Entomofauna

ZEITSCHRIFT FÜR ENTOMOLOGIE

Band 34, Heft 31: 409-432 ISSN 0250-4413 Ansfelden, 2. Januar 2013

New species of caddisflies from New Guinea (Insecta, Trichoptera)

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Abstract

Adult Trichoptera specimens were collected recently in Papua New Guinea, East New Britain Province and in Papua (Irian Jaya), Indonesia. A total of 26 species are recorded including 15 new species. The descriptions of the new species and illustrations of the male genitalia and some female genitalia are provided. All species belong to typical and widespread south-east Asian genera.

Zusammenfassung

Eine kleine Kollektion von Köcherfliegenimagines aus Papua Neu Guinea und Papua (Iriyan Jaya), Indonesien ist untersucht und ausgewertet worden. Insgesamt umfasst das Material 26 Arten, wovon 15 Arten neu für die Wissenschaft sind. Die neuen Arten werden beschrieben. Von jeder Art werden Zeichnungen der männlichen Genitalapparate

abgebildet. Bei zwei Arten werden auch die Weibchen beschrieben. Alle Arten sind Elemente der typischen, südostasiatischen Fauna.

Introduction

During the last years a growing interest in the exploration of the entomofauna of the Island of New Guinea has been observed. Butterflies and beetles are the most favoured groups attracting many entomologists from Europe, North America and Japan. Caddisflies (Trichoptera) were and are not in the focus of entomo-faunistic explorations or research projects so far. However, some material was collected incidentally by operating light traps or Malaise traps, mainly in the search for Lepidoptera. Recently, two samples of Trichoptera material obtained in this way by Dutch and German entomologists were made available for us to study. In this paper we give a list of the collected and identified species and provide descriptions of 15 new species.

The material including type specimens is preserved in alcohol (75 %) and deposited in the following museums:

NBC-ZMAN - Naturalis Biodiversity Center- Zoological Museum, Amsterdam

MFN – Museum für Naturkunde, Berlin

Review of Species

Glossosomatidae

***Agapetus gorbul* sp. n.** (Figs 1-4)

Diagnosis – Close to *A. apalapsili* (MALICKY) but differs by having differently shaped segment IX in lateral view; cerci broad based, not simple; gonopods rounded, not elongated in lateral view and with 2, not with 3 teeth in ventral view.

Description – Male (in alcohol). Brown animal, with legs and venter slightly lighter. Maxillary palp broken, second segment with globular mesolateral projection. Wing membrane brown; forewing length 4 mm; on hindwing Fork I lost R1 vestigial. Blister-like protuberance on the dorsal margin of sternite V present detached from the ridge; ventral process on sternite VI long.

Male genitalia. Segment IX synsclerotized, subquadrangular in lateral view. Segment X membranous, indistinct, but discernible deeply excised in dorsal view. Cerci broad based. Paraproctal lateral vertical plates (lateral lobe of segment X) narrowing, projecting on their apical half and mesad curving. Gonopods rounded high in lateral view; with 2 small teeth mesad and subapicad in ventral view. Phallic organ with a single curving paramere.

Type material – Holotype: Indonesia, Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07’S 139°38’E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN). Paratypes: same as holotypes (1 male NBC-ZMAN, 1 male OPC).

Etymology – *gorbul*, from "görbült" curved in Hungarian, refers to the mesad curving paraproctal apices.

***Agapetus kihuzot* sp. n.** (Figs 5-8)

Diagnosis – Close to *A. ulmeri* ROSS and *A. kivagot* sp. n. but differs from both by having subquadrangular shape of segment IX in lateral view; narrowing and projecting pair of lateral processes of segment X in lateral view, not truncate; cerci low, not high, gonopods with long basal broadening in ventral view, not short.

Description – Male (in alcohol). Brown animal, with legs and venter slightly lighter. Maxillary palp broken, second segment with globular mesolateral projection. Wing membrane brown; forewing length 3.1 mm; on hindwing Fork I lost R1 vestigial. Blister-like protuberance on the dorsal margin of sternite V present detached from the ridge; ventral process on sternite VI long.

Male genitalia. Segment IX synsclerotized, subquadrangular in lateral view. Segment X membranous, indistinct, but discernible deeply excised in dorsal view. Cerci downward and laterad directed setose lobe. Paraproctal lateral vertical plates (lateral lobe of segment X) narrowing and projecting on their apical half. Gonopods with concave ventrum and slightly tapering apex in lateral view; their apex mesally oblique and truncate in ventral view. Phallic organ indistinct basally; a pair of downward directed spines and a single mesal straight spines discernible apically.

Type material – Holotype: Indonesia**,** Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07'S 139°38'E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN).

Etymology – *kihuzot*, from "kihúzott" projecting in Hungarian, refers to the narrowing and projecting lateroapical processes of segment X.

Philopotamidae

***Chimarra biramosa* KIMMINS, 1957**

Material examined – Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, MFN).

***Chimarra erzekela* sp. n.** (Figs 9-12)

Diagnosis – Close to *Chimarra falcata* KIMMINS from Papua New Guinea, but differs by having fork 1 on anterior wind stalked, not sessile; apicoventral keel on segment IX more developed; paraproct with short subtriangular, not elongated; flat dorsal surface densely covered with sensillae; phallotheca with different shape in lateral view; endotheca with 2 clusters of spines, not with 2 single spines.

Description – Male. Medium-sized light brown animal. Maxillary palp formula 1-(2,4)-3-5. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane

brown; forewing length 5.9 mm; forewing discoidal, thyridial and median cells having similar length, but discoidal cell double tall than the others; RS sinuate, R almost straight; fork 1 on forewing stalked; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins *r-m*, *m-cu* and on the arculus; on hindwing 2A diagnostic looping to join 1A present, forming a closed cell.

Male genitalia. Segment VIII unmodified except the pleuron separating tergum and sternum reduced very low, membranous part reduced. Segment IX synsclerotized, its dorsum reduced to a short heavily pigmented bridle of the antecosta; anterior margin concave, posterior margin straight, slightly convex; ventroapical keel developed triangular in lateral view. Segment X membranous, short with some lateral flanks. Cerci small rounded high. Paraproct short and high, subtriangular with dorsal and ventral apical lobes; dorsum with numerous sensillae. Gonopods dorsad and mesad curving, elongated slender.. Phallic organ with 2 spine clusters.

Material examined – Holotype: Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35’56”S 152°06’06”E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, MFN).

Etymology – *erzekela* from „érzékelők” sensillae in Hungarian, refers to the numerous sensillae present on the dorsal flats on the paraproct.

***Chimarra felholda* sp. n.** (Figs 13-16)

Diagnosis – Close to *Chimarra holda* sp. n. from Indonesia (Papua), but differs by having anterior margin of segment IX long concave, not short; both the short dorsolateral apodemes and the apicoventral keel on segment IX digitiform, not triangular; membranous segment X without basodorsal striated fringes; paraproct with rounded sensitory surface, not with sensitory flank; (5) number of sensillae 12, not 8; gonopods with pointed apex, not blunt; phallotheca slender with different shape in lateral view.

Description – Male (in alcohol). Medium-sized light brown animal. Maxillary palp broken. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 5 mm; forewing discoidal, median cells having similar length, but discoidal cell double tall; thyridial cell double long and low like median cell; RS sinuate, R almost straight with a triangular thickening; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins r-m, and on the arculus; on hindwing 2A diagnostic looping to join 1A present, forming a closed cell.

Male genitalia. Segment VIII unmodified except the pleuron separating tergum and sternum reduced very low. Segment IX synsclerotized, its dorsum reduced to a short heavily pigmented bridle of the antecosta; anterior margin concave, posterior margin convex, they are almost parallel-sided; ventroapical keel present, elongated, not triangular in lateral view. Segment X membranous, liguliform, its lateral margins indiscernible. Cerci small rounded. Paraproctal lateral vertical plate liguliform, with large rounded area filled by 12 sensillae. Gonopods halfmoon-shaped both in lateral and ventral view. Phallic organ with 8 straight spines of similar length.

