnostic looping of 2A to join 1A present, 3A present.

Male genitalia. Segment VIII unmodified. Segment IX synsclerotised, ventrum longer than dorsum; anterior margin concave, posterior margin straight; ventroapical keel developed triangular in lateral view. Segment X membranous. Cerci small elongated. Paraproct short and high, subtriangular with dorsal and ventral apical lobes; dorsum with numerous subapical sensillae. Gonopods dorsad and mesad curving, elongate slender. Phallic organ with four short spines and with a large even shorter spine cluster.

Material examined – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC). Paratype: same as holotype (1 male, OPC). Same as holotype, but 30.I.2012 (2 males, OPC).



Figs 17–20. *Chimarra erzek* sp. n., holotype, male genitalia: 17 = left lateral view, 18 = dorsal view, 19 = left gonopod in ventral view, 20 = phallic organ in left lateral view

Etymology – Erzek, from "érzék", sense in Hungarian, refers to the presence of sensory surface on the paraproct, not simply two sensillae, as usual.

Chimarra fehera Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E 130.51968°, under great clearing, 6.II.2012, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (7 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (10 males, OPC).

Chimarra felkora Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 6.II.2012, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E 130.51968°, under great clearing, 6.II.2012, light trap, leg. R. Horváth (4 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Ron stream, S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, leg. R. Horváth (2 males, OPC).

Chimarra fogas sp. n.
(Figs 21–24)

Diagnosis – Similar to *C. felholda* Oláh et Mey, 2013 but differs by having ventrum IX without any ventroapical keel; paraproct plates slender with laterad directed subbasal and subapical teeth; phallotheca with long ventroapical process. Probably the teeth on paraproct are modified sensillae.

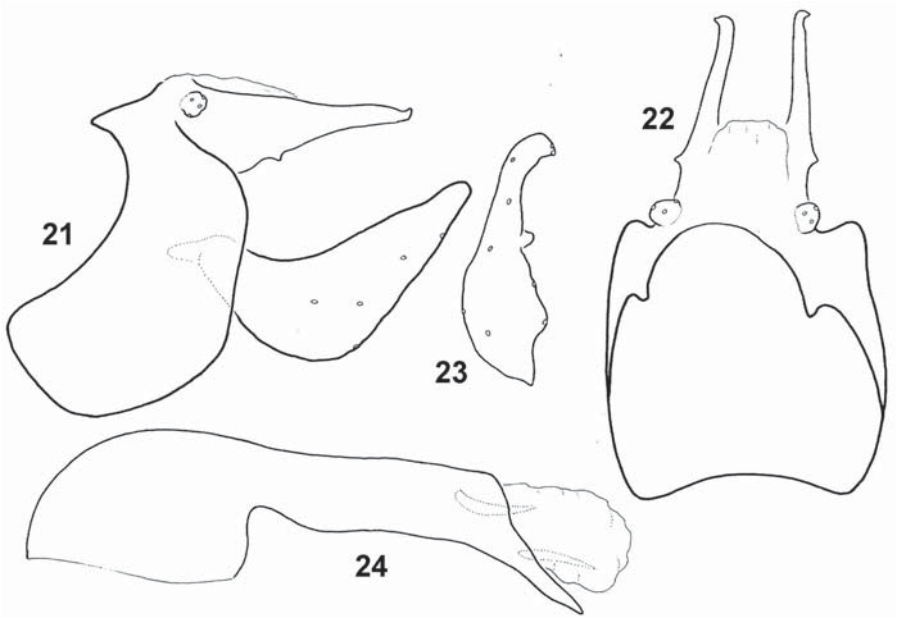
Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown; forewing length 5.5 mm; discoidal, median and thyridial cells on forewing having similar length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strong-

ly sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing diagnostic looping of 2A to join 1A present, 3A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII without ventral process. Segment IX synsclerotised, long ventrum shorter dorsum; ventroapical keel lacking. Segment X membranous, indistinct. Cerci medium-sized setose protuberance. Paraproctal lateral vertical plates with laterad directed subbasal and subapical teeth. Gonopods falciform in lateral view with one middle tooth in ventral view. Phallic organ with slender horizontal phallotheca terminating in a long ventroapical process; endotheca with two spines.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC). Paratypes: same as holotype (9 males, OPC). Same as holotype, but 30.I.2012 (1 male, OPC).

Etymology – *Fogas*, from "fogas", toothed in Hungarian, refers to the presence of subbasal and subapical teeth on the paraproct.



Figs 21–24. *Chimarra fogas* sp. n., holotype, male genitalia: 21 = left lateral view, 22 = dorsal view, 23 = left gonopod in ventral view, 24 = phallic organ in left lateral view

Chimarra holda Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, 27.I.2012, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 22.I.2013, light trap, leg. R. Horváth (6 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (8 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), Same locality and data, but 30.I.2012 (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 600 m from the mouth, 7.IX.2011, leg. R. Horváth (2 males, OPC).

Chimarra horgoka Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (18 males, OPC). Same locality and data, but 30.I.2012 (12 males, OPC).

Chimarra kanala Oláh, 2012

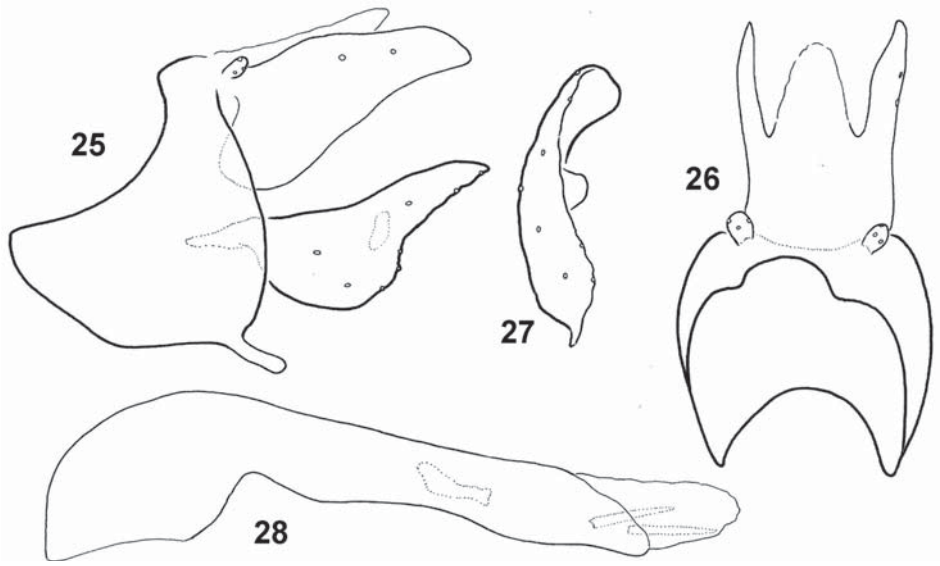
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, 22.I.2013, light trap, leg. R. Horváth (6 males, OPC). Same locality and data, but 27.I.2012 (4 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light trap, leg. R. Horváth (17 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E

130.51968°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (5 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38' 45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (8 males, OPC). Same locality and data, but 30.I.2012 (3 males, OPC).

Chimarra kerka sp. n.
(Figs 25–28)

Diagnosis – Similar to *Chimarra kanala* Oláh, 2012, but differs by having gonopod with rounded ventroapical region, not concave; the dark oblique ridge on mediomesal surface modified into a dark rounded lobe, not running across; endophallus with a single pair of equal spines, not with two pairs of unequal spines.

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 144. Wing membrane brown; forewing length 3.6 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 discoidal cell, whose veins also thick-



Figs 25–28. *Chimarra kerka* sp. n., holotype, male genitalia: 25 = left lateral view, 26 = dorsal view, 27 = left gonopod in ventral view, 28 = phallic organ in left lateral view

ened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing 2A diagnostic looping to join 1A forming a closed cell; 3A reduced.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII produced in a triangular ventral process. Segment IX synsclerotised, its dorsum reduced to a short bridle; anterior margin produced triangular, posterior margin convex; ventroapical keel modified into a long process with slightly dilated apex in lateral view. Segment X membranous, with indistinct shape. Cerci small rounded ovoid. Paraproctal lateral vertical plate liguliform with 2 sensillae styloconica. Gonopods rounded basoventrad in lateral view with spatulate apex in ventral view; spatulate apex slightly rounded truncate; posterior margin irregularly serrated; mediomesal surface with a dark oblique plate. Phallic organ with a single pair of straight black equal spines; apex of membranous endotheca with microtrichia.

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratypes: same as holotype (8 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, 22.I.2013, light trap, leg. R. Horváth (3 males, OPC). Same locality and data, but 27.I.2012 (3 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light trap, leg. R. Horváth (7 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'23.25", E 130°42'35.18", below second waterfall, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (6 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (15 males, OPC). Same locality and data, but 30.I.2012 (16 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 600 m from the mouth, 7.IX.2011, leg. R. Horváth (16 males, OPC).

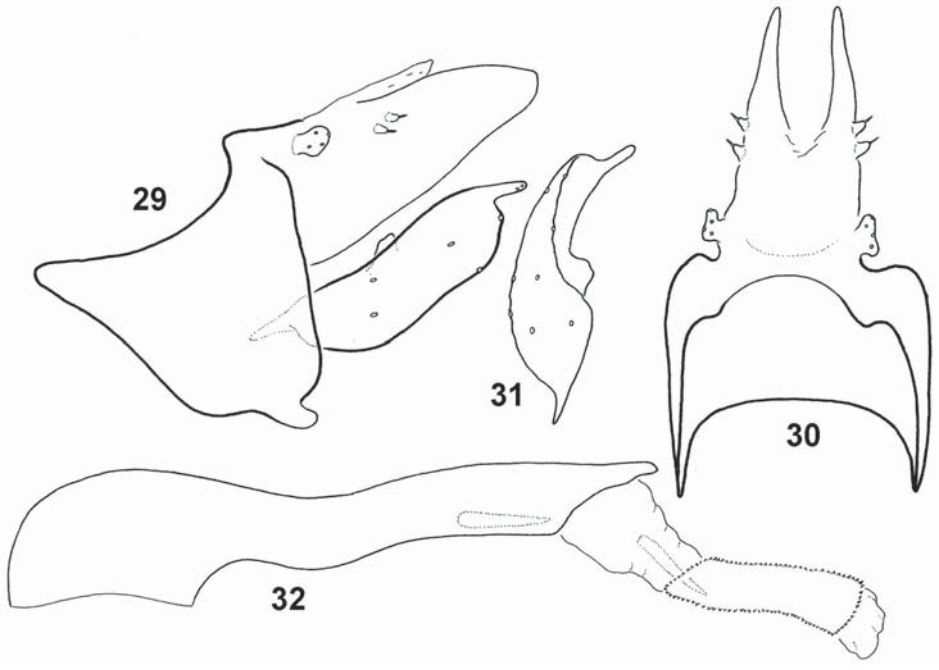
Etymology – *Kerka*, from "kerek", round in Hungarian, refers to rounded apicobasal region of gonopods.

Chimarra mrsale sp. n.
(Figs 29–32)

Diagnosis – Similar to *C. schmidi* Kimmins, 1962 from New Guinea (Cyclops Mts), but differs in shapes of segment IX, paraproct, gonopod and phallotheca.

Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown; forewing length 5 mm; discoidal, median and thyridial cells on forewing having similar length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strongly sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing diagnostic looping of 2A to join 1A present, 3A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII with ventral process. Segment IX synsclerotised, triangular in lateral view; ventroapical keel developed into a short blunt process. Segment X membranous, indistinct. Cerci reduced to small setose knot, angled in dorsal view. Paraproctal lateral vertical plates well developed with 2 closely positioned sensillae styloconica. Gonopods with short digitiform dorsal process. Phallic organ with slender horizontal phallotheca continuing into short dorsoapical pointed process; endotheca with a dark tube of microtrichiae and with two equal spines.



Figs 29–32. *Chimarra mrsale* sp. n., holotype, male genitalia: 29 = left lateral view, 30 = dorsal view, 31 = left gonopod in ventral view, 32 = phallic organ in left lateral view

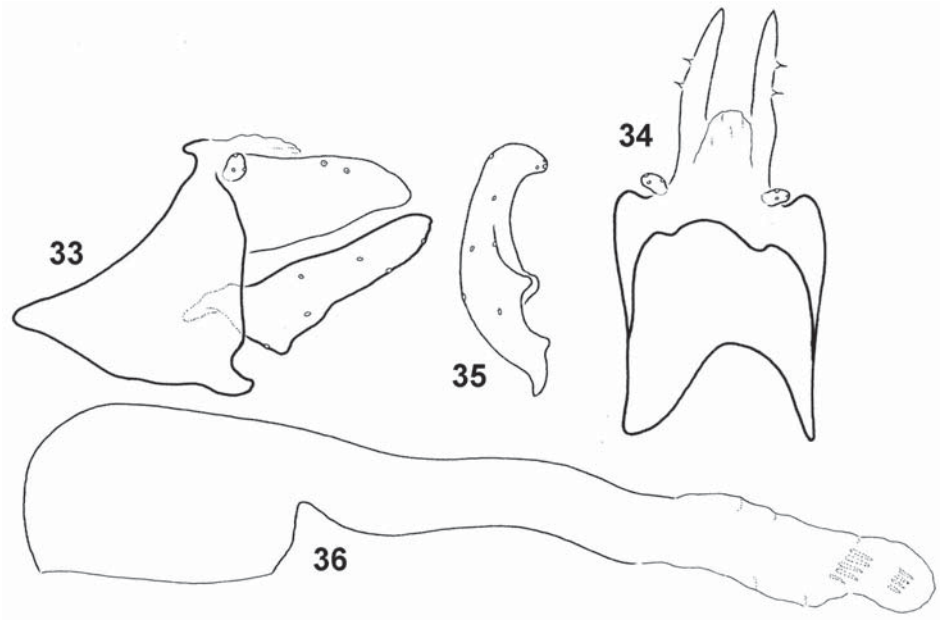
Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratypes: Same as holotype (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC).

Etymology – Mrsale, dedicating this name to the owner of MrSale company, who has contributed to cover our collecting expenses.

Chimarra sarkos sp. n.
(Figs 33–36)

Diagnosis – Similar to *Chimarra kanala* Oláh, 2012, and *C. kerka* sp. n., but differs by having gonopod with angulated ventrobasal region, not lobed or rounded and the gonopod apex is not spatulate.

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 144. Wing membrane brown; forewing length 4 mm; discoidal, median and thyridial cells on forewing having similar length, but discoidal cell dou-



Figs 33–36. *Chimarra sarkos* sp. n., holotype, male genitalia: 33 = left lateral view, 34 = dorsal view, 35 = left gonopod in ventral view, 36 = phallic organ in left lateral view

ble tall than median and median cell double tall than thyridial cell; R slightly sinuate, Rs sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing 2A diagnostic looping to join 1A forming a closed cell; 3A reduced.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII produced in a short triangular ventral process. Segment IX synsclerotised, its dorsum reduced to a short bridle; anterior margin produced triangular, posterior margin straight vertical; ventroapical keel modified into a large process with slightly tapering apex in lateral view. Segment X membranous, with indistinct shape. Cerci small rounded ovoid. Paraproctal lateral vertical plate liguliform with 2 sensillae styloconica. Gonopods angulated basoventrad in lateral view with mesad turning apex in ventral view; mediomarginal and mediomesal surface each with a dark lobe. Phallic organ with a two pairs of small spine cluster.

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (1 male, OPC). Paratype: same as holotype (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (4 males, OPC).

Etymology – *Sarkos*, from "sarkos", angulated in Hungarian, refers to the knee-shaped ventrobasal region of gonopods.

Chimarra tompa sp. n.
(Figs 37–40)

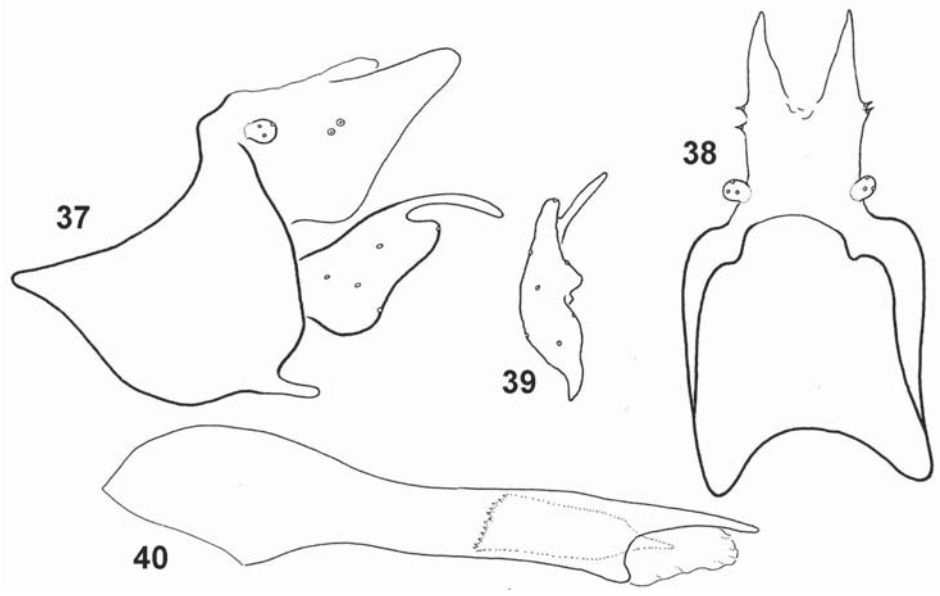
Diagnosis – Belongs to a small group of species, with long filiform dorsoapical process on gonopds, restricted to the New Guinea region: *C. agasa* sp. n., *C. bobita* Oláh, 2012, *C. kozela* Oláh et Mey, 2013, *C. papuana* Kimmins, 1962, *C. tulok* sp. n. Closest to the *C. kozela*, but differs by having pointed pleuron, not rounded anterad; downward curving dorsal process on gonopods, not upward; abbreviated paraprocts, not extremely elongate and slender; phallotheca with dorsal elongate and pointed process.

Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown; forewing length 4.5 mm; discoidal, median and thyridial cells on forewing having similar length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strongly sinuous with thickening before discoidal cell, whose veins also thickened at

base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing diagnostic looping of 2A to join 1A present, 3A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII with ventral process. Segment IX synsclerotised, triangular in lateral view; ventroapical keel developed into a long process. Segment X membranous, indistinct. Cerci reduced to small setose knot. Paraproctal lateral vertical plates abbreviated with 2 closely positioned sensillae styloconica. Gonopods with a thin filiform dorsal stalk. Phallic organ with slender horizontal phallotheca continuing into dorsoapical pointed process; internal structure of endotheca dark, indistinct.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'23.25", E 130°42'35.18", below second waterfall, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E



Figs 37–40. *Chimarra tompa* sp. n., holotype, male genitalia: 37 = left lateral view, 38 = dorsal view, 39 = left gonopod in ventral view, 40 = phallic organ in left lateral view

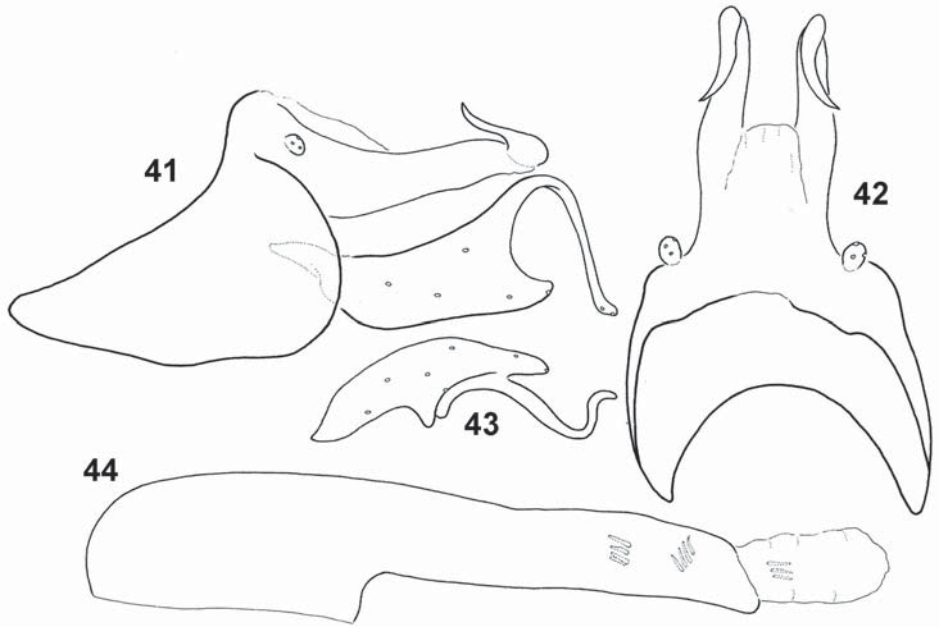
130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC). Same locality and data, but 30.I.2012 (2 males, OPC).

Etymology – *Tompa*, from "tompa", blunt in Hungarian, refers to the abbreviated paraprocts.

Chimarra tulok sp. n.
(Figs 41–44)

Diagnosis – Belongs to a small group of species with long filiform dorsoapical process on gonopds restricted to the New Guinea region: *C. agasa* sp. n., *C. bobita* Oláh, 2012, *C. kozela* Oláh et Mey, 2013, *C. papuana* Kimmins, 1962, *C. tompa* sp n. Differs from all by having horns on the paraproctal plates.

Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula: I-IV-II-III-V. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown; forewing length 4 mm; discoidal, median and thyridial cells on forewing having similar length, discoidal cell double tall than median and median cell double tall than thyridial cell; R slightly, Rs strongly sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of



Figs 41–44. *Chimarra tulok* sp. n., holotype, male genitalia: 41 = left lateral view, 42 = dorsal view, 43 = left gonopod in ventral view, 44 = phallic organ in left lateral view

pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing diagnostic looping of 2A to join 1A present, 3A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII without ventral process. Segment IX synsclerotised, triangular in lateral view; ventroapical keel developed into a long process. Segment X membranous, indistinct. Cerci reduced to small setose knot. Paraproctal lateral vertical plates bearing apical horn. Gonopods with a thin filiform long dorsal stalk. Phallic organ with slender horizontal phallotheca, endotheca with three small cluster of minute spines.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC).

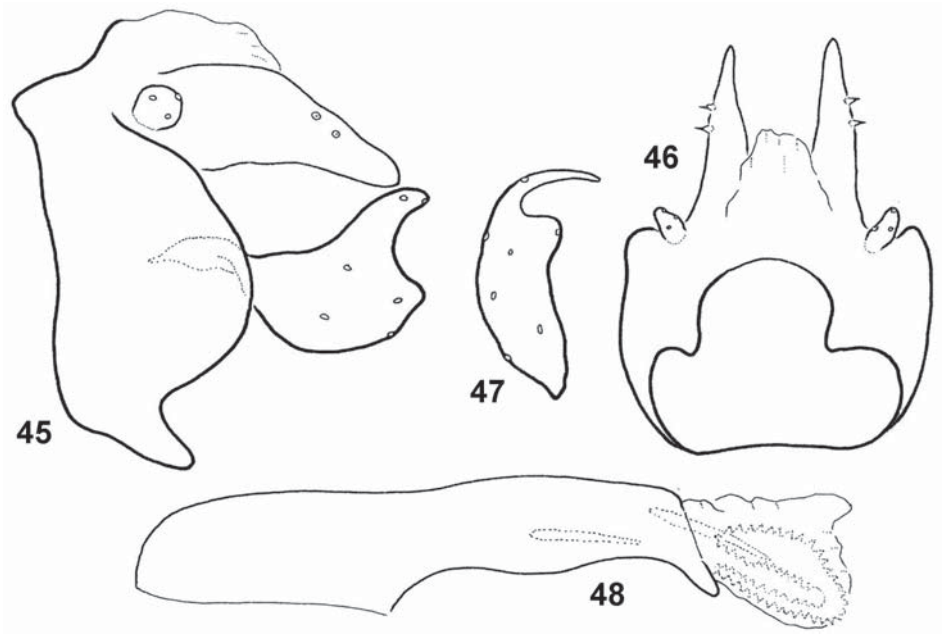
Etymology – *Tulok* from "tulok", bullock in Hungarian, refers to the horn bearing paraproct.

Chimarra tuparna sp. n.
(Figs 45–48)

Diagnosis – Has some resemblance to *C. loriana* Navás, 1933, and *C. lorengau* Malicky, 1994, but differs by having gonopod with rounded basal margin in lateral view, and the gonopod apex is produced into long, tapering and mesad curving process.

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 144. 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 discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on arculus; on hindwing 2A diagnostic looping to join 1A forming a closed cell; 3A reduced.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII produced in a short triangular ventral process. Segment IX synsclerotised, its dorsum reduced to a short bridle; anterior margin straight vertical, posterior margin forming a large rounded lobe; ventroapical keel moved ventroanteriad. Segment X membranous, with indistinct shape. Cerci small rounded ovoid. Paraproctal lateral vertical plate liguliform with 2 sensillae styloconica. Gonopods rounded ventrad in lateral view with mesad turning filiform apex in ventral view. Phallic organ with a complex of large elaborated spine cluster, beside two individual spines.



Figs 45–48. *Chimarra tuparna* sp. n., holotype, male genitalia: 45 = left lateral view, 46 = dorsal view, 47 = left gonopod in ventral view, 48 = phallic organ in left lateral view

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (1 male, OPC). Paratype: same as holotype (3 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (9 males, OPC).

Etymology – *Tuparna*, from "tűpárna", needle pillow in Hungarian, refers to the well developed cluster package of microtrichiae in the endotheca.

Chimarra ujjka Oláh, 2012

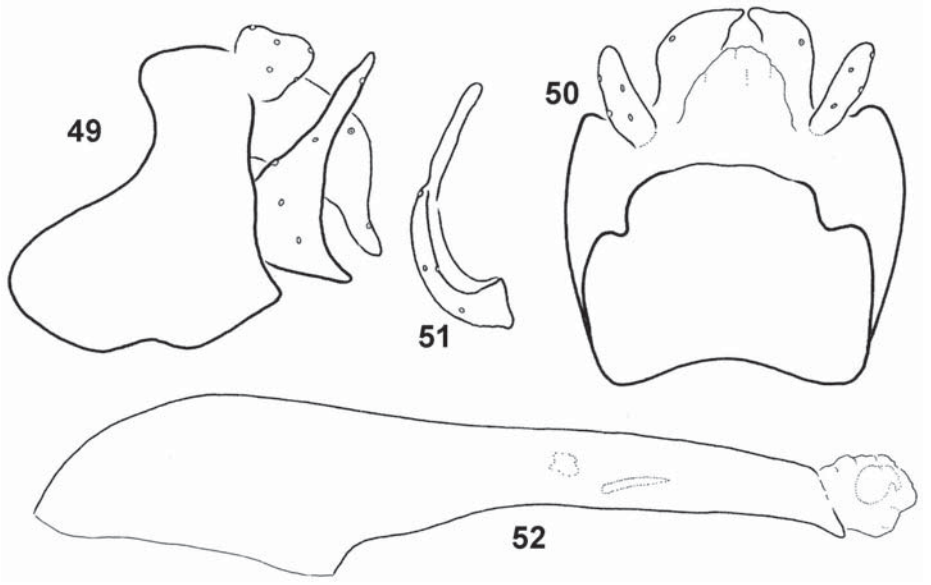
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light trap, leg. R. Horváth (7 males,

OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 600 m from the mouth, 7.IX.2011, leg. R. Horváth (5 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Ron stream, S 0°49'16.37", E 130°49'23.72", at hut, 8.IX.2011, leg. R. Horváth (1 male, OPC).

Chimarra vegsem sp. n.
(Figs 49–52)

Diagnosis – Similar to *Chimarra ujjka* Oláh, 2012, but differs by having paraproctal plates without lateral processes; gonopod with concave apical margin, not convex; endotheca with a single spine and one pair of rounded plates, not with three spines.

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 144. 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 discoidal cell, whose veins



Figs 49–52. *Chimarra vegsem* sp. n., holotype, male genitalia: 49 = left lateral view, 50 = dorsal view, 51 = left gonopod in ventral view, 52 = phallic organ in left lateral view

also thickened at base; hyaline window pattern (reduced pigmentation) less developed, present as lack of pigmentation on crossveins r-m, m, m-cu, and on 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 synsclerotised, its dorsum short, ventrum long; ventroapical keel lacking. Segment X membranous, with indistinct shape. Cerci large subtriangular plate in lateral view. Paraproctal lateral vertical plate with downward directed ends; with 2 sensillae styloconica, one middle, other apicad. Gonopods with long dorsal and short ventral process in lateral view. Endotheca with one pair of rounded plates.

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC). Paratype: same as holotype (8 male, OPC). Same as holotype, but 30.I.2012 (15 males, OPC).