Material examined – Holotype: Indonesia, Papua (Irian Jaya), Wandamman Peninsula, ZMA Exp. Dotir, 150 m, River Mawoy, second forest, 2km inland, 2°38’S 134°30’E, at light, 17. II. 1996, leg. ZMA-exp. (1 male, NBC-ZMAN).

Etymology – *felholda* from „fél" half and "hold", moon in Hungarian, refers to the halfmoon-like shape of gonopods both in lateral and ventral view.

***Chimarra ketaga* sp. n.** (Figs 17-20)

Diagnosis – Closest to *Chimarra xenilion* NEBOISS from Papua New Guinea, but differs by having apicoventral keel on segment IX triangular, not rounded; paraproct with bifid apical apices, not hooked; cerci large, elongated quadrangular, not small wartlike; phallotheca with pointed ventral process, not blunt.

Description – Male (in alcohol). Medium-sized light brown animal. Maxillary palp formula 1-4-2-3-5. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 5 mm; forewing discoidal, thyridial and median cells having similar length, but discoidal cell double tall than the others; RS sinuate, R almost straight; base of discoidal cell enforced corneous; fork 1 on forewing sessile; hyaline window pattern (reduced pigmentation) less developed present as lack of pigmentation on crossveins *r-m*, *m*, *m-cu* and on the arculus; on hindwing 2A diagnostic looping to join 1A present, forming a closed cell.

Male genitalia. Segment VIII unmodified except small ventroapical process present. Segment IX synsclerotized, its dorsum reduced to a short heavily pigmented bridle of the antecosta; anterior margin slightly concave, posterior margin undulating; ventroapical keel triangular in lateral view. Segment X membranous, long, slightly sclerotized on its rounded slightly excised posterior margin. Cerci elongated quadratic. Paraproct having bifid apices; with 2 subapical sensillae, visible in lateral view. Gonopods slender mesad curving in ventral and more robust rounded in lateral view rounded. Phallic organ with 2 spines.

Material examined – Holotype: Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, MFN). Paratype: Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, OPC).

Etymology – *ketaga* from „kétágú" two-branched in Hungarian, refers to the bifide apices on the paraproct.

***Chimarra kokoda* KIMMINS, 1962**

Material examined – Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, MFN).

***Chimarra kozela* sp. n. (Figs 21-24)**

Diagnosis – Closest to *C . bobita* sp. n. but differs by having segment IX more elongated anteriad; dorsal process of the gonopods without topknot; sensillae on paraproct located nearby each others.

Description – Male (in alcohol). Medium-sized brown animal. Maxillary palp formula: 1-4-2-3-5. Fore tibial spurs reduced to diagnostic one: spur formula 1:4:4. Wing membrane brown; forewing length 4.6 mm; discoidal, median and thyridial cells on forewing having similar length, discoidal cell double high than the others; R slightly, Rs strongly sinuous with thickening before the discoidal cell, whose veins are also thickened at the base; hyaline window pattern less developed present as lack of pigmentation on crossveins r-m, m, m-cu, and on the arculus; on hindwing diagnostic looping of 2A to join 1A present.

Male genitalia. Tergite and sternite VIII distinct, sternite VIII with ventral process. Segment IX synsclerotized, horizontally long triangular in lateral view; ventroapical keel developed into a long process originating from well subapicad. Segment X membranous, indistinct between the elongated paraprocts. Cerci reduced to small setose knot. Paraproctal lateral vertical plates long and slender with 2 sensillae styloconica located close to each others. Gonopods flat in sagittal plane with a thin dorsal stalk armed with 2 strong setae. Phallic organ with slender horizontal phallotheca; endotheca with one small clusters of 3-4 microspines, phallotremal sclerites small indistinct.

Type material – Holotype: Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, MFN).

Etymology — *kozela*, from „közel", in Hungarian, refers to the 2 sensillae on paraproct located nearby to each others.

Psychomyidae

***Tinodes kunkor* sp. n.** (Figs 25-27)

Diagnosis – The coxopodits are almost entirely fused into a circular structure in ventral view. Similar fused coxopodit is present at *T. lomholdti* MALICKY from Papua New Guinea (Bismarck Archipelago) and at *T. gomboc* sp. n. but the new species differs by having sternum IX trilobed in ventral view, not monolobed; apex of phallic organ dilated and upward curving.

Description – Male (in alcohol). Small castanean brown animal. Sclerites medium brown. Maxillary palp formula is IV-I-III-II-V. Forewing length 3.2 mm, hyaline pattern on forewing reduced to distinct and contrasting hyaline line along stem M. Spur formula is 244.

Male genitalia. IXth abdominal segment represented by sternite and tergite, tergite low, sternite tall subtriangular in lateral view; setaless tergite is apron-shaped and more dark due to the finely granulated surface densely packed with microtrichia and roofing directly over phallic apparatus and the dorsal paraproctal processes; sternite tall triangular in lateral view joining high to fulcrum complex where met with tergite IX, cerci and paraproct as well as the median bridge providing sclerous connection between phallic apparatus and the sternite IX. Vestigial membranous segment X indiscernible on the cleared holotype. Cerci long spatulate, strongly setose. Paraproctal digitifoorm proceses with 3 megasetae. Gonopods the largest genital element composed of the fused

coxopodite with trifid apex; harpago is probably the setiferous middle claviform lobelike arm, the 2 spinelike processes belong to coxopodite; spinelike processes curving apicad then ventrad; the basal plate of gonopods composed of long slightly capitate anterior apodeme and a arching distal spinelike process; the middle is attached to gonopods by lateral straps. Phallic apparatus with dilated and upcurving apex; filiform aedeagus inserted midway on the dorsum.

Type material – Holotype: Indonesia**,** Papua, Roon Island, YENDE, 60m, 7. XI. 1993, at light, leg. A. J. DE BOER, A. L. M. Rutten & R. DEVOS (2 males, NBC-ZMAN).

Etymology – *kunkor*, from „kunkori", curving upward in Hungarian, refers to the upward curving apex of aedeagus.

Polycentropodidae

***Nyctiophylax (Paranyctiophylax) levagot* sp. n.** (Figs 28-31)

Diagnosis – This new species having elongated monolobed gonopods belongs to *Nyctiophylax flavus* species group of OLÁH & JOHANSON (2010) and most similar to *N. bunk* sp. n. from Indonesia (West Papua: Batanta Island), but differs having segment X more developed; cerci with apex clavate in lateral and truncate in dorsal view; paraproct differently formed both in lateral and ventral view; gonopods S-forming in lateral view, not L-forming; endotheca with 2+2 straight spines, not with 4+2 spines.

Description – Male (in alcohol). The entire body is rather uniformly pale yellow. Antennae rather stout. Maxillary palp formula is II-I-IV-III-V, third segment inserted mesosubapicad on the second. Spur formula 344. Forewing pale; forewing length 5.7 mm. Forewing, hindwing discoidal cells and forewing median cells closed. Forewing with apical forks 2, 3, 4, 5, hindwing with apical forks 2, 5 present. In forewing A1, A2 and A3 looped.

Male genitalia. The IXth abdominal segment is represented by a subtriangular robust sternite, with a well developed apicoventral mesal lobe; tergite IX small, almost indiscernible. Segment X present; its basal area membranous covered with microtrichia; apical part produced into setose lobe, slightly excised medially. Setose cerci elongated clavate in lateral and mesally truncate in dorsal view. Paraproctal subphallic plate present deeply divided mesad; dorsal paraproctal processes lacking. Gonopods elongated slender, S-forming in lateral view; ventrobasal elbow less developed, but armed with a pair of long setae. The phallic apparatus located dorsad, fixed and guided by the paraproct and by segment X; the tube forming phallotheca less developed; phallobase modified into an arching long and narrow dorsal apodeme, very distinct clear-cut, arching and narrowing into a spine-like process in lateral view, but also narrowing in dorsal view; the aedeagus membranous with a 2+2 straight spines, dorsal pair little shorter.