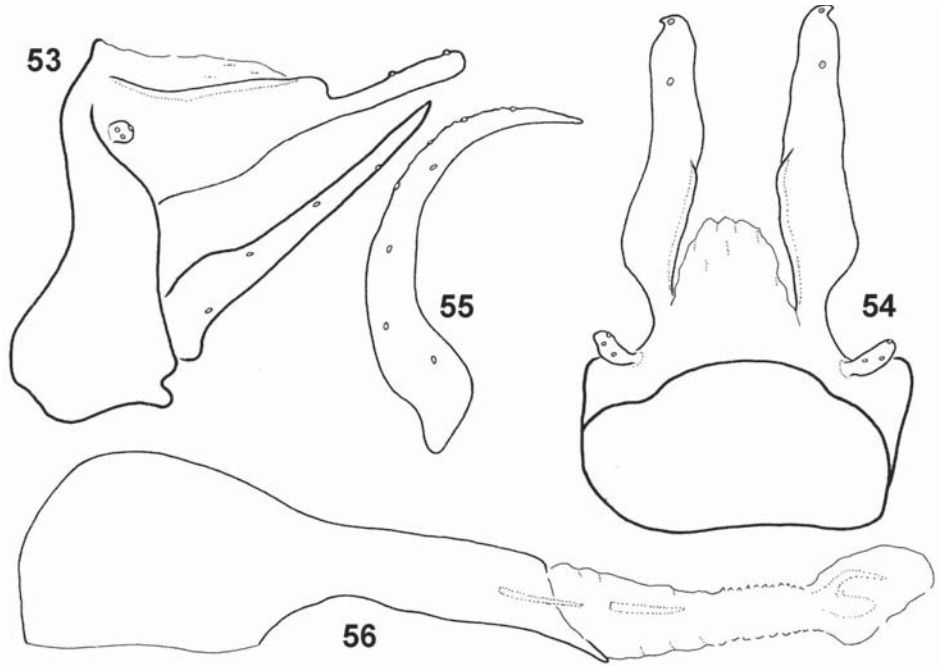
Etymology – *Vegsem*, from "vég szem", teminal eye in Hungarian, refers to the pair of circular plates in terminal position inside the endotheca.

Chimarra vekon sp. n.
(Figs 53–56)

Diagnosis – Similar to a group of species of New Guinea with slender gonopods: *C. aiyura* Korboot, 1965, *C. falcata* Kimmins, 1962, *C. sedlaceki* Sykora, 1967, *C. sinuosa* Kimmins, 1962, but differs by having slender, thin gonopod and very short dorsum IX.

Description – Male (in alcohol). Small light brown animal, abdomen light below. Maxillary palp formula: I-IV-II-(III,V), segment V abbreviated. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown, anastomosis area dark pigmented; forewing length 4 mm; discoidal, median and thyridial cells on forewing having similar length, but discoidal cell double tall than median, thyridial cell very reduced; R sinuate, Rs sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed; on hindwing 2A diagnostic looping to join 1A forming a closed cell; 3A reduced.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII without any ventral process. Segment IX synsclerotised, its dorsum very short; anterior margin concave, posterior margin convex; ventroapical keel short blunt. Segment X membranous, with indistinct shape. Cerci minute, elongated. Paraproctal lateral vertical plate liguliform with rod-shaped apical third in lateral view, apical end-



Figs 53–56. *Chimarra vekon* sp. n., holotype, male genitalia: 53 = left lateral view, 54 = dorsal view, 55 = left gonopod in ventral view, 56 = phallic organ in left lateral view

ing with minute laterad directed point. Gonopods slender, straight in lateral and semicircular in ventral view. Phallic organ with one pair of spines, apex of membranous endotheca with microtrichia.

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth (3 light traps), 2.IX.2011 leg. R. Horváth (1 male, OPC). Paratype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC).

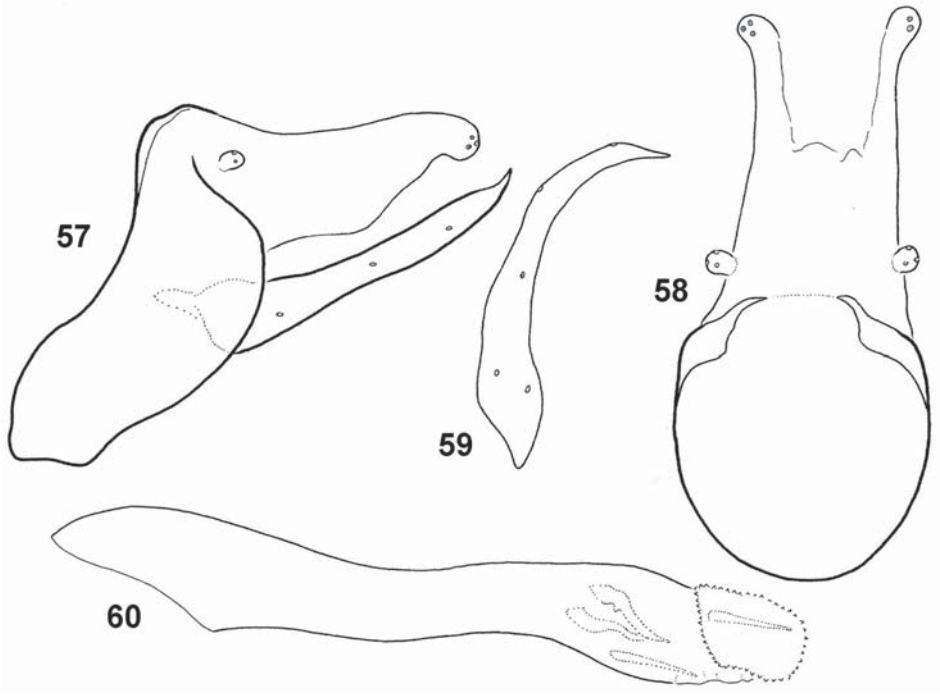
Etymology – *Vekon*, from "vékony", thin in Hungarian, refers to the slender gonopods.

Chimarra waridora sp. n.
(Figs 57–60)

Diagnosis – Similar to *Chimarra falcata* Kimmins, 1962, but differs by having posterior margin of segment IX rounded, not straight; gonopod less falcated; cerci minute, not large; paraproctal plates with laterad produced apices.

Description – Male (in alcohol). Small light brown animal, abdomen light below. Maxillary palp formula: I-IV-II-(III, V), segment V abbreviated. Fore tibial spurs reduced to diagnostic one: spur formula 144. Wing membrane brown, anastomosis area dark pigmented; forewing length 5 mm; discoidal, median and thyridial cells on forewing having similar length, but discoidal cell double tall than median, thyridial cell very reduced; R sinuate, Rs sinuous with thickening before discoidal cell, whose veins also thickened at base; hyaline window pattern (reduced pigmentation) less developed; on hindwing 2A diagnostic looping to join 1A forming a closed cell; 3A reduced.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII without any ventral process. Segment IX synsclerotised, its dorsum and ventrum short; anterior margin concave, posterior margin convex; ventroapical keel lacking. Segment X membranous, with indistinct shape. Cerci minute, rounded. Paraproctal lateral vertical plate liguliform, apical ending capitate, slightly laterad directed. Gonopods digitate slender. Phallic organ with one straight and one curved pairs of spines, apex of membranous endotheca with microtrichia.



Figs 57–60. *Chimarra waridora* sp. n., holotype, male genitalia: 57 = left lateral view, 58 = dorsal view, 59 = left gonopod in ventral view, 60 = phallic organ in left lateral view

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86492°, E 130.52206°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratypes: same as holotype (5 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E 130.51968°, 22.I.2013, light trap, leg. R. Horváth (8 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 22.I.2013, light trap, leg. R. Horváth (4 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E 130.51968°, under great clearing, 6.II.2012, light trap, leg. R. Horváth (6 males, OPC).

Etymology – *Waridora*, named for the type locality.

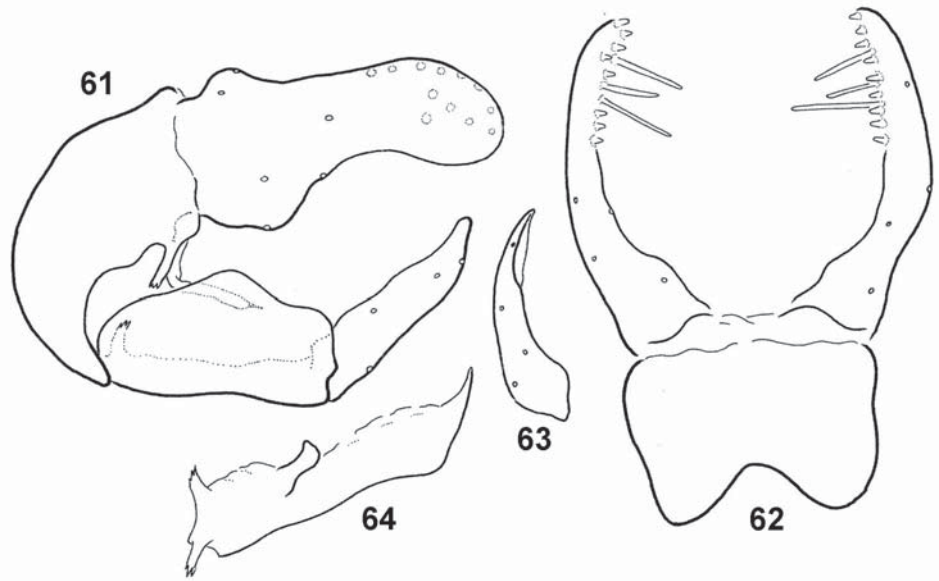
Ecnomidae

Ecnomus bogos sp. n.
(Figs 61–64)

Diagnosis – Most similar to *Ecnomus lelog* Oláh, 2012, but differs by having more robust cerci with basodorsal and basoventral burls; gonopod differently shaped.

Description – Male (in alcohol) Small light brown animal. Foretibial spurs complete, three; spur formula 344. Maxillary palp formula I-II-III-IV-V, second segment slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale brown; forewing length 3.4 mm; forewing forks complete, F1 present; corneous nygmae present and well-visible in F2 and in thyridial cell; forewing vein R1 strongly hypertrophied, thickened along its entire length; false fork of R1 indistinct on granulate pterostigmal area; median cell longer than discoidal cell; thyridial cell low and slightly shorter than discoidal.

Male genitalia. Tergum IX concave anteriorly and narrowing ventrally and broadening dorsally in lateral view; sclerotised strips, skeletal holder connecting tergum IX to phallobase distinct; sternum IX long subquadrangular, without longitudinal median suture in ventral view. Vestigial segment X indiscernible. Cerci robust with basal burls in lateral view; cercal stout setae black, spread anterad on dorsoapical margin, few very long. External paraproctal processes deeply shifted down by elongation of internal paraproctal processes; digitiform with setal apices. Gonopod elongate slender and apex pointed. Phallic apparatus starts from a ring-like phallic apodeme followed by dorsobasal lobe and by pair of short



Figs 61–64. *Ecnomus bogos* sp. n., holotype, male genitalia: 61 = left lateral view, 62 = dorsal view, 63 = left gonopod in ventral view, 64 = phallic organ in left lateral view

parameres; aedeagus tapering apicad and upward directed in lateral view; tenons connecting phallobase to basal plate of gonopods discernible.

Type material – Holotype: Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 6.II.2012, leg. R. Horváth (1 male, OPC). Paratypes: same as holotype (3 males, OPC).

Etymology – *Bogos*, from "bogos", with burls in Hungarian, refers to burls developed on basodorsal and basoventral region of cerci as visible in lateral view.

Ecnomus bondor sp. n.
(Figs 65–68)

Diagnosis – Most similar to *Ecnomus masong* Cartwright, 1998 from Papua New Guinea, but differs by having cerci S-shaped curling, not straight; basoventral process without basal broadening; apex of gonopod mesad turning, not straight; phallic organ with more pronounced parameres.

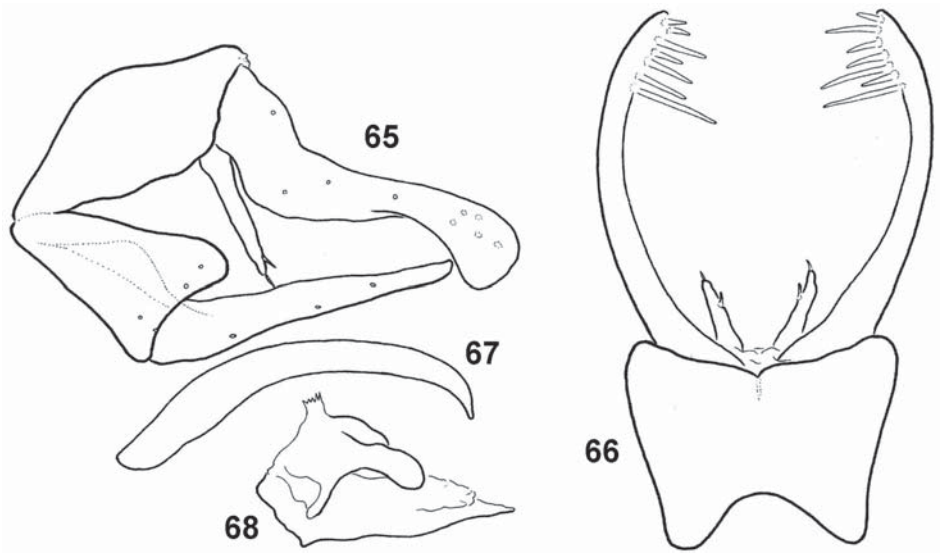
Description – Male (in alcohol). Small brown animal with lighter legs and venter. Foretibial spurs complete, three; spur formula 344. Maxillary palp formula I-II-III-IV-V, second segment slightly longer than first and only slightly shorter

than third; third segment positioned apically on second. Wing membrane pale brown; forewing length 2.8 mm; forewing forks complete, F1 present; corneous nygmae present and well-visible in F2 and in thyridial cell; forewing vein R1 strongly hypertrophied, thickened along its entire length; false fork of R1 indistinct on granulate pterostigmal area.

Male genitalia. Tergum IX rhomboid, stenum IV subtriangular in lateral view; sclerotised strips, skeletal holder connecting tergum IX to phallobase indistinct; sternum IX without longitudinal median suture in ventral view. Vestigial segment X indiscernible. Cerci S-shaped, capitate; cercal stout setae black with unregular length, mesad directed. External digitate paraproctal processes deeply hanging down with setal apices. Gonopod extremely elongate slender and apex upward mesad turning. Phallic apparatus starts from a ring-like phallic apodeme followed by dorsobasal lobe and by rounded pair of parameres; aedeagus tapering apicad in lateral and ventral view; tenons connecting phallobase to basal plate of gonopods indistinct.

Type material – Holotype: Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84152°, E 130.70810°, above second waterfall 22.I.2013, leg. R. Horváth (1 male, OPC).

Etymology – *Bondor*, from "bondor", curl in Hungarian, refers to double curving shape of cerci.



Figs 65–68. *Ecnomus bondor* sp. n., holotype, male genitalia: 65 = left lateral view, 66 = dorsal view, 67 = left gonopod in ventral view, 68 = phallic organ in left lateral view

Ecnomus bunkos Oláh, 2012

Material examined – Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84152°, E 130.70810°, above second waterfall 22.I.2013, light leg. R. Horváth (7 males, OPC). Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light leg. R. Horváth (11 males, OPC). Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0°50'18.40", E 130°42'41.91", above first waterfall, 27.I.2012, light leg. R. Horváth (1 male, OPC). Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth, 2.IX.2011 (3 light traps), leg. R. Horváth (8 males, OPC). Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (10 males, OPC). Same locality and data, but 30.I.2012 (1 male, OPC). Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 600 m from the mouth, 7.IX.2011, light leg. R. Horváth (5 males, OPC).

Ecnomus lelog Oláh, 2012

Material examined – Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light leg. R. Horváth (1 male, OPC). Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (2 males, OPC).

Remark – The apex of the vertically flat aedeagus was erroneously drawn tapering on the original drawing. It is bilobed or rather bipointed both on the holotype and on the three newly collected and examined specimens.

Ecnomus terul sp. n.
(Figs 69–72)

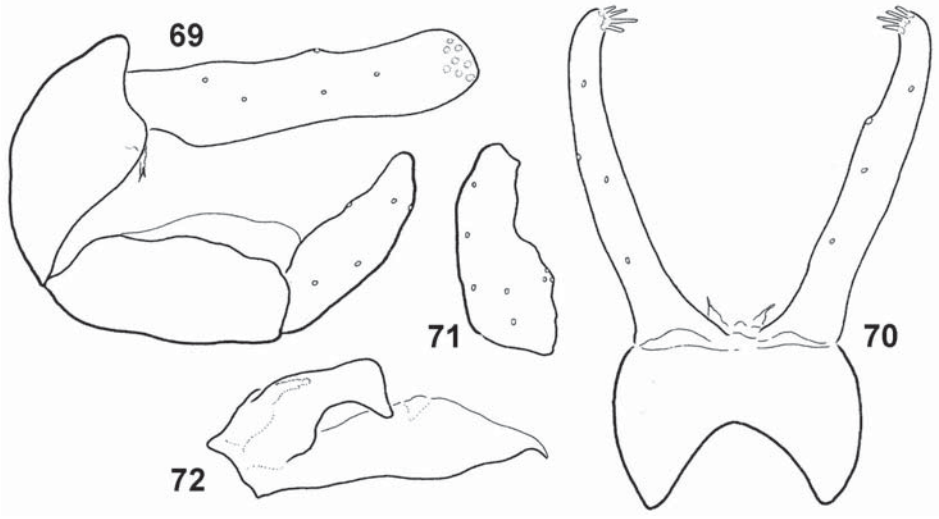
Diagnosis – Close to *Ecnomus bunkos* Oláh, 2012, the most distributed *Ecnomus* species in the island, but differs by having cerci parallel-sided, not clavate; gonopods spread plate-shaped; phallic organ differently constructed, aedeagus pointed, not bifid.

Description – Male (in alcohol). Small brown animal, head lost. Wing membrane pale brown; forewing length 2.9 mm; forewing forks complete, F1 present; corneous nygmae present and well-visible in F2 and in thyridial cell; forewing vein R1 strongly hypertrophied, thickened along its entire length; false fork of

R1 indistinct on granulate pterostigmal area; median cell as long as discoidal cell; thyridial cell low and slightly shorter than discoidal.

Male genitalia. Tergum IX concave anteriorly and narrowing both ventrally and dorsally in lateral view; sclerotised strips, skeletal holder connecting tergum IX to phallobase distinct; sternum IX long subquadrangular, obliquely cut at tergal margin in lateral view without longitudinal median suture in ventral view. Vestigial segment X indiscernible. Cerci straight parallel-sided slender digitiform in dorsal strip-shaped in lateral view; cercal terminal stout setae black, limited to apicomarginal mesal surface; medium-sized and mesad directed. External paraproctal processes just discernible as short digitiform with small apical setae; internal paraproctal processes fused to external ones. Gonopod short and spread; vertical band-like basal plates running along mesal surface of sternites and connected to phallic tendons. Phallic apparatus starts from a ring-like phallic apodeme followed by short dorsobasal lobe and by heavily sclerotised pointed aviform parameres; aedeagus with pointed apex; tenons connecting phallobase to basal plate of gonopods visible.

Type material – Holotype: Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 18.I.2013, light leg. R. Horváth (1 male, OPC). Paratype: same as holotype (1 male, OPC). Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 18.I.2013, light leg. R. Horváth (1 male, OPC). Indonesia, West Papua, Raja Ampat, Batanta Island,



Figs 69–72. *Ecnomus terul* sp. n., holotype, male genitalia: 69 = left lateral view, 70 = dorsal view, 71 = left gonopod in ventral view, 72 = phallic organ in left lateral view

northern coast, Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 6.II.2012, light leg. R. Horváth (3 males, OPC).

Etymology – Terul, from "terül", spread in Hungarian, refers to broadly spread shape of the gonopods as well as the vertically spread plate-like basal plate.

Ecnomus vekon Oláh, 2012

Material examined – Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light leg. R. Horváth (5 males, OPC). Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 6.II.2012, light leg. R. Horváth (7 males, OPC). Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Ron stream S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, light leg. R. Horváth (2 males, OPC). Indonesia, West Papua, Raja Ampat, Batanta Island, northern coast, Ron stream, S 0°49'16.34", E 130°49'23.72", below hut, 8.IX.2011, light leg. R. Horváth (5 males, OPC).

Psychomyiidae

Tinodes rekae Oláh, 2012

Material examined – Batanta Island, northern coast, small stream S 0°48'54.16", E 130°38'09.04", 600 m from the mouth, 7.IX.2011, light leg. R. Horváth (9 males, OPC).

Hydropsychidae
Macronematinae

Baliomorpha mariannae Oláh, 2012

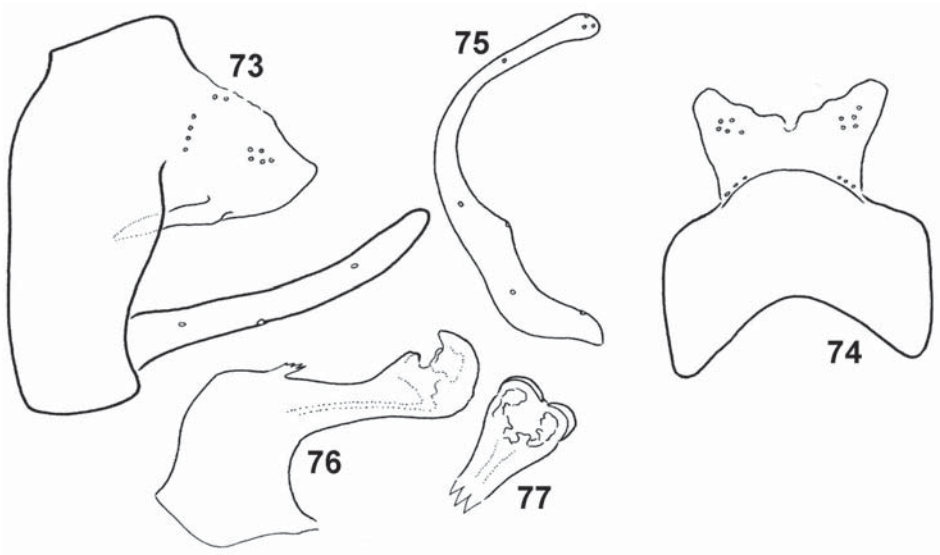
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 7.IX.2011, light trap, leg. R. Horváth (6 males, 2 females, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 2.IX.2011, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above the waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, 6 females, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, at the large fallen tree, S 0.83769°, E 130.71094°, 22.I.2013, light trap, leg. R. Horváth (2 males, 5 females, OPC).

Baliomorpha sarga sp. n.
(Figs 73–77)

Diagnosis – This small yellow species with uniform dark brown wings is most similar to *Baliomorphy barna* Oláh, 2012, described from Batanta, but differs by having a single triangular light patch on pterostigmal area of forewing. The head of the phallic organ without the very characteristic lateral wing present on *B. barna*.

Description – Male (in alcohol). The entire body is yellow, including appendages, only vertexal lateroocellar compact setal warts are brown. Maxillary palp formula I-II-IV-III-V. Forewing length 8 mm; Sc on forewing not united with R1 apically; nygma of thyridial cell at about middle of cell; forewing membrane dark brown with a single triangular pterostigmal light patch.

Male genitalia. Segment IX with almost equal short dorsum, ventrum and pleuron in lateral view. Segment X shor triangular in lateral view; diverging with blunt apices in dorsal view; cerci located subapicad on lateral lobes and represented by setal slightly elevated surface. Vestigial paraproct emarginating segment X ventrolaterad and forming more sclerotised rod-shaped phallic guide. Gonopod semicircular in ventral view, no visible articulation between coxopodite and harpago. Phallobase right angled to stem; phallic apex bilobed in lateral view.



Figs 73–77. *Baliomorpha sarga* sp. n., holotype, male genitalia: 73 = left lateral view, 74 = dorsal view, 75 = left gonopod in ventral view, 76 = phallic organ in left lateral view, 77 = apex of phallic organ indorsal view

Material examined – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 7.IX.2011, light trap, leg. R. Horváth (1 male, OPC). Paratypes: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (2 males, OPC).

Etymology – *Sarga*, from "sárga", yellow in Hungarian, refers to yellow colouration of the entire body.

Macrostemum auriferum Neboiss, 1984

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, at mouth of small stream under large fallen trees, S 0.85582°, E 130.52075°, 18.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 18.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86492°, E 130.52206°, 18.I.2013, light trap, leg. R. Horváth (4 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (4 females, OPC).

Macrostemum warmon sp. n.
(Figs 78–82)

Diagnosis – Two *Macrostemum* species were described by McLachlan (1866) from New Guinea from single female specimens without genital drawings. Their type specimens have been lost (Neboiss 1986). Rather precise and detailed description of body as well as wing colour and pattern permits to compare them with *M. warmon* sp. n. *Macrostemum wallacei* (McLachlan, 1866) described from Nova Guinea (New Guinea without more data), has whole body yellow-ochraceous without any castaneous patches and the light pattern both on the forewing and hindwing are different. *Macrostemum dulce* (McLachlan, 1866) described from Mysol (Misool, New Guinea) has the head dark brown with three yellow spots in front. The forewing pattern of *M. warmon* sp. n. has similarity to *Macrostemum saundersi* (McLachlan, 1866) described also from Mysol, but the genital structure differs.

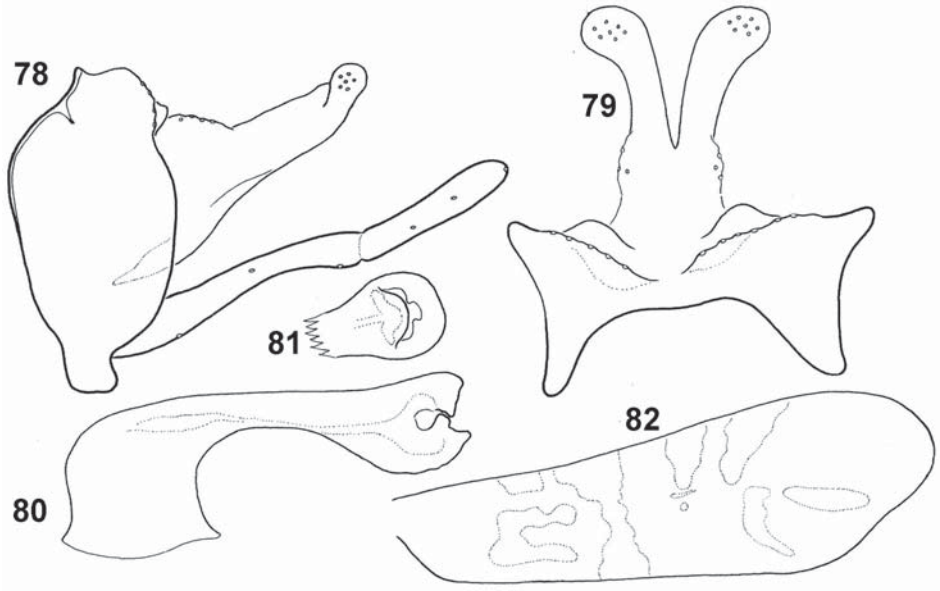
Description – Male (in alcohol). The entire body is variously bright yellow including legs and palps with some castaneous brown area: small patches on genal area, even smaller on vertex touching blackish eyes, laterad on first femur and laterad on mezothoracic sclerites. First antennal segments ochraceous, fol-

lowing brown and ochraceous afterwards. Maxillary palp formula is I-II-IV-III-V. Forewing length 10 mm; Sc on forewing united with R1 apically; nygma of thyridial cell at distal end; forewing membrane dark with light pattern composed of 7 distinct patches: 2 subtriangular near pterostigma, 2 ventrosubapicad, 1 transversal little basad of middle, 1 small quadratic costal and 1 C-shaped middle both subbasad.

Male genitalia. Segment IX short with very short ventrum. Segment X elongate in lateral view; diverging with capitate apices in dorsal view; cerci located basad and represented by setal protuberance. Vestigial paraproct emarginating segment X ventrolaterad and forming more sclerotised phallic guide. Coxopodite little longer than harpago. Phallobase right angled to stem; phallic apex capitate in ventral and bilobed in lateral view.

Material examined – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above the waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC).

Etymology – Warmon, coined from the name of type locality, of the stream with beautiful waterfalls.