Type material – Holotype: Indonesia**,** Papua, Baliemvalley, JIWIKA, 1600m, 21. X. 1993, at light, leg. A. J. DE BOER, A. L. M. RUTTEN & R. DEVOS (2 males, NBC-ZMAN).

Etymology – *levagot*, from „levágott", truncate in Hungarian, refers to the mesally truncate apex of the cerci.

***Polycentropus moselyi* KIMMINS, 1962**

Material examined – Indonesia, Papua, Kecamatan Abenaho, PASS WALLEY, 1950m, cultivated area, 3°51'S 139°05'E, 11-17. II. 2005, at light, UNZEN-ZMA Expedition, (1 male, 1 female, NBC-ZMAN).

***Polycentropus toldas* sp. n.** (Figs 32-37)

Diagnosis – According to the hindwing venation this new species is a typical *Polycentropus*. Discoidal cell open, not closed like at *Plectrocnemia*, fork 1 present, not absent like at *Polyplectropus*. Close to *Polycentropus auricollis* KIMMINS from Papua New Guinea (Kokoda), but differs by having dorsum IX spinelike posterad turning, not simple; apicomesal plate on gonopods upturning in sagittal plane longer and differently shaped; cerci and paraproctal complexes having the same strategy of structures, but developed different in details.

Description – Male (in alcohol). The entire body is rather uniformly dark brown coloured, head and thoracic dorsum shining; postoccipital setal warts and pronotum yellow, mesonotum light brown. Antennae are dark and stout. Maxillary palp formula is (1,2)-4-3-5, third segment inserted mesosubapicad. Spur formula 3-4-4. Forewing length is 4.6 mm; hyaline windows present the largest at crossveins r-m, m, and m-cu, later extends to nearby forkbase M. Discoidal and median cells in forewing closed, in hindwing open; forewing with apical forks 1-2-3-4-5, hindwing with apical forks 1-2-5.

Male genitalia. Segment IX short narrowing dorsad forming a pair of posterad turning spinelike processes in lateral view; dorsum open. Membranous segment X covers the open dorsum. Cerci composed of elongated irregular lateral and mesal lobes with an additional small digitate process tipped with a single seta on the mesal margin of the lateral segment. Paraproct rather complex, most visible is the dorsal process with asymmetric bifid apex each with stout spinelike seta; paraproct continuing downward in inner position with a posterior shorter pair and an anterior longer pair of processes; both pairs of paraproctal processes serving phallic guide function; anterior pair encircling entirely the phallic organ. Gonopods with apical upward directed plate developed in sagittal plane. The phallic apparatus with bilobed apex in ventral and bifid apex in lateral view.

Female genitalia. Elongated subtriangular plates on sternite VIII well separated mesad, mesal margins concave, subgenital plate produced by sternite VIII tapering in lateral and slightly excised in ventral view. Segment IX bipartite, basal half with serrated apical margin. Setose segment X with additional 2 small papillae beside cerci.

Type material – Holotype: Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, MFN). Allotype: same as holotype (1 female, MFN). Paratypes: same as holotype (2 males, 1 female, 1 male, 1 female OPC).

Etymology – *toldas* from „toldás", additional elongated in Hungarian, refers to the elongated spinelike processes of dorsum IX turning posterad in right angle.

Hydropsychidae

Abacaria beroni (KUMANSKI, 1979)

Material examined – Indonesia, Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07'S 139°38'E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN).

Cheumatopsyche bunkoska sp. n. (Figs 38-41)

Diagnosis – This light brown animal with pale dotted wing pattern is a member of the *Cheumatopsyche expeditionis* species group and is similar to *Cheumatopsyche ronujra* OLÁH from Indonesia (Papua: Batanta Island), but differs by having forewing dotted, not unicolour; dorsocaudal spiny lobe of segment IX narrow, not wide in dorsal view; ventroapical setose lobe slender, not robust; mesocaudal lobe wide semicircular, not narrow; harpago clavate in ventral view.

Description – Male (in alcohol). Cephalic and thoracic scerites and appendages including palps, antennae, legs light brown. Maxillary palp formula: I-IV-III-II-V. Spur formula 2,4,4. Forewing length 7 mm; brown with veins slightly darker; Forewing SC and R run free to margin, Cu_2 and A1 run free to margin, not confluent. Hindwing SC and R met after r at s; as a result r precedes s, fork 1 absent.

Male genitalia. IXth abdominal segment annular, tergum very short, sternum almost 2x wider; anterior margin convex; apical lobe of posterior margin rounded, slightly above lightly sclerotized articulation cavity of gonopods; antecosta medium-sized, gradually narrowing ventrad and dorsad with antecostal suture visible externally; spine row on posterior margin of segment IX interrupted at segment X; in dorsal view dorsoapical spiny lobes narrow in dorsal view, continuous, not separated mesad. Intersegmental lateral profile between segments IX and X is high and obtuse angled. Segment X short, slightly trapezoid both in dorsal and lateral view; basal part slightly sclerotized, indistinct; terminating distally by the less produced setaless mesocaudal wide semicircular lobe; ventroapical setose lobe slender rounded, slightly capitate in lateral view. Sutures of segment X visible behind cerci. Cerci (lateral setose area) forming elevated a small wart. Coxopodite of the gonopods extend well beyond apex of segment X, straigth rod-like in lateral view, slightly dilated at apex in ventral view; harpago clavate in ventral view. Phallotheca robust, basal section slightly broader and bent at obtuse angle to stem; middle region constricted followed by apex broadening into ventral bulge from subapicad; endophallus long and broad, extending through and filling almost the entire phallotheca, ending anteriad in a narrow tube at the gonopore; chitinized endothecal process strongly pigmented, rounded with minute ventral incision; phallotremal sclerite indistinctly round in lateral view.

Type material – Holotype: Indonesia, Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07'S 139°38'E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN). Paratypes: same as holotype (2 males, NBC-ZMAN, 1 male, OPC). Indonesia, Papua, Baliemvalley, JIWIKA, 1600m, 21. X. 1993, at light, leg. A. J. DE BOER, A. L. M. Rutten & R. DEVOS (2 males, NBC-ZMAN).

Etymology. – *bunkoska*, from „bunkóska", diminutive clavate in Hungarian, refers to the clavate apex of the gonopods.

***Cheumatopsyche expeditionis* (ULMER, 1938)**

Material examined – Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (64males, MFN, 12 males, OPC).

***Diplectrona semes* sp. n. (Figs 42-47)**

Diagnosis – This new species has some relation to *Diplectrona mafulua* KIMMINS from Papua New Guinea. However eyes are enlarged, inter-ocular distance very narrow, especially on the anterior dorsum, not about equal to radius of eye in dorsal view. Dorsum and ventrum of segment IX short, not long. Harpagones long slender, not short robust.

Description – Male (in alcohol). Pale brown animal. Eyes extremely enlarged, unsetose, inter-ocular distance very narrow, especially on the anterior dorsum. Cephalic warts on the face are represented by a pair of frontal lateral compact setose warts rounded somewhat elongated transversally, by a single clypeal median compact setose warts, and by a single labral anteromedian compact setose wart; on head dorsum a single rounded vertexal medioantennal compact setose wart present as well as 2 pairs of longitudinally elongated seat warts fill the narrow vertex between the enlarged eyes. Proepisternal swollen setal wart present. Anterodorsal filament with reticulated surface associated with sternum V glands characterized by broader basal and thinner terminal half, reaching almost the posterior margin of segment VI; there are a pair of large ovoid internal striated and wrinkled sacs in sternum VII. Forewing length is 8 mm.