Figs 78–82. *Macrostemum warmon* sp. n., holotype, male genitalia: 78 = left lateral view, 79 = dorsal view, 80 = phallic organ in left lateral view, 81 = apex of phallic organ indorsal view, 82 = forewing pattern

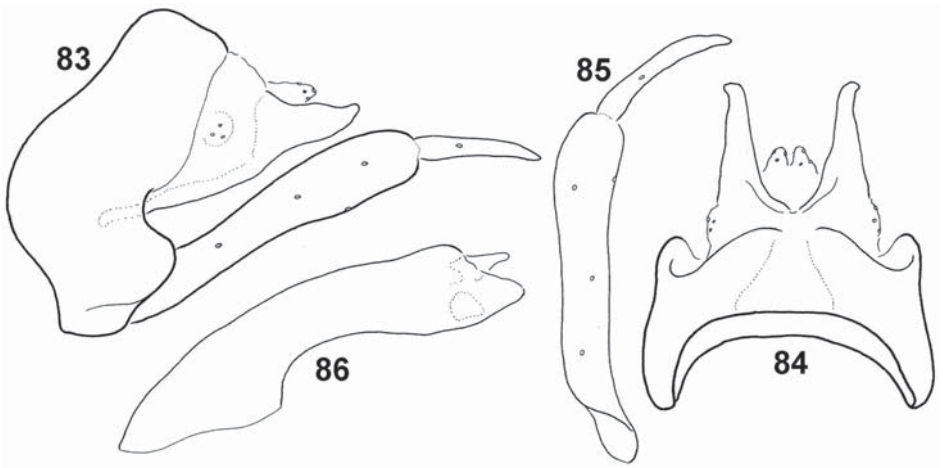
Diplectroninae

Diplectrona savos sp. n.
(Figs 83–86)

Diagnosis – Differs from all the five species described from New Guinea by the contrasting colouration of yellow body and dark wing, by the light-banded pattern on forewing and by the heavily sclerotised and deeply divided paraproctal component of the dorsal complex.

Description – Male (in alcohol). Yellow body and dark forewing, only head and thorax dorsum darker. Eye unsetose, small, interocular distance large, 1.8 length of eye diameter. Maxillary palp formula I-IV-IIV-III-V. Anterodorsal filament on sternite V is 1.8 length of segment. Forewing length is 5.4 mm, apical fork I is present on hindwing.

Male genitalia. Segment IX medium long, regularly convex anteriad, with dorsal and ventral concavity in lateral view; median keel indistinct. Segment X dark sclerotised, deeply divided in dorsal view. The dorsoapical setose lobes (inner lobes of segment X) of segment X characteristic for genus digitate, less sclerotised and appear as separated from paraproct dominated highly sclerotised unsetose lobes; ventroapical setose lobe of segment X indiscernible. Cerci (lateral setose area or preanal appendages) rounded setose surface located basad. Unsetose paraproct (outer lobes of segment X) dominating segment X. Gonopods straight, coxopodite slightly dilating apicad; harpago narrow, arching mesad, parallel-sided. Phallic apparatus with down curving and broadening basal section and with a slightly longer



Figs 83–86. *Diplectrona savos* sp. n., holotype, male genitalia: 83 = left lateral view, 84 = dorsal view, 85 = left gonopod in ventral view, 86 = phallic organ in left lateral view

tube-forming horizontal apical half with protruding ventral lip in lateral view; two pairs of endothecal processes visible, dorsal pair elongate freely projecting popsterad, ventral pair rounded and located inside; phallotremal sclerite less distinct.

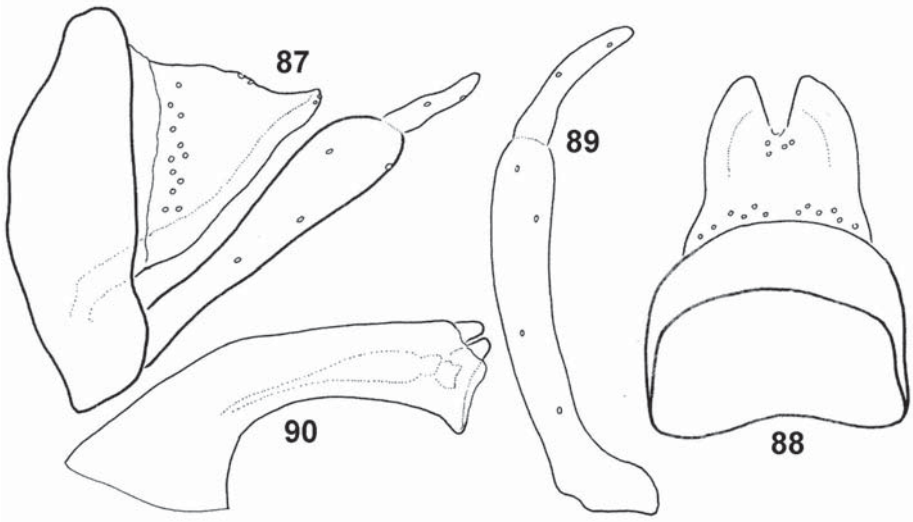
Material examined – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large clearing, S 0.84751°, E 130.51968°, 2.II.2012, light trap, leg. R. Horváth (1 male, 3 females, OPC). Paratype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Ron stream, S 0°49'16.37", E 130°49'23.72", 8.IX.2011, light trap, leg. R. Horváth (1 male, OPC).

Etymology – *Savos* from "sávos" banded in Hungarian, refers to light bands on the dark forewing background.

Diplectrona szalma sp. n.
(Figs 87–90)

Diagnosis – Close to *Diplectrona triangulata* Sykora, 1967 described from New Guinea, but differs by having segment IX much shorter; segment X excised apicomesad short not long; harpago with blunt apex, not pointed; phallotheca with differently formed apex, apicoventral margin blunt pointed, not rounded in lateral view.

Description – Male (in alcohol). Straw yellow animal with yellow forewing. Eye unsetose, enlarged, interocular distance reduced to one fifth of eye. Maxillary palp formula I-III-IV-II-V. Anterodorsal filament on sternite V little longer than segment. Forewing length is 8.4 mm, apical fork I is present on hindwing.



Figs 87–90. *Diplectrona szalma* sp. n., holotype, male genitalia: 87 = left lateral view, 88 = dorsal view, 89 = left gonopod in ventral view, 90 = phallic organ in left lateral view

Male genitalia. Segment IX short, regularly convex anteriad, without dorsal concavity; median keel indistinct. Segment X well-separated from tergum IX by visible suture. The dorsoapical setose lobes (inner lobes of segment X) of segment X characteristic for genus indistinct fused to paraproct; ventroapical setose lobe of segment X indiscernible. Cerci (lateral setose area or preanal appendages) vertically elongate setose area along basad, narrow in lateral view. Unsetose paraproct (outer lobes of segment X) emarginating segment X ventrally. Gonopods straight, coxopodite dilating apicad; harpago narrow, arching mesad, parallel-sided, not tapering apicad. Phallic apparatus with down curving and broadening basal section and with a slightly longer tube-forming horizontal apical half with truncate apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral view; phallotremal sclerite less distinct.

Material examined – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38' 45.02", 28.I.2012, light trap, leg. R. Horváth (1 male, OPC).

Etymology – *Szalma*, from "szalma", straw in Hungarian, refers to the straw yellow colouration of the entire animal.

Hydropsychinae

Abacaria sima sp. n.
(Figs 91–93)

Diagnosis – This beautiful small species with bright yellow body and dark brown wings without any pattern belongs to the *Abacaria subfusca* species group of Oláh *et al.* (2006). This group is known only from New Guinea. Easily distinguished from the known three species by the quadrilobed apex of segment X; by the tapering harpago and by the structure of the phallic organ.

Male (in alcohol). Body yellow, wings dark brown without any pattern, except very low and long hyaline line along bifurcation of M stem. Maxillary palp formula I-III-IV-II-V. Proepisternal setal wart absent. Spur formula 244, anteroapical spur very small, vestigial. Spur formula is 144 at other males of genus except *Abacaria fijiana* (Mosely, 1934), which have 044 of male and 244 of female. Forewing length 5 mm; hind wing median cell open; hind wing with forks 2, 3 and 5.

Male genitalia. Segment IX fused, annular and short; its median keel short, broad and shifted posteriad; apical lobe on posterolateral margin rounded triangular. Intersegmental profile between ninth and tenth segments deep stepwise. Segment X elongated, quadrilobed; lateral setose area, cerci located on lateral lobes. Coxopodit of gonopod as long as apex of segment X, harpago tapering. Phallic organ with equal diameter along downcurving basal and horizontal sec-

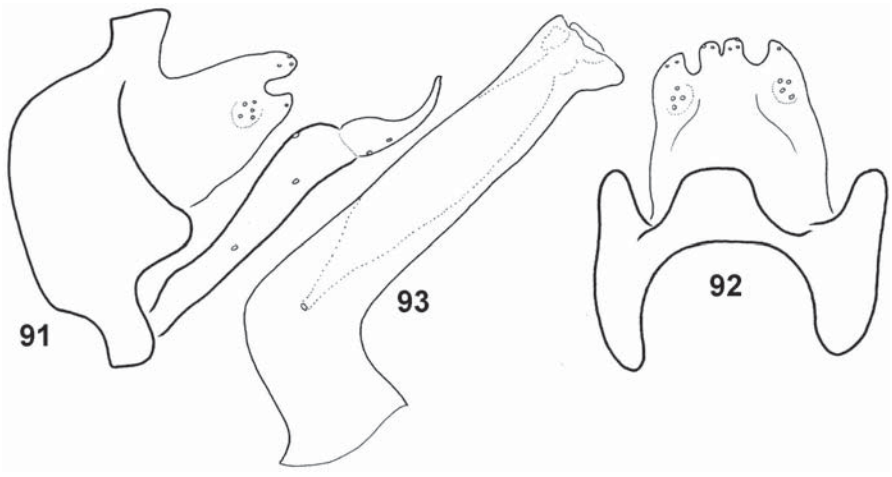
tions of phallotheca; ventroapical lip of phallotheca produced downward in lateral view; endothecal sclerites mesad turned, just visible in lateral view.

Material examined – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, at the large fallen tree, S 0.83769°, E 130.71094°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large clearing, S 0.84751°, E 130.51968°, 68.II.2012, light trap, leg. R. Horváth (1 male, OPC).

Etymology – *Sima*, from "sima", simple in Hungarian, refers to unicoloured wings.

Cheumatopsyche batanta Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.84152°, E 130.70810°, above second waterfall, 22.I.2013, light trap, leg. R. Horváth (5 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, at fallen tree, 22.I.2013, light trap, leg. R. Horváth (8 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, below first waterfall, 22.I.2013, light trap, leg. R. Horváth (25 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'23.25", E 130°42'35.18", below second waterfall, 22.I.2013, light trap, leg. R. Horváth (10 males, OPC). Same locality and data, but 27.I.2012 (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast,



Figs 91–93. *Abacaria sima* sp. n., holotype, male genitalia: 91 = left lateral view, 92 = dorsal view, 93 = phallic organ in left lateral view

Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, at fallen tree, 27.I.2012, light trap, leg. R. Horváth (23 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'04.50", E 130°42' 54.01", above first waterfall, 27.I.2012, light trap, leg. R. Horváth (82 males, OPC).

Cheumatopsyche ronbata Oláh, 2012

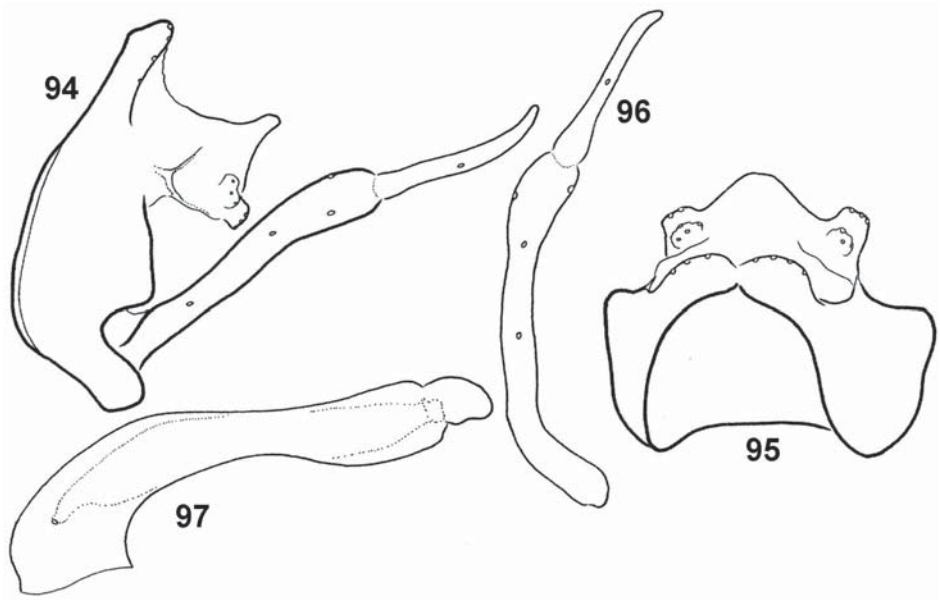
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large clearing, S 0.84751°, E 130.51968°, 18.I.2013, light trap, leg. R. Horváth (6 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large clearing, S 0.84751°, E 130.51968°, 6.II.2012, light trap, leg. R. Horváth (6 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Ron stream, below hut, S 0°49'16.34", E 130°49'23.72", 8.IX.2011, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Ron stream, at hut, S 0°49'16.37", E 130°49'23.72", 8.IX.2011, light trap, leg. R. Horváth (15 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Ron stream, S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, light trap, leg. R. Horváth (2 males, OPC).

Cheumatopsyche sorra sp. n.
(Figs 94–97, 98–101)

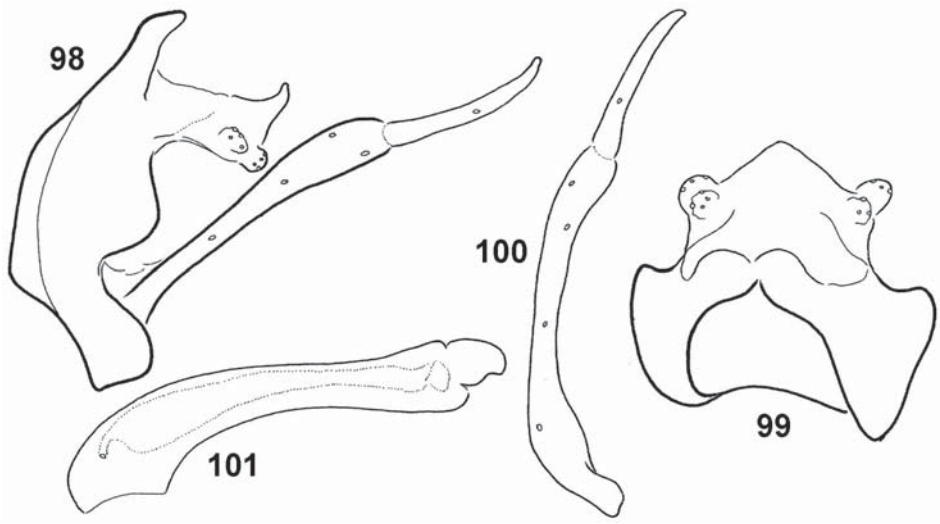
Diagnosis – This brown-winged animal with rows of larger light spots is a member of the *Cheumatopsyche expeditionis* species group and has similarity to *Cheumatopsyche kuranishii* Oláh et Johanson, 2008 from the Philippines, but differs by having forewing spotted, not irrorated; intersegmental profile deep, not shallow; ventroapical setose lobe broad in dorsal view, not narrow; harpago very long; lateral profile of phallotheca and endothecal sclerite different. Slight morphological divergence has been detected in the shape of setaless mesocaudal lobe and ventroapical setose lobes between populations sampled in Dry and Waridor streams (see figures!)

Description – Male (in alcohol). Cephalic and thoracic scerites brown, legs paler brown. Maxillary palp formula: I-IV-III-II-V. Spur formula 2, 4, 4. Forewing length 4.5 mm; brown with veins slightly darker; membrane with rows of light spots arranged mostly in longitudinal cells.

Male genitalia. IXth abdominal segment annular, tergum and ventrum very short; anterior margin convex; apical lobe of posterior margin round triangular; antecosta broad; spine row on posterior margin of segment IX limited to apical lobe; in dorsal view dorsoapical spiny lobes separated by small short excision. Intersegmental lateral profile between segments IX and X high. Segment X



Figs 94–97. *Cheumatopsyche sorra* sp. n., Warridor Stream, holotype, male genitalia: 94 = left lateral view, 95 = dorsal view, 96 = left gonopod in ventral view, 97 = phallic organ in left lateral view



Figs 98–101. *Cheumatopsyche sorra* sp. n., Dry Stream, paratype, male genitalia: 98 = left lateral view, 99 = dorsal view, 100 = left gonopod in ventral view, 101 = phallic organ in left lateral view

short, subquadratic both in dorsal and lateral view; basal part slightly sclerotised; setaless mesocaudal lobe produced rounded triangular in dorsal view, upcurving in lateral view; ventroapical setose lobe truncate, directed downward in lateral view. Sutures of segment X visible behind cerci. Cerci forming elevated wart and close to ventroapical setose lobe. Coxopodite of gonopods extends much beyond apex of segment X, straight rod-like in lateral view, slightly dilated at apex in ventral view; harpago long, parallel-sided and slightly S-shaped in ventral view. Phallotheca robust, basal section slightly broader and bent at obtuse angle to stem; ventral bulge long subapicad; endophallus long and broad, extending through and filling almost entire phallotheca, ending anteriad in a narrow tube at gonopore; chitinised endothecal process slightly elongated, strongly pigmented; phallotremal sclerite indistinctly round in lateral view.

Type material – Holotype, Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large clearing, S 0.84751°, E 130.51968°, 6.II.2012, light trap, leg. R. Horváth (1 male, OPC). Paratypes: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth, 2.IX.2011 (3 light traps), leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (8 males, OPC). Same locality and data, but 30.I.2012 (3 males, OPC).

Etymology – *Sorra*, from "sorra", on row in Hungarian, refers to rows of light spots on the forewing arranged in the longitudinal cells.

Cheumatopsyche tarka Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 600 m from the mouth, 7.IX.2011, light trap, leg. R. Horváth (7 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.84152°, E 130.70810°, above second waterfall, 22.I.2013, light trap, leg. R. Horváth (8 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0°50'18.40", E 130°42'41.91", above first waterfall, at fallen tree, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, S 0.83570°, E 130.71400°, above second waterfall, 22.I.2013, light trap, leg. R. Horváth (4 males, OPC).

Hydropsyche sabronensis (Kimmins, 1962)

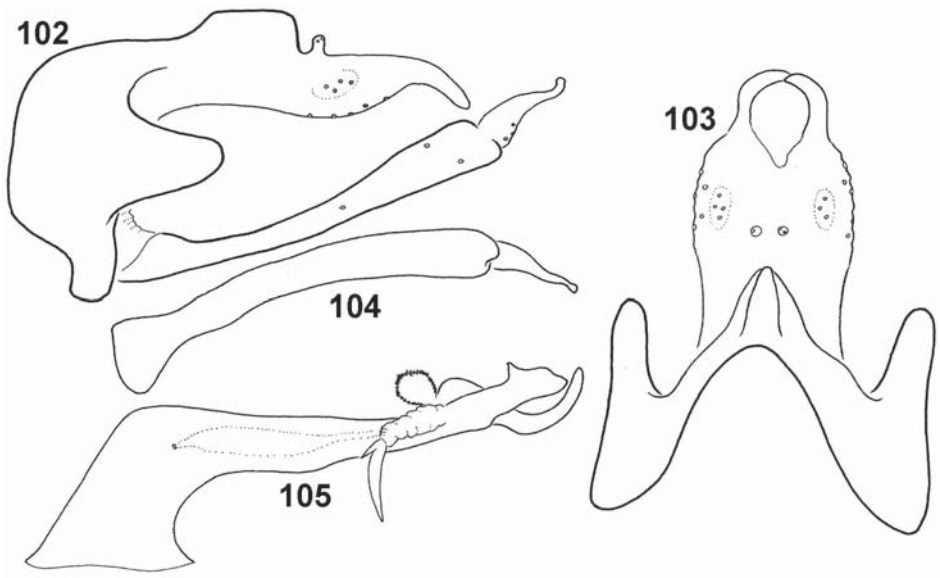
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large clearing, S 0.84751°, E 130.51968°,

18.I.2013, light trap, leg. R. Horváth (33 males, 10 females, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, shipable most upstream, S 0.84373°, E 130.52457°, 18.I.2013, light trap, leg. R. Horváth (33 males, 10 females, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, at mouth of small stream, under large fallen trees, S 0.85582°, E 130.52075°, 18.I.2013, light trap, leg. R. Horváth (1 male, 4 females, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large clearing, S 0.84751°, E 130.51968°, 2.II.2012, light trap, leg. R. Horváth (1 male, 3 females, OPC).

Notes – Almost identical with the compared specimens from Morobe Province of eastern Papua New Guinea and from New Britain.

Hydropsyche tuskes sp. n.
(Figs 102–105)

Diagnosis – Belongs to the *Hydropsyche hamifera* species group and to the *Hydropsyche celebensis* species cluster of Oláh & Johanson (2008). Close to *Hydropsyche flintorum* Oláh et Johanson, 2008, and *Hydropsyche mosely* Kimmins, 1962, both described from Papua New Guinea. It is easy to differentiate the new species from both species having unique spines present on the dorsum of the phallothecal apical lobes and on the basement of the endothecal spines.



Figs 102–105. *Hydropsyche tuskes* sp. n., holotype, male genitalia: 102 = left lateral view, 103 = dorsal view, 104 = left gonopod in ventral view, 105 = phallic organ in left lateral view

Description – Male (in alcohol). Body stramineous, wings ochraceous with lighter pubescence. Maxillary palp formula I-III-IV-II-V. Pretarsal claw asymmetrical with laterally flanked setal bundle. Spur formula 244. Forewing length 9 mm.

Male genitalia. Segment IX fused annular and short; its median keel narrowing apicad with granulose dorsal surface, this narrow keel representing entire dorsum of segment IX shifted posteriad; apical lobe on posterolateral margin rounded quadrangular. Intersegmental profile between ninth and tenth segments deep stepwise. Segment X elongated, bellied in lateral and rounded quadrangular in dorsal view; lateral setose area, cerci located in middle position; ventroapical setose lobe modified into a pair of long slender process bearing setae on its apex, downcurving in lateral view and mesad curving in dorsal view. The coxopodit of gonopod as long as apex of segment X, harpago with a broad base and with a double curving filiform distal section. Phallic organ broadening along downcurving basal section; horizontal section of phallotheca slightly concave dorsum; endophallus present as a narrow tube, constricted at its very end near gonopore and reaching to bent; basement of phallotremal tongue curving upward in lateral view, longer than apical lobes of bilobed phallotheca; phallothecal apical lobes produced each a single dorsal spine; pair of anterior dorsolateral membranous lobe of endotheca tipped with long spine; this spine has a small basal spine; pair of dorsolateral membranous lobe of endotheca short, its dorsum looks serrated due to coverage with short spicules.

Material examined – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38' 45.02", 2.IX.2011, light trap, leg. R. Horváth (1 male, OPC). Paratype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 28.I.2012, light trap, leg. R. Horváth (1 male, OPC).

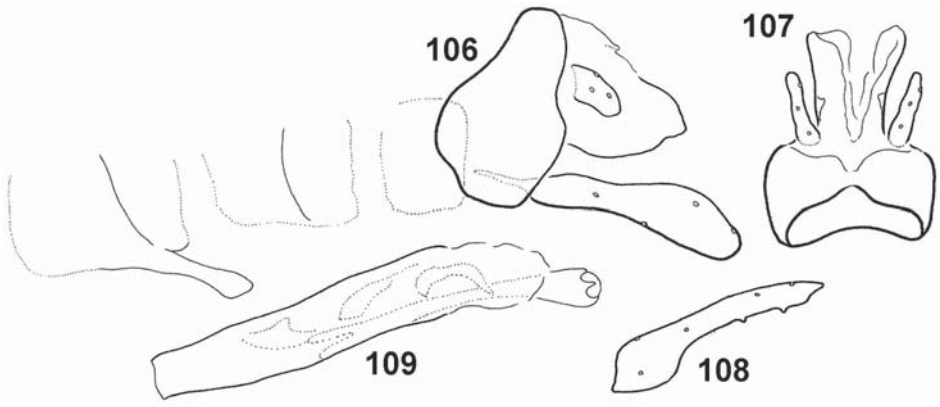
Etymology – *Tuskes*, from "tüskés", spiny in Hungarian, refers to the unique spines present on the dorsum of the phallothecal apical lobes and on the basement on the endothecal spines.

Glossosomatidae

Agapetus bunkos sp. n.
(Figs 106–109)

Diagnosis – Its characteristic clavate gonopods differentiate it from all the known Australasian member of this genus.

Description – Male (in alcohol). Dark brown animal with legs and slightly lighter venter. Maxillary palp formula: I-II-IV-V-III, second segment with glob-



Figs 106–109. *Agapetus bunkos* sp. n., holotype, male: 106 = segments VI, VII, VIII and genitalia in left lateral view, 107 = dorsal view, 108 = left gonopod in ventral view, 109 = phallic organ in left lateral view

ular mesolateral projection. Wing membrane brown; forewing length 2.8 mm; Fork I on hindwing lost. Blister-like protuberance on dorsal margin of sternite V present detached from ridge; ventral process on sternite VI medium long.

Male genitalia. Segment IX synsclerotised with convex anterior and posterior margin in lateral view. Segment X less pigmented, short and high, deeply excised in dorsal view. Cerci small and low. Paraproctal lateral vertical plates (lateral lobe of segment X) indistinct. Gonopods elongate clavate in lateral view; supplied with two pointed black and mesad directed small teeth. Aedeagus with unpaired embedded sclerites.

Type material – Holotype: Indonesia, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38"45.02", 500–900 m above Dry mouth, 2.IX.2011 (3 light traps), leg. R. Horváth (1 male, OPC).

Etymology – Bunkos from "bunkós" clavate in Hungarian, refers to the elongate clavate shape of gonopods.

Agapetus fogaska sp. n.
(Figs 110–113)

Diagnosis – Closest to *A. ulmeri* Ross, 1951, but differs by having cerci low, not high; segment X low, not high; apices of segment X narrowing pointed; gonopods with pointed dark subapical tooth.

Description – Male (in alcohol). Dark brown animal, with legs and venter slightly lighter. Maxillary palp formula: I-II-IV-V-III, second segment with globular mesolateral projection. Wing membrane brown; forewing length 3 mm;

Fork I on hindwing lost. Blister-like protuberance on dorsal margin of sternite V present detached from ridge; ventral process on sternite VI long.

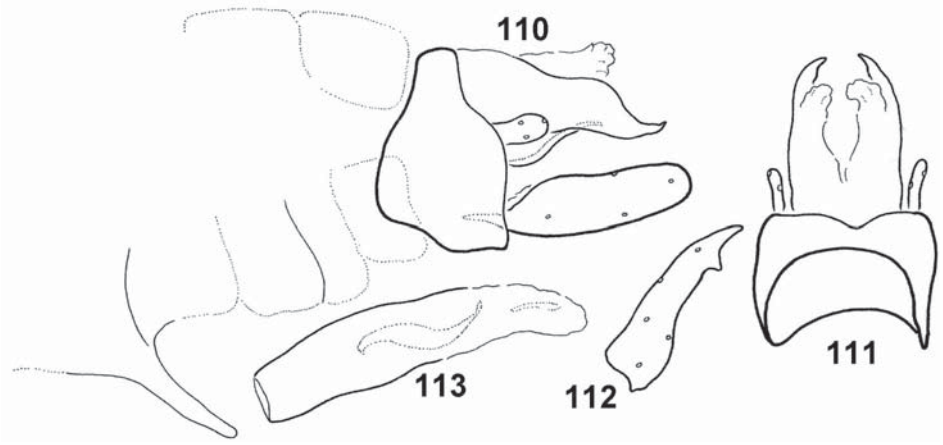
Male genitalia. Segment IX synsclerotised, subtriangular in lateral view. Segment X membranous dorsad, more sclerotised ventrad and deeply excised in dorsal view. Cerci small and low. Paraproctal lateral vertical plates (lateral lobe of segment X) distinct, more sclerotised lines discernible in lateral view. Gonopods rounded and elongate subquadrangular in lateral view; supplied with a single pointed black and mesad directed tooth. Aedeagus with unpaired embedded sclerite.

Type material – Holotype: Indonesia, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38"45.02", 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps), leg. R. Horváth (1 male, OPC).

Etymology – *Fogaska*, from "fogaska", diminutive "toothed" in Hungarian, refers to the pointed single tooth present subapicad on the mesal margin of gonopods.

Agapetus kivagot Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86492°, E 130.52206°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84373°, E 130.52457°,



Figs 110–113. *Agapetus fogaska* sp. n., holotype, male: 110 = segments VI, VII, VIII and genitalia in left lateral view, 111 = dorsal view, 112 = left gonopod in ventral view, 113 = phallic organ in left lateral view

shipable endpoint, 6.II.2012, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Batanta Island, northern coast, Ron stream, 0°49'16.37"S 130°49'23.72"E, at hut, 8.IX.2011, light trap, leg. R. Horváth (1 male, OPC).