Male genitalia. Abdominal segment IX short, convex anteriad; dorsum constricted medially in dorsal view. Segment X fused to the tergum X, its basal part less sclerotized. The dorsoapical setose lobes of segment X (inner lobes of segment X), characteristic for the genus, present as a pair of inner long triangular setaless lobes, separated by narrow and triangular dorsal interlobular gap; somehow confused to lateral more sclerotized paraproctal rodlike margin, at least its setal area moved to the paraproctal apex; the ventroapical setose lobe of segment X forming a setose hump also merged with the paraproctal rodlike lateral complex. Cerci (lateral setose area) setose, vertically elongated, broad, occupying the larger basal half of segment X delineated anteriad by a very pronounced suture. Paraproct (outer lobes of segment X) longer than segment X forming the more sclerotized lateral marginal complex together with setose lobes of segment X and running ventrolaterad towards basal plate of gonopod. Gonopods straight, coxopodite with weakly dilated apical third; harpago narrow, arching mesad, parallel-sided, tapering abruptly, only at its very apex. Phallic apparatus with down curving and broadening basal section and with a slightly longer tube-forming horizontal apical half with downward bulging apex in lateral view; two pairs of endothecal processes visible, both with triangular shape visible both in lateral and ventral view; lateral pair directed laterad; phallotremal sclerite less distinct.

Type material – Holotype: Indonesia**,** Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07'S 139°38'E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN).

Etymology. — *semes*, from „szemes", eyed in Hungarian, refers to the extremely enlarged eye.

Hydropsyche noonadanae (MALICKY, 2009), comb. n.

Herbertorossia noonadanae MALICKY, 2009: 41.

Material examined – Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, 1 female, MFN).

Hydropsyche orakaivai (KIMMINS, 1962)

Material examined – Indonesia, Papua (Irian Jaya), Wandamman Peninsula, ZMA Exp. Dotir, 150 m, River Mawoy, second forest, 2km inland, 2°38'S 134°30'E, at light, 17. II. 1996, leg. (4males, ZMA, 2 males, OPC).

Hydropsyche sabronensis (KIMMINS, 1962)

Material examined – Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (34males, MFN, 12 males, OPC).

Calamoceratidae

Anisocentropus immunis MCLACHLAN, 1863

Material examined – Indonesia**,** Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07'S 139°38'E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN).

Remark – BOTOSANEANU (2008) has published drawings of *Anisocentropus* sp. from a specimen collected in the same habitat, in the same period. The specimen was in bad condition: wing damaged, the colour pattern vanished. It is *Anisocentropus immunis* MCLACHLAN.

Anisocentropus pholos MALICKY, 2009

Material examined – Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, OPC).

***Anisocentropus tosavos* sp. n.** (Figs 48-51)

Diagnosis – Belongs to the *Anisocentropus* (s. str.) *latifascia* species group of the *Anisocentropus* (s. str.) subgenus. Forewing pattern differentiates this new species from all the known species of the genus. According to the wing pattern most close to A. *krampus* MALICKY from Papua New Guinea (New Britain), but forewing pattern different.

Description – Female (in alcohol). Medium sized species with forewing length of 8 mm. Body and body appendages golden yellow. Forewing pattern is characterized by dark brown basal band, by lighter middle band and by the light brown coloured apical half; the contour between the dark brown basal band and the lighter middle band is very sharp contrasting; however the contour between the light middle band and the light brown apical area is not contrasted, rather obscured by a few small light dots.

Female genitalia. Abdominal segment VIII similar to the preceding segments, with separate tergite and sternite, distal margin of sternite deeply cleft mesally. Apical margin of tergite IX not produced posteriorly at middle, slightlyexcised between lobes of segment X; sternite IX somewhat flattened and depressed ventrally with nindistinct longitudinal mesal suture; lateral surfaces obliquely striated. Segment X fused with segment IX terminating apically with a pair of setose lobes. Vaginal sclerite with tapered anterior tip and rounded posterior apex.

Type material – Holotype: Papua New Guinea: East New Britain Province, Kokopo Arabam, Rapmarine River, 180 m, 04° 35’ 56’’ S, 152° 06’ 02’’ E, 2. III. 2000, leg. A. WEIGEL-F. P. ROICK (1 female, MFN).

Etymology – *tosavos*, from “tősávos” basal banded in Hungarian, refers to the dark brown basal band on the forewing.

Leptoceridae

***Triplectides oblos* sp. n.** (Figs 52-55)

Diagnosis – This new species belongs to the *Triplectides australis* species group, the only members of the genus distributed in Australasiam, Oriental and eastern Palearctic Biogeographic regions. According to forewing venation and mesal lobe most close to *Triplectides australis* NAVAS distributed widely in Australia, but differs by having apicolateral lobe high and short, not low and long; segment X as long as cerci, not longer; cerci very wide in dorsal view, mesal lobe of gonopods more quadrangular, sinus enclosed by the mesal surface and mesal lobe of coxopodit almost circle-shaped, not triangular.

Description – Male (in alcohol). Light brown animal, wing membrane lighter; on forewing discoidal cell apically broadened, its lower distal angle clearly very produced by crossvein *r-m* toward the median vein; crossvein *s* very concave being curved basad; discoidal cell clearly separated from the thyridial cell by crossvein *r-m*; crossvein r-m meets crossvein *m-cu* that is long and oblique basad; folk M far from the meeting point of crossveins r-m and m-cu; forewing length 14 mm. Tibial spur formula 2-2-2.

Male genitalia. Segment IX synsclerotized with a weakly sclerotized constriction at cerci at each side; a high apicolateral lobe extends mesad between cerci and gonopods. Segment X simple, narrow lacks any sharp carinae; hoodlike, nearly as long as cerci, with short apicomesal excision and bearing a few short minute apical setae. Cerci are very broad, narrowing apicad in dorsal view, long foliform in lateral view. Basal section of gonopods as long as the semi-membranous dorsoapical lobe; basoventral lobe reaching to the harpago; mesal lobe subquadrangular enclosing a rounded sinus with the basomesal part of the coxopodite; harpago slightly curving downward and mesad. Phallic organ with bilobed endothecal membrane and with indistinct phallotremal sclerite.

Type material – Holotype: Indonesia**,** Papua (Irian Jaya), Baliemvalley, JIWIKA, 1600m, at light, 21. X.1993, at light, leg. A. J. DE BOER, A. L. M. RUTTEN & R. DE VOS (1 male, NBC-ZMAN).

Etymology **–** *oblos*, from "öblös" sinouos in Hungarian, refers to the deep rounded sinus visible between the mesal basis of apicodorsal lobe and mesal lobe of gonopods in ventral view.

***Oecetis gorbula* sp. n.** (Figs 56-59)

Diagnosis –Very close to *O. marginata* KIMMINS from Papua New Guinea (Kokoda), but differs definitely by having a pair of small triangular process on tergum IX in dorsal view; ventrum of segment IX with a deep V-shaped mesal excision; cerci excised concave apicad, not rounded convex; gonopods wide curving laterad, not narrow; gonopods without subbasal lobes in ventral view; basal lobes differently shaped in ventral view.

Description – Male (in alcohol). Brown animal. Wing membrane brown; forewing length 14 mm.

Male genitalia. Segment IX synsclerotized, shorter dorsad, little longer ventrad; dorsoapical margin with a pair of small triangular lobes; ventroapical margin with deep V-shaped excision. Segment X consisting of a slender median process, slightly clavate accompanied by a pair of very transparent small irregular lateral digitiform processes. Cerci fused to segment IX subquadrate shortly excised apicad. Gonopods mesad curving long slender processes, each with a quadrangular basis in lateral view; that produced by right angled lobe in ventral view and a smaller lobe on the inner margin beyond the basal lobe. Phallic organ elongated with globular phallobase and 3 parameres of different size.

Type material **–** Holotype: Indonesia**,** Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07'S 139°38'E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN).

Etymology **–** *gorbula*, from "görbülő" curving in Hungarian, refers to the strongly laterad curving gonopods.

***Oecetis tripunctata* (FABRICIUS, 1793)**

Material examined – Papua New Guinea, East New Britain Province, 33km SW Kokopo Aranam, Rapmarine River, 180m, 04°35'56"S 152°06'06"E, 2. III. 2000, leg. M. SCHAARSCHMIDT & F. P. ROICK (1 male, OPC).

***Triaenodes paratlan* sp. n.** (Figs 60-64)

Diagnosis –This unique species of Triaenodes (Triaenodes) subgenus has a single recurved process on the basal plate of gonopods, distinguishing from all the known species. It belongs to the Triaenodes mondoana species group of HUR (2006), and most similar to T. mondoana KIMMINS from Papua New Guinea. The asymmetry of recurved processes has been developed into the almost entire loss of the left process. Vestigium of the left process present only as a small spine crossing transversal closely appressed to gonopod basis from right to left.

Description – Male (in alcohol). Brown animal, scapus enlarged, legs and antennae broken. Wing membrane brown; forewing length 8 mm.

Male genitalia. Segment IX synsclerotized, subquadrangular in ventral view; well-sclerotized frame of sutures encircles the very small tergite IX. Segment X comprising of filiform trifid mesal process (upper process); the median arm of the trifid mesal process bifid in lateral view; pair of short, bare digitate processes present basodorsad on the mesal process. Cerci setose filiform, long as the upper process of segment X. Paraproct (lower process of segment X) forming a short subtriangular plate with chalazae basad and setae apicad. Gonopods bilobed; long bifid recurved process present only on right side, left process highly vestigial, almost lost. Phallic organ with extremely developed high left ridge; phallobase connected with a pair of lateral sclerotized straps to ventroapical corner of segment IX.

Type material – Holotype: Indonesia, Papua, Kecamatan Nipsan, Walmak, 1710m, cultivated area, 04°07'S 139°38'E, 31. I.-9.II. 2005, at light, UNZEN-ZMA Expedition, (1 male, NBC-ZMAN); same as holotype (1 male, OPC).

Etymology – *paratlan*, from "páratlan" not paired in Hungarian, refers to the single recurved process on the basal plate of gonopods.

Acknowledgement

We acknowledge and express our thanks to the collectors M. SCHAARSCHMIDT, F. P. ROICK and ROB DE VOS for providing the material for study. For reviewing a draft of this paper and the editorial work we are especially grateful to Wolfgang SPEIDEL.

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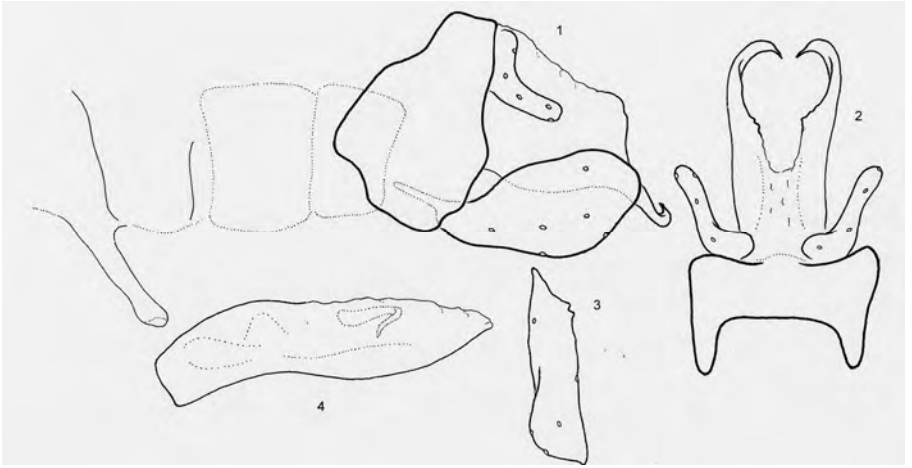
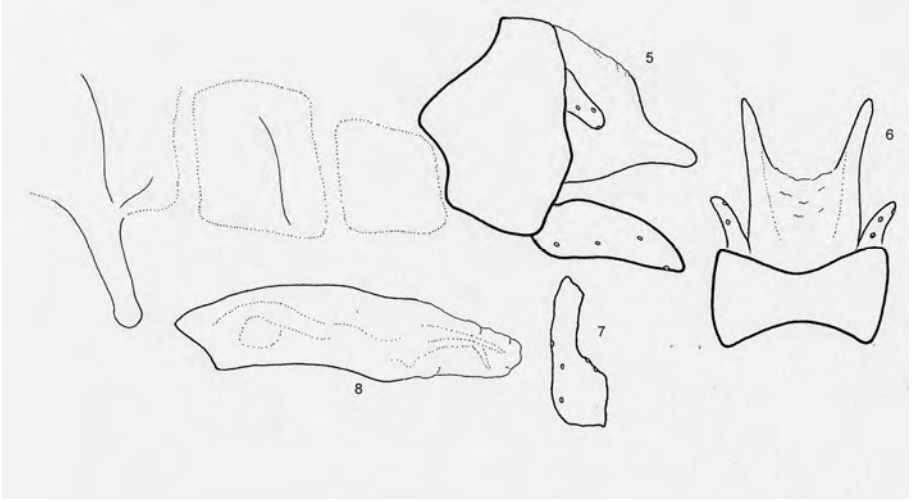
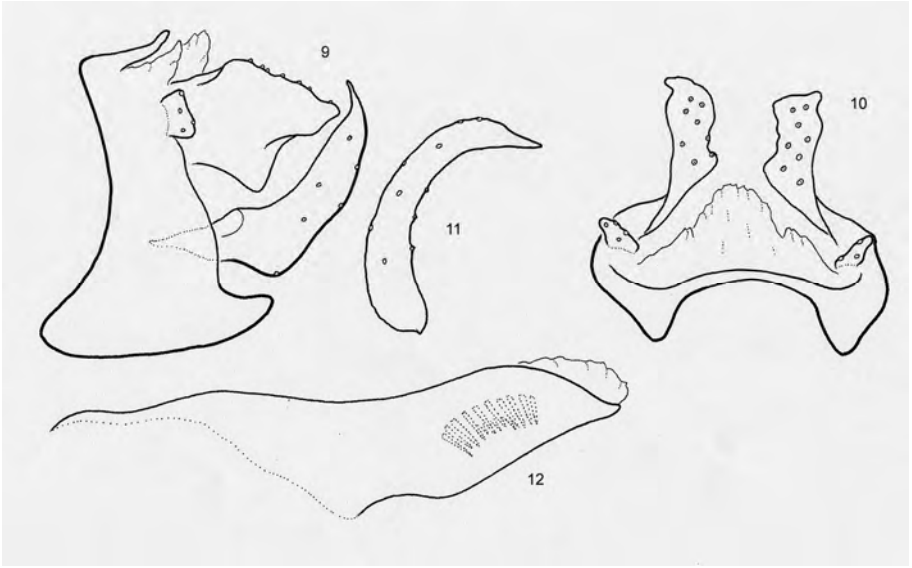