Hydroptilidae

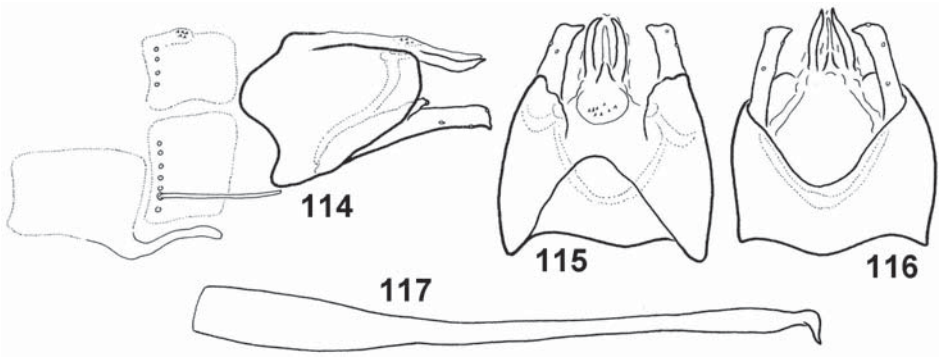
Hellyethira sarina Oláh, 2012
(Figs 114–117)

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River S 0.84373°, E 130.52457°, shipable endpoint, 9.IX.2011, light trap, leg. R. Horváth (1 male, OPC). Batanta Island, northern coast, Ron stream, S 0°49'16.37", E 130°49'23.72", at hut, 8.IX.2011, light trap, leg. R. Horváth (6 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, light trap, leg. R. Horváth (9 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'16.34", E 130°49'23.72", below hut, 8.IX.2011, light trap, leg. R. Horváth (15 males, OPC).

Notes – More detailed genital drawings were prepared from the newly collected specimens.

Hydroptila nemtompa Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, at fallen tree, S 0°50'18.40", E 130°42'41.91", 22.I.2013, light trap, leg. R. Horváth (4 males, OPC). Indonesia, Papua, Raja



Figs 114–117. *Hellyethira sarina* Oláh, 2012 male: 114 = segments VII, VIII and genitalia in left lateral view, 115 = dorsal view, 116 = ventral view, 117 = phallic organ in left lateral view

Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above first waterfall, at fallen tree, S 0°50'18.40", E 130°42'41.91", 27.I.2012, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86492°, E 130.52206°, 22.I.2013, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (4 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 22.I.2013, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 9.IX.2011, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84751°, E 130.51968°, under great cleaering, 6.II.2012, light trap, leg. R. Horváth (3 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'16.37", E 130°49'23.72", at hut, 8.IX.2011, light trap, leg. R. Horváth (16 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, light trap, leg. R. Horváth (29 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'16.34", E 130°49'23.72", below hut: 8.IX.2011, light trap, leg. R. Horváth (8 males, OPC).

Hydroptila obscura Wells, 1979

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (6 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 22.I.2013, light trap, leg. R. Horváth (4 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 9.IX.2011, light trap, leg. R. Horváth (1 male, OPC). Same locality and data, but 6.II.2012 (11 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'16.37", E 130°49'23.72", at hut, 8.IX.2011, light trap, leg. R. Horváth (26 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, light trap, leg. R. Horváth (49 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'16.34", E 130°49'23.72", below hut: 8.IX.2011, light trap, leg. R. Horváth (14 males, OPC).

Missitrichia kunkora Oláh, 2012

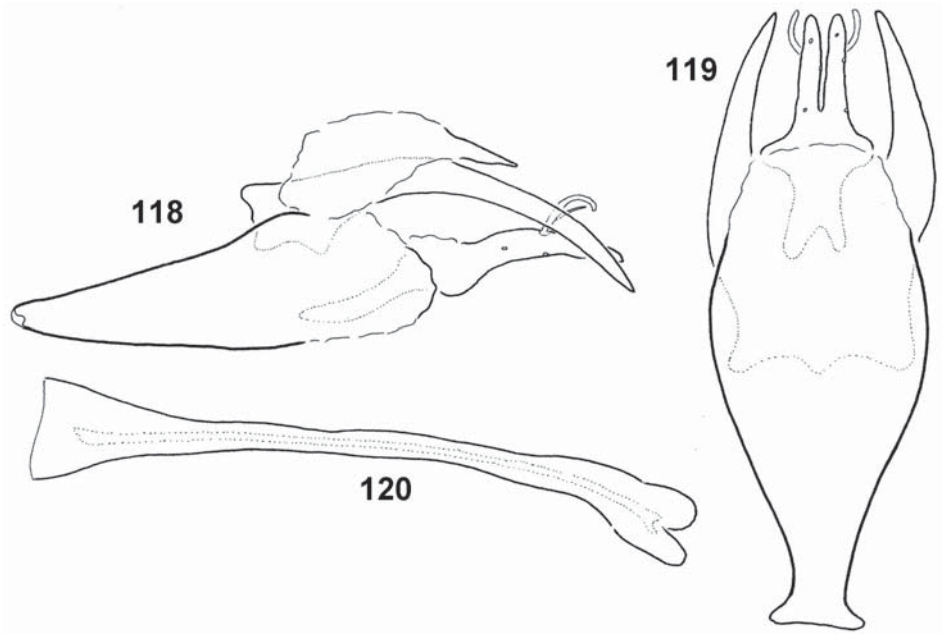
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (3 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above first waterfall, at fallen tree, S 0°50'18.40", E 130°42'41.91", 27.I.2012, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 500–900 m above Dry mouth, 2.IX.2011 (3 light traps), leg. R. Horváth (1 male, OPC).

Missitrichia vagot sp. n.
(Figs 118–120)

Diagnosis – This is the third species of this monobasic genus described from Papua New Guinea (Wells 1991). The new species is closer to *M. kunkora* Oláh, 2012, described from the nearby Warmon creek, but differs by having the long ventromesal apodeme cut abbreviated and truncate, not long; ventrum of segment IX without any suture, not with enforced median suture; membranous segment X with a pair of sclerotised spine-like processes, segment X lacking any sclerotised structures at the other two species, enlarged curved seta on gonopods displaced apicad, not located basad on its usual site.

Description – Male (in alcohol). Forewing length 1.4 mm. Antennae broken, scapus double long, pedicel longer 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, far from each others; not modified as scent organ. Tentorial bridge stout, well visible, arms reduced to thin thread discernible only with careful examination. Ocelli lacking. Mesoscutellum without transversal suture. Metascutellum triangular. Forewing with abbreviated jugal lobe. Spur formula 024. Sternum VII with small pointed apicomesal process.

Male genitalia. Segment IX highly reduced to a long triangular ventrum, dorsum missing; ventrum without a straight strongly sclerotised enforced median suture, long ventromesal apodeme truncated ending in thickened apical antecosta with small lateral lobes. Segment X (dorsal plate) forming a membranous saddle bearing a pair of spine-like sclerotised lateral process and joining with very thin lateral apodemes to enlarged paraproct. Paraproct present as a downward and mesad arching pair of spines integrating segment IX and X; protruding over all structures and representing dominant structure of genitalia, their basal part fused. Gonopods



Figs 118–120. *Missitrichia vagot* sp. n., holotype, male genitalia: 118 = left lateral view, 119 = ventral view, 120 = phallic organ in left lateral view

well separated elongate parallel-sided and articulated each to segment IX by mesal and lateral knots of condyles. The complex of basal plate forming an almost mirror structure protruding deep inside segment IX and small protuberances with upward directed long straight seta and with a modified upward directed hook formation of enforced seta moved curiously cubapicad. Phallic organ is a simple tube with broadened basal and dilated apical region and without titillator; ejaculatory duct visible inside ending in a more pigmented head; phallotheca apically bilobed.

Type material – Holotype: Indonesia, Batanta Island, northern coast, small stream with Dry mouth, 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps integrated), leg. R. Horváth (1 male, OPC). Paratype: Indonesia, Batanta Island, northern coast, small stream with Dry mouth, 500–900 m above Dry mouth, 2.IX.2011 (3 light traps), leg. R. Horváth (1 male, OPC).

Etymology – *Vagot*, from "vágott", cut in Hungarian, refers to the cut, truncate apex of the ventromesal apodeme.

Saranganotrichia oldalra Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°,

22.I.2013, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, at fallen tree, S 0°50'18.40", E 130°42'41.91", 22.I.2013, light trap, leg. R. Horváth (3 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (3 males, OPC).

Orthotrichia balra Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I. 2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, at fallen tree, S 0°50'18.40", E 130°42' 41.91", 22.I.2013, light trap, leg. R. Horváth (4 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (6 males, OPC).

Orthotrichia eltera Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Batanta Island, northern coast, Ron stream, S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, light trap, leg. R. Horváth (1 male, OPC).

Orthotrichia kisbunka Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above first waterfall, at fallen tree, S 0°50'18.40", E 130°42'41.91", 27.I.2012, light trap, leg. R. Horváth (5 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86492°, E 130.52206°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC).

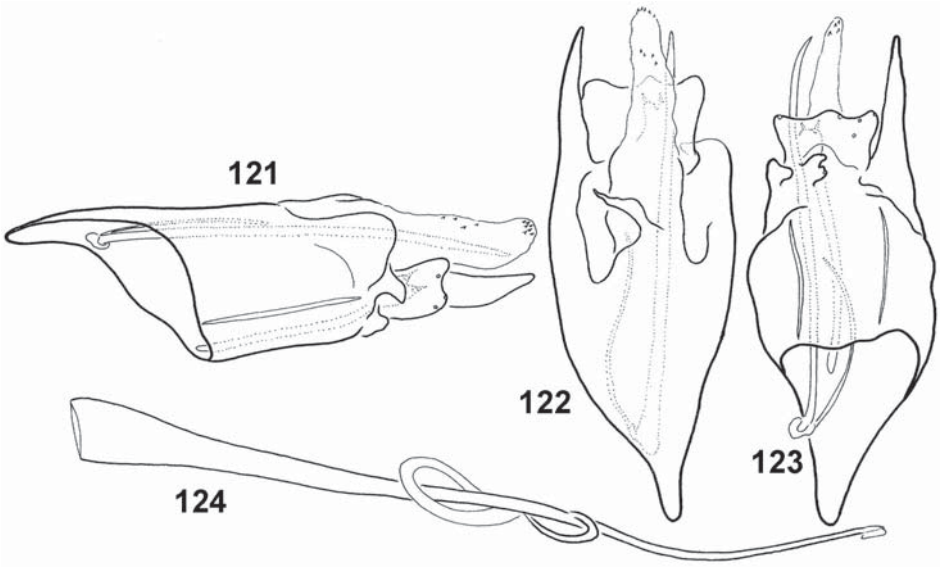
Orthotrichia laposka sp. n.
(Figs 121–124)

Diagnosis – This new species has resemblance to *O. bensoni* Wells, 1990, but differs by having plate-like gonopod differently shaped and more fused.

Description – Male (in alcohol). Small animal with forewing length of 1.6 mm. Antennae broken, 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. Tregite and sternite VIII with strong setae apicad. Segment IX half as long dorsad than ventrad; dorsum narrowing; right side with long lateral tapering spine; left side with heavily sclerotised lateral lobe. Segment X (dorsal plate) flattened sagittally, covered especially on head with microtrichae. Paraproct suspended along phallic organ and forming a long spine and a filament arising both from a basal structure. Gonopods fused plate with trilobed apical margin. Basal plate of gonopods discernible as a short bilobed structure with terminal pair of setae; its apodeme long. Phallic organ forms a long tube with broader basal half and titillator having one coil and one larger loop, filament of loop thick.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River S 0.84373°, E 130.52457°, shipable endpoint, 9.IX.2011, light trap, leg. R. Horváth (1 male, OPC).



Figs 121–124. *Orthotrichia laposka* sp. n., holotype, male genitalia: 121 = left lateral view, 122 = dorsal view, 123 = ventral view, 124 = phallic organ in left lateral view

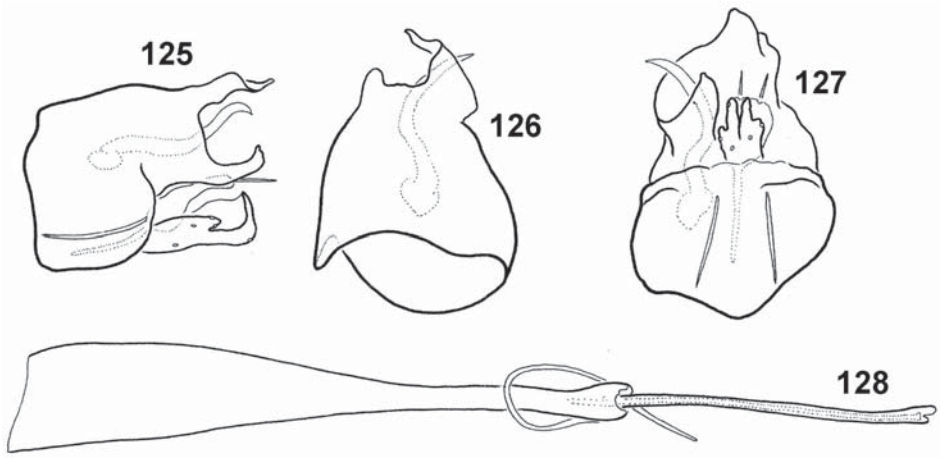
Etymology – Laposka from "laposka" diminutive form of flat in Hungarian, refers to the fused plate-like flat gonopods.

Orthotrichia olelo sp. n.
(Figs 125–128)

Diagnosis – This new species is similar to *O. obscura* Kimmins and *O. fimbriata* Wells, but differs by having segment IX convex in ventral view, not concave like at *O. fimbriata* and straight vertical in lateral view, not triangular like at *O. obscura*; segment X more sophisticated with various lobes; gonopods basally fused, not discrete like at *O. fimbriata* or not completely fused like at *O. obscura*; basal plate monolobed, not trilobed.

Description – Male (in alcohol). Small animal with forewing length of 2 mm. Antennae broken, 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. Tregite and sternite VIII with strong setae apicad. Segment IX subquadrangular without any pronounced process. Segment X (dorsal plate) fused to segment IX semiclosed tubular with irregular lobes. Paraproct suspended along phallic organ and forming a single, S-shaped spine arising from a basal



Figs 125–128. *Orthotrichia olelo* sp. n., holotype, male genitalia: 125 = left lateral view, 126 = dorsal view, 127 = ventral view, 128 = phallic organ in left lateral view

circular structure that is probably reduced, vestigial member of paired paraproct. Gonopods fused basally separated apically with high mesal vertical plate. Basal plate of gonopods fused into a monolobed, sagittally flattened, downward directed structure with terminal pair of setae; its apodeme long. Phallic organ forms a long tube with broader basal half ending in collar from where titillator with a larger loop, and thin apical half arising.