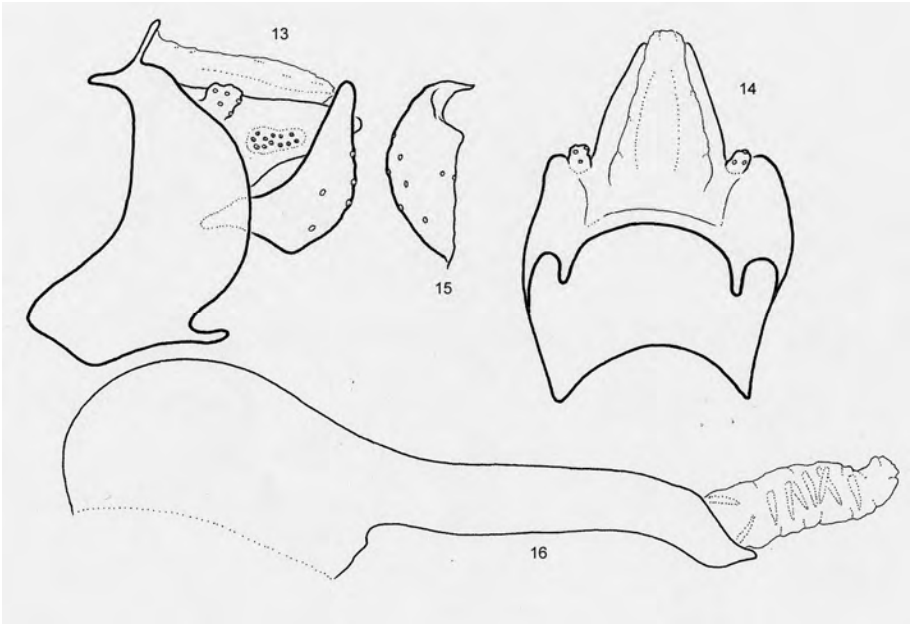
Figs 1-4: Male genitalia of *Agapetus gorbuhl* sp. n., 1 – lateral, 2 – dorsal, 3 – ventral, 4 – phallic apparatus, lateral



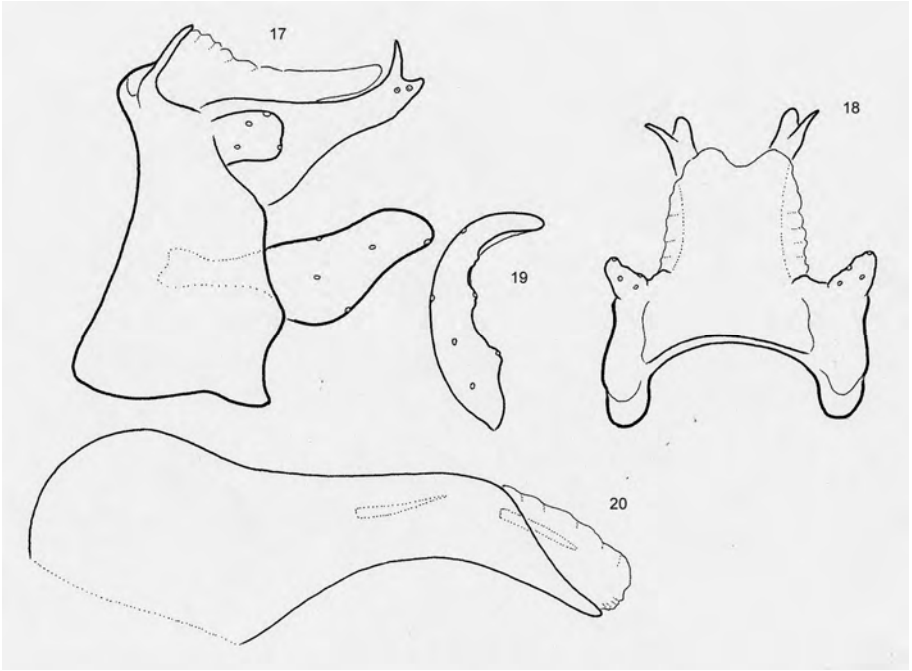
Figs 5-8: Male genitalia of *Agapetus kihuzot* sp. n. , 5 – lateral, 6 – dorsal, 7 – ventral, 8 – phallic apparatus, lateral



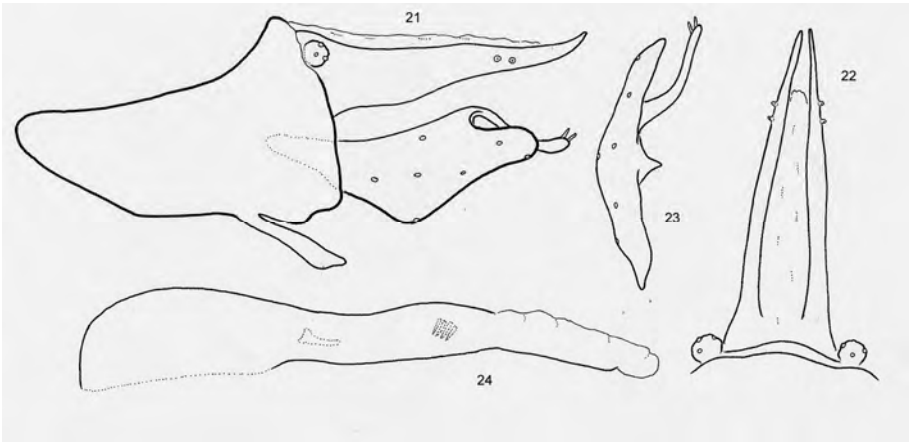
Figs 9-12: Male genitalia of *Chimarra erzekela* sp. n., 9 – lateral, 10 – dorsal, 11 – ventral, 12 – phallic apparatus, lateral



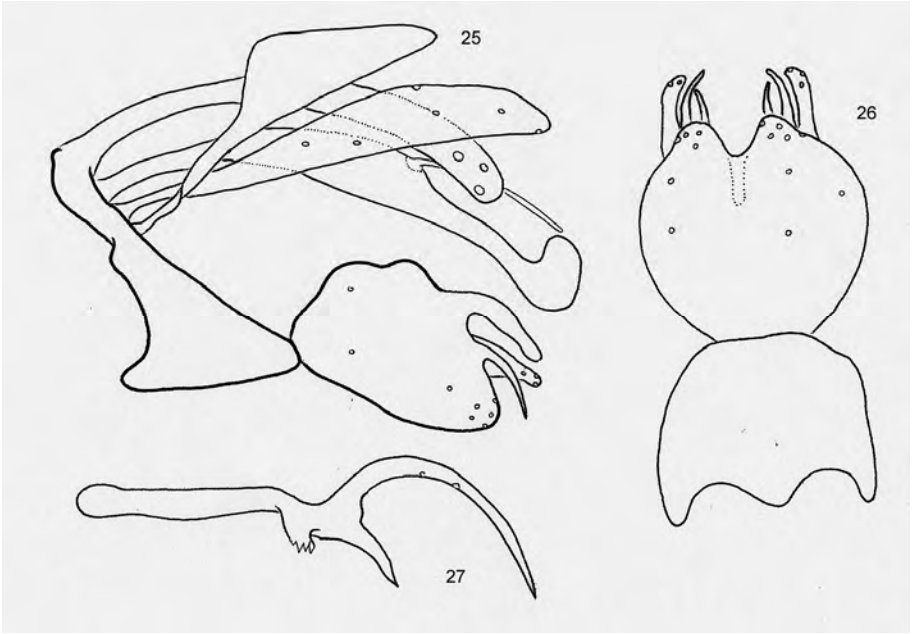
Figs 13-16: Male genitalia of *Chimarra felholda* sp. n., 13 – lateral, 14 – dorsal, 15 – ventral, 16 – phallic apparatus, lateral



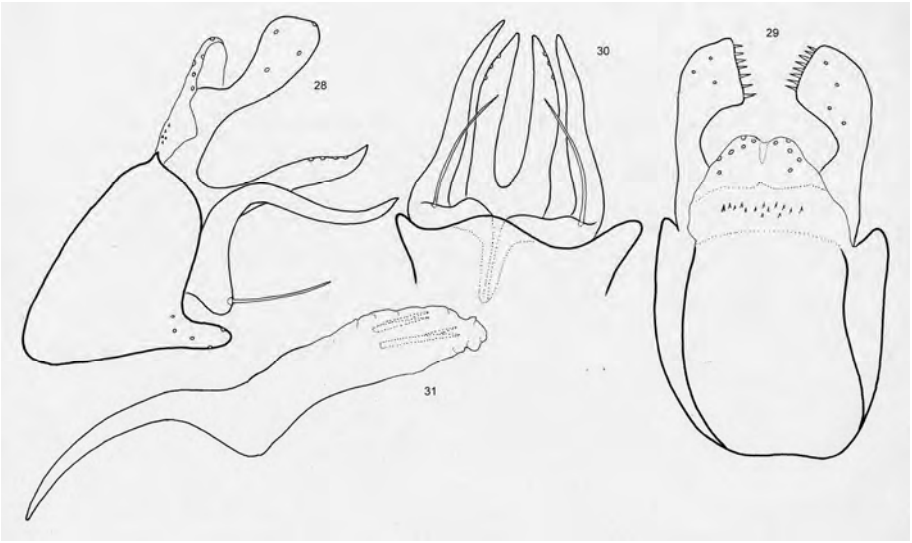
Figs 17-20: Male genitalia of *Chimarra ketaga* sp. n., 17 – lateral, 18 – dorsal, 19 – ventral, 20 – phallic apparatus, lateral



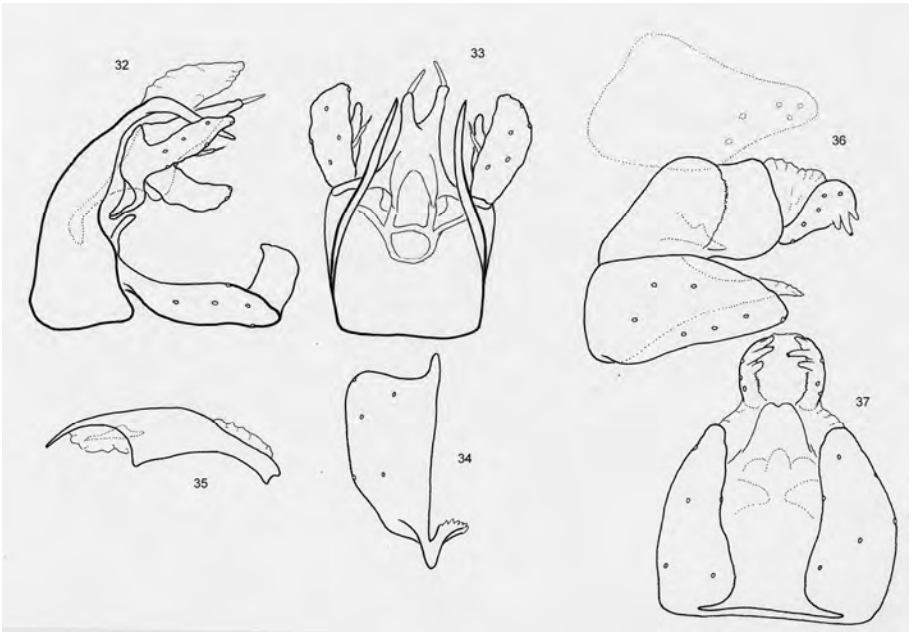
Figs 21-24: Male genitalia of *Chimarra kozela* sp. n., 21 – lateral, 22 – dorsal, 23 – ventral, 24 – phallic apparatus, lateral



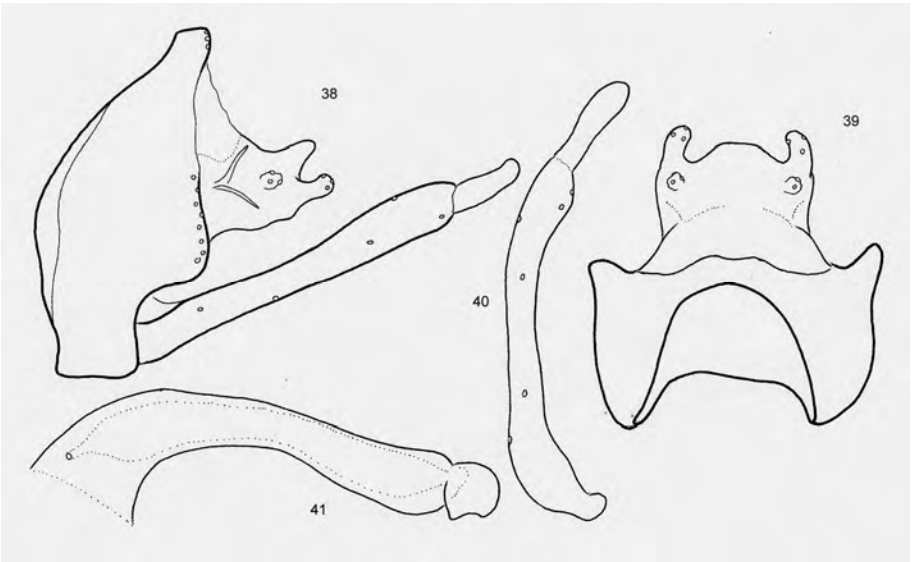
Figs 25-27: Male genitalia of *Tinodes kunkor* sp. n. , 25 – lateral, 26 – ventral, 27 – phallic apparatus, lateral



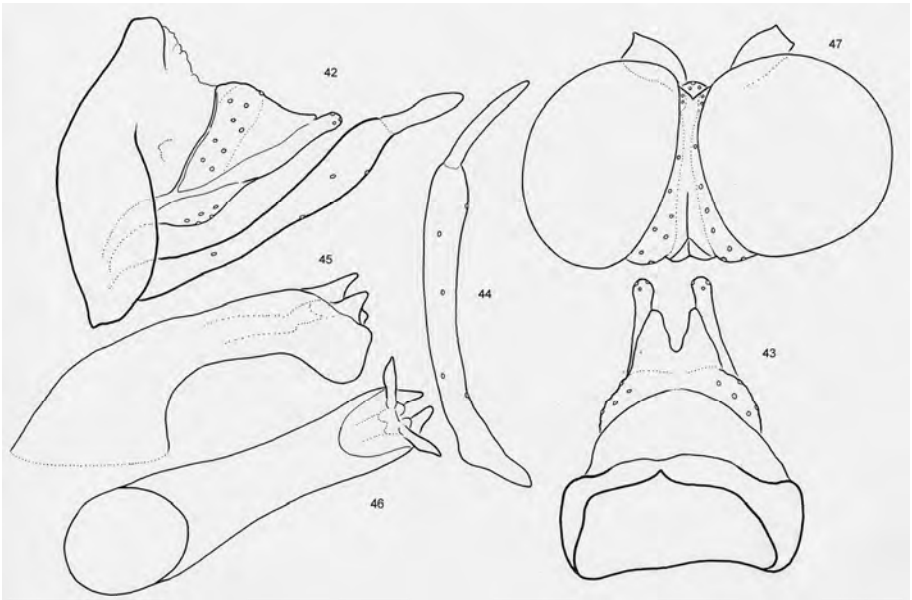
Figs 28-31: Male genitalia of *Nyctiophylax* (*Paranyctiophylax*) *levagot* sp. n., 28 – lateral, 29 – dorsal, 30 – ventral, 31 – phallic apparatus, lateral