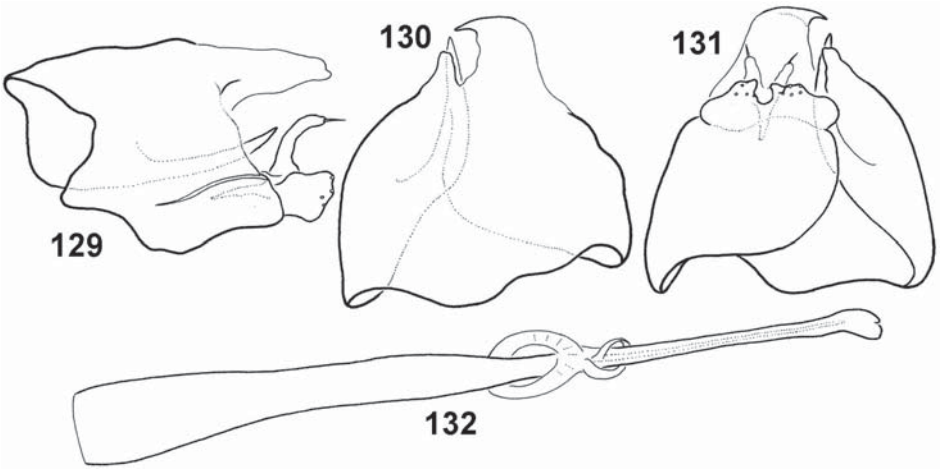
Type material – Holotype: Indonesia, Batanta Island, northern coast, small stream with Dry mouth, 1000–1500 m above Dry mouth, 28.I.2012 (3 light traps integrated), leg. R. Horváth (1 male, OPC).

Etymology – *Olelo*, from "ölelő", embracing, enveloping in Hungarian, refers to segment X developed around the phallic organ and paraproct.

Orthotrichia orias sp. n.
(Figs 129–132)

Diagnosis – This new species has resemblance to *O. banisbus* Wells, 1991, but differs by its large size and by having right ventrolateral spine-like process on segment IX short, not long; segment X with right turning spine apical, not subapical; gonopods and basal plates differently formed.

Description – Male (in alcohol). Giant animal with forewing length of 3.8 mm. Antennae broken, 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



Figs 129–132. *Orthotrichia orias* sp. n., holotype, male genitalia: 129 = left lateral view, 130 = dorsal view, 131 = ventral view, 132 = phallic organ in left lateral view

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. Tregite and sternite VIII with strong setae apicad. Segment IX short, right side with a short dorsoapical setose lobe and with a large ventroapical unsetose black spine-like process. Segment X (dorsal plate) present as a long less-pigmented lobe with an apical right turning spine. Paraproct indiscernible. Gonopods forming a basally fused short and broad setose complex with mesad turning unsetose pointed apices. Basal plate of gonopods visible as bilobed process with terminal setae; its apodeme short. Phallic organ forming a long tube with broader basal half and titillator having one coil and one larger loop, this loop is somehow strip flat; apex dilated bifid.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC).

Etymology – Orias, from "óriás", giant in Hungarian, refers to the large body size.

Orthotrichia para Oláh, 2012

Batanta Island, northern coast, Ron stream, S 0°49'16.37", E 130°49'23.72", at hut, 8.IX.2011, light trap, leg. R. Horváth (2 males, OPC). Batanta Island, northern coast, Ron stream, S 0°49'18.03", E 130°49'26.03", above hut, 8.IX.2011, light trap, leg. R. Horváth (2 males, OPC).

Orthotrichia savoska Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, at fallen tree, S 0°50'18.40", E 130°42'41.91", 22.I.2013, light trap, leg. R. Horváth (2 males, OPC).

Orthotrichia tobfona Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above first waterfall, at fallen tree, S 0°50'18.40", E 130°42'41.91", 27.I.2012, light trap, leg. R. Horváth (1 male, OPC).

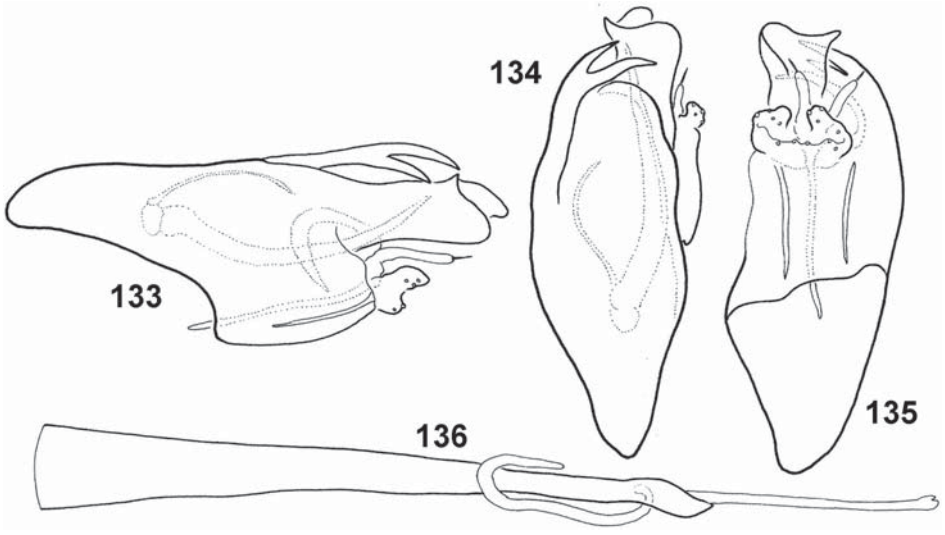
Notes – Reexamining the holotype and several freshly collected specimens we have found a dorsoapical spine-like pointed process on the right side of segment IX not recognised in the original description and drawings.

Orthotrichia waridora sp. n.
(Figs 133–136)

Diagnosis – This new species has resemblance to *O. kisbunka* Oláh, 2012, but differs by having more tapering anterodorsal part of segment IX; right lateral process on segment IX bifid, not simple; paraproct more robust; gonopods regular bilobed.

Description – Male (in alcohol). Small animal with forewing length of 1.2 mm. Antennae broken, 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. Tregite and sternite VIII with strong setae apicad. Segment IX long dorsad half as long ventrad, right side with bifid long lateral spine; left side with heavily sclerotised lateral frame. Segment X (dorsal plate) embracing phallic organ dorsad and laterad with right side turning point. Transversally arching scle-



Figs 133–136. *Orthotrichia waridora* sp. n., holotype, male genitalia: 133 = left lateral view, 134 = dorsal view, 135 = ventral view, 136 = phallic organ in left lateral view

rotised pointed rod turning from basal plate region to left inside segment IX. Paraproct forming a strong spine and a filament arising both from a basal cup suspended along phallic organ. Gonopods short bilobed apical part and a fused basal rim. Basal plate of gonopods visible as a long bilobed process with terminal setae; its apodeme long. Phallic organ forms a long tube with broader basal half and titillator having one coil and one larger loop, this loop is somehow strip flat; apex dilated bifid.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86492°, E 130.52206°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratypes: same as holotype (2 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.85582°, E 130.52075°, at mouth of small tributary, 22.I.2013, light trap, leg. R. Horváth (5 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.86840°, E 130.52516°, 22.I.2013, light trap, leg. R. Horváth (3 males, OPC).

Etymology – Named after the type locality.

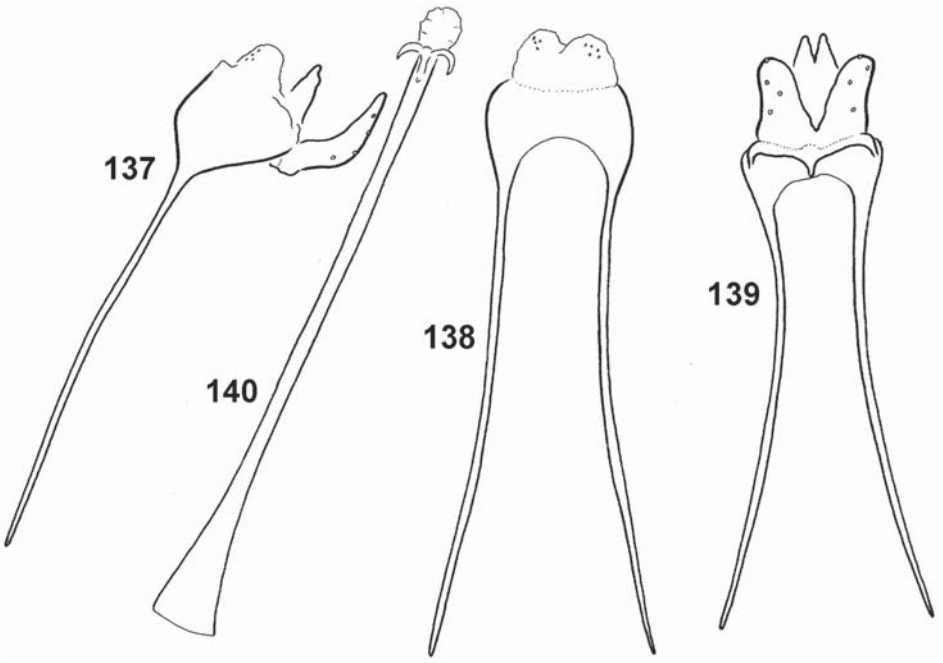
Chrysotrichia horgos sp. n.
(Figs 137–140)

Diagnosis – This new species is similar to *C. iomora* Wells, 1990, from Papua New Guinea, but differs by its bilobed paraproct and by the presence of hook-shaped spines in the endotheca.

Description – Male (in alcohol). Small animal with forewing length of 1.1 mm. Tentorium arms complete without posterior bridge. Antennae 18 segmented, scapus and pedicel almost equal length; flagellar segments shorter, terminal segment pointed conical; vestiture consisting of antennal setae in basal whorl. Maxillary palp formula I-II-III-IV-V, first two segments extremely short, shorter than present. 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 slightly asymmetrical bilobed setose lobe. Paraproct tapering bilobed. Gonopods forming a pair of broad lobes fused basad. Basal plate of gonopods visible as a more sclerotised rim with mesal and lateral enlargement. Phallic organ forms a long tube with membranous apex, this dilated apex armed ventrally with a pair of hook-shaped spines.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC). Paratype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above first waterfall, at fallen tree, S 0°50'18.40", E 130°42'41.91", 27.I.2012, light trap, leg. R. Horváth (1 male, OPC).



Figs 137–140. *Chrysotrichia horgos* sp. n., holotype, male genitalia: 137 = left lateral view, 138 = dorsal view, 139 = ventral view, 140 = phallic organ in ventral view

Etymology – *Horgos*, from "horgos", supplied with hooks in Hungarian, refers to the pair of hook-like spines in the endotheca of the phallic organ.

Niuginitrichia huzva sp. n.
(Figs 141–144)

Diagnosis – This new species is similar to *N. bukamak* Wells, 1990, from Papua New Guinea, but differs by ventrum of segment IX, by extended apices of gonopods and of apicomesal elongation of dorsum IX and by hook formation on apical portion of phallotheca.

Description – Male (in alcohol). Small dark animal with forewing length of 1.5 mm. Posterior tentorial arms 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 present. Metascutellum short and wide. Spur formula 024.

Male genitalia. Segment IX forms a complete ring, short ventrad, longer dorsad without any anterolateral apodeme. Segment X (dorsal plate) indiscern-

ible. Paraproct broadbased, tapering convergent. Gonopods forming a pair of broad triangular lobes with extended digitiform apices, fused basad. Basal plate of gonopods indiscernible. Phallic organ forms a long tube without paramere; apex of phallotheca hooked.

Type material – Holotype: Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, S 0.84373°, E 130.52457°, shipable endpoint, 9.IX.2011, leg. R. Horváth (1 male, OPC).

Etymology – *Huzva*, from "húzva", extended in Hungarian, refers to the drawn apices of gonopods and apicomesal projection on dorsum IX.

Stactobia zarva Oláh, 2012

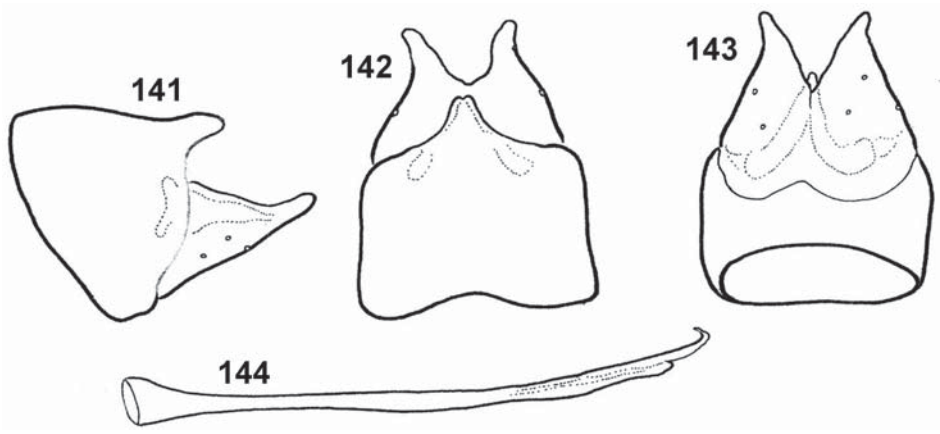
Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, above second waterfall, S 0.84152°, E 130.70810°, 22.I.2013, light trap, leg. R. Horváth (1 male, OPC).

Calamoceratidae

Anisocentropus dilucidus McLachlan, 1863

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 2.IX.2011, light trap, leg. R. Horváth (1 female, OPC).

Notes – The species was described from New Guinea, Island of Mysol (Papua, Raja Ampat, Misool Island).



Figs 141–144. *Niuginitrichia huzva* sp. n., holotype, male genitalia: 141 = left lateral view, 142 = dorsal view, 143 = ventral view, 144 = phallic organ in left lateral view

Anisocentropus horvathi Oláh, 2012

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream with Dry mouth, S 0°49'27.84", E 130°38'45.02", 2.IX. 2011, light trap, leg. R. Horváth (1 male, 1 female, OPC). Same locality and data, but 28.I.2012 (5 males, 3 females, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, small stream, S 0°48'54.16", E 130°38'09.04", 7.IX.2011, light trap, leg. R. Horváth (5 males, OPC). Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Warmon stream, below first waterfall, S 0.83570°, E 130.71400°, 22.I.2013, light trap, leg. R. Horváth (5 males, 2 females, OPC).

Anisocentropus illustris McLachlan, 1863

Material examined – Indonesia, Papua, Raja Ampat, Batanta Island, northern coast, Waridor River, under large fallen trees, S 0.85582°, E 130.52075°, 18.I.2013, light trap, leg. R. Horváth (1 male, 2 females, OPC).

Notes – The species was described from New Guinea, Island of Salawati (Papua, Raja Ampat, Salawati Island).

*

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