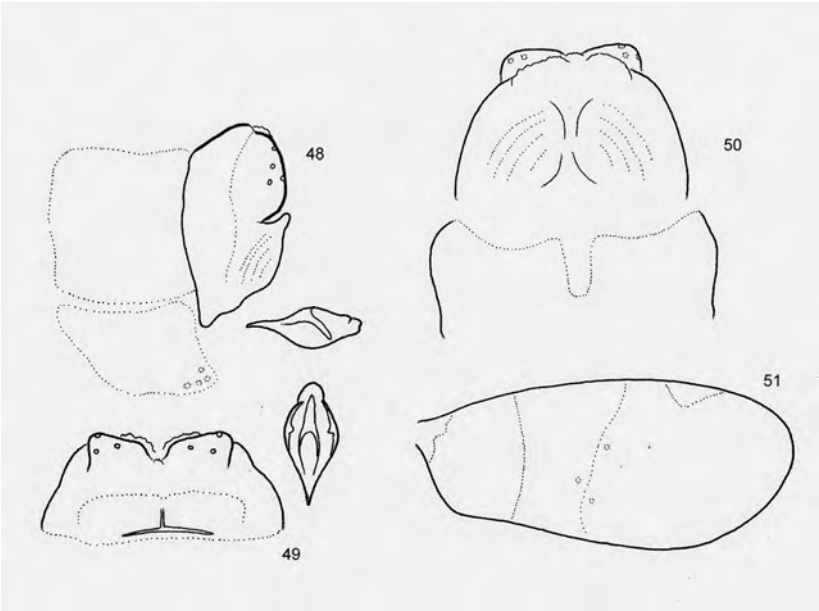
Figs 32-37: Male genitalia of *Polycentropus toldas* sp. n. 32 – lateral, 33 – dorsal, 34 – ventral, 35 – phallic apparatus, lateral, 36 – female genitalia, lateral, 37 – ventral.



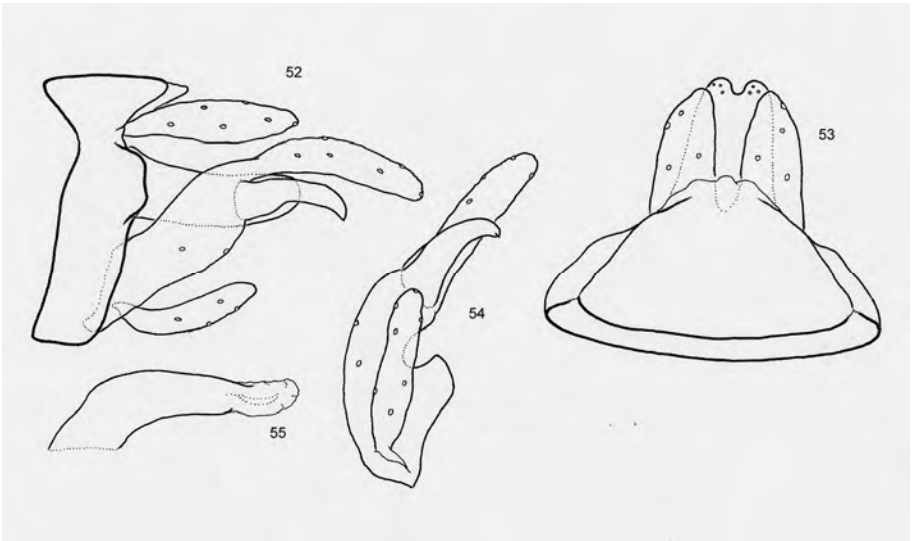
Figs 38-41: Male genitalia of *Cheumatopsyche bunkoska* sp. n., 38 – lateral, 39 – dorsal, 40 – ventral, 41 – phallic apparatus, lateral



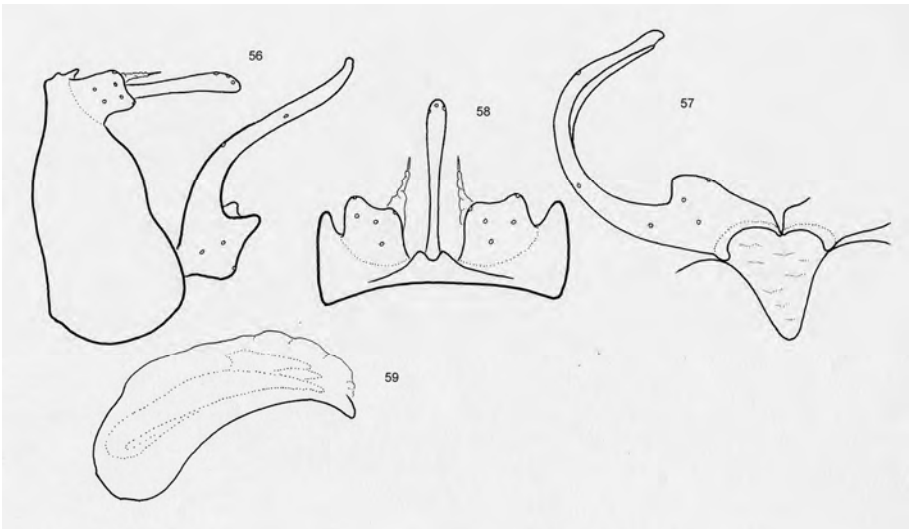
Figs 42-47: Male genitalia of *Diplectrona semes* sp. n., 42 – lateral, 43 – dorsal, 44 – ventral, 45 – phallic apparatus, lateral, 46 – dorsal, 47 – head, dorsal



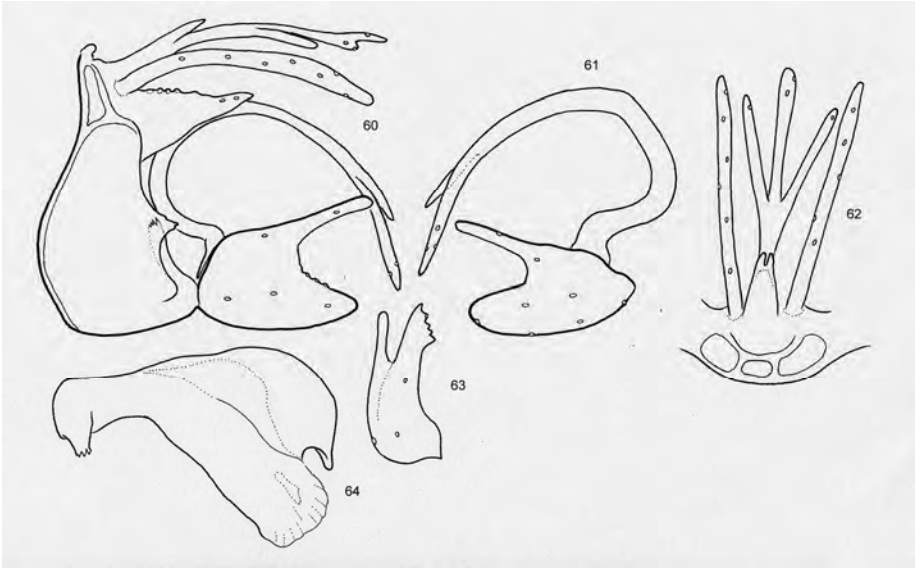
Figs 48-51: Female genitalia of *Anisocentropus tosavos* sp. n., 48 – lateral, 49 – dorsal, 50 – ventral, 51 – forewing pattern.



Figs 52-55: Male genitalia of *Triplectides oblos* sp. n., 52 – lateral, 53 – dorsal, 54 – ventral, 55 – phallic apparatus, lateral



Figs 56-59: Male genitalia of *Oecetis gorbula* sp. n., 56 – lateral, 58 – dorsal, 57 – ventral, 59 – phallic apparatus, lateral



Figs 60-64: Male genitalia of *Triaenodes paratlan* sp. n., 60 – lateral, 61 – inferior appendage, 62 – dorsal, 63 – ventral, 64 – phallic apparatus, lateral

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Druck, Eigentümer, Herausgeber, Verleger und für den Inhalt verantwortlich:
Maximilian SCHWARZ, Konsulent f. Wissenschaft der Oberösterreichischen Landesregierung, Eibenweg 6, A-4052 Ansfelden, E-Mail: maximilian.schwarz@liwest.at.

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