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### New species and new species records of Trichoptera from Vietnam

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**Abstract.** New species of caddisflies from Vietnam are described and figured, belonging to the families Rhyacophilidae (3 species), Glossosomatidae (1), Philopotamidae (35), Stenopsychidae (2), Ecnomidae (7) and Psychomyiidae (4). New Vietnamese records of other species of these families are presented.

#### Introduction

A long term scientific cooperation was elaborated and agreement signed by the Hungarian Academy of Sciences and the Scientific Centre of Vietnam on the basis of cultural relations which established cooperation on biodiversity research with regular exchanges of research workers between the two countries. The research project on Vietnamese Trichoptera is a component of this bilateral contract existing between Hungary and Vietnam. By making use of this framework, we worked out a schedule which aimed to explore the animal communities and invertebrate fauna of the various waters and soils of Vietnam (see details in MAHUNKA & OLÁH 1986). Here we describe new caddisfly species and new records from Vietnam. The material was collected mostly by the first author during the years 1986-1988 in four collecting trips (MAHUNKA & OLÁH 1986; MÉSZÁROS & al. 1987; MATSKÁSI & al. 1989; MAHUNKA & al. 1989). – The material is preserved in alcohol in the private collection of J.Oláh, unless otherwise stated.

#### RHYACOPHILIDAE

##### *Rhyacophila arefinae* new species (p.32)

Medium-sized, castaneous brown species. Forewing length 7 mm, wing membrane uniformly castaneous coloured; forewing pattern reduced to well-developed corneous pterostigma and a bright hyaline lunula at around crossveins r-m, m-cu and near arculus where Cu2 meets the margin. This new species belongs to the *Rhyacophila anatina* Group and is most similar to *Rhyacophila petersorum* SCHMID & DENNING described from Thailand, but differs by having (1) dorsoapical lobe of segment 9 U-shaped median excision, *not* V-shaped with a small hump at the middle of the bottom of the excision; (2) cerci elongated round, *not* rounded (3) the coxopods of the gonopods longer and parallel-sided; (4) the harpagones regularly and gradually tapering apicad, *not* rounded. It is also very similar to *R. tambdaona* OLÁH, and the best separating character is the ventral view of the dorsal part of the phallus: short and rounded in *tambdaona*, long and spatulate in *arefinae*. The parameres of *arefinae* are slender and slightly bent upwards, but straight and thickened in *tambdaona*.

ROSS when establishing the *Rhyacophila anatina* species group, described the absence of a tergal trap connecting the paraproct to the phallobase; however this tergal trap is present in this species and probably in others, slender but discernible; as a result the phallobase is fixed to the tergum by the tergal trap and by a small trap of gonopod tendon to the dorsobasal corner of the coxopodit.

**Holotype male:** Thua Thien Hue Province, Bach Ma National Park 700m, 22.ii.2006, light trap [Z. Ecsedi and J.Oláh jr.] — 1 male.

**Etmymology:** the name is dedicated to Tatyana Arefina in recognition of her contribution to the knowledge of the Vietnamese *Rhyacophila*.

##### *Rhyacophila armitagei* new species (p.32)

Medium-sized, castaneous brown species. Forewing length 7 mm, wing membrane uniformly castaneous; forewing pattern reduced to a well-developed corneous pterostigma and a bright hyaline lunula at around crossvein m-cu and near the arculus where Cu2 meets the margin. This new species belongs to the *Rhyacophila castanea* group and most similar to *Rhyacophila olahi* ARMITAGE & AREFINA described from Vietnam, but differs by having (1) segment 10 simple and rounded with a small mesal excision, without visible lateral lobes in dorsal view; (2) gonopods with coxopodits of deep excision ventroapicad and with harpagones of narrow almost pointed ventral lobe; (3) aedeagus with large dorsal lobe; (4) apical half of the parameres with a long setal brush of decumbent setae having 5-6 erect and robust spine-like setae dorsosubapicad.

**Holotype male:** Thua Thien Hue Province, Bach Ma National Park 1200m, 20.ii.2006, light trap [Z. Ecsedi and J.Oláh jr.] — 1 male.

**Etmymology:** The name was dedicated to Brian Armitage in recognition of his contribution to the knowledge of Vietnamese *Rhyacophila*.

##### *Rhyacophila hoabinha* OLÁH 1987

Type country: Vietnam. Distribution: Vietnam

**New record:** Nghta Bihn Province, Bung stream, 12.i. 1991, light [S.Andrikovics] — 1 male.

##### *Rhyacophila inaequalis* DENNING & SCHMID 1971

Type country: Thailand. Distribution: Thailand, Laos, Cambodia, Vietnam

**New records:** Lamdong, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 3 males. Thua Thien Hue Province, Bach Ma National Park, entrance, 100m, 22.ii.2007, light trap [G. Simay] — 1 male.

##### *Rhyacophila kyimdongpa* SCHMID 1970

Type country: India (Assam). Distribution: India, Thailand, Vietnam

**New record:** Vinh Phuc Province, Tamdao, 12.v.1987, light [J. Oláh] — 3 males.

##### *Rhyacophila lamdonga* new species (p.32)

Small brown species. Forewing length 5 mm, wing membrane uniformly brown coloured; forewing slightly dot-patterned mostly on costal, subcostal cells, with well-developed corneous pterostigma and a hyaline lunula at around crossvein m-cu and near the arculus where Cu2 meets the margin. This new species belongs to the *Rhyacophila castanea* Group and is most similar to *Rhyacophila olahi* ARMITAGE & AREFINA described from Vietnam, but differs by having (1) smaller size; (2) segment 10 long with very small mesal excision, *not* short with deep mesal excision in dorsal view; (3) anal sclerite horizontal and triangular with a very pronounced root, (4) gonopods with shorter harpagones and deeper apical excision; (5) aedeagus without any angled dorsal lobe.

**Holotype male:** Lamdong Province, Baoloc, Duchma stream, 23.x.1988, light [J.Oláh] — 1 male. **Paratypes:** Lamdong

Province, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 2 males.

Etymology: The name refers to the province where the holotypes and paratypes were collected.

***Rhyacophila malayana* BANKS 1931**

Type country: Peninsular Malaysia. Distribution: Malaysia, Vietnam, Thailand, Laos, Cambodia

**New record:** Quang Tri Province, Da Krong Natura Reserve, 2 km SE of HQ, 16.v.2007, collected by light-trap, set up at a forested stream [G. Csorba] — 1 male.

Remarks. The species was first reported, male redrawn and female first described from Vietnam by Armitage & Arefina (2003).

***Rhyacophila multispinomera* SUN & YANG 1998**

Type country: China (Yunnan), Vietnam

**New record:** Lao Cai Province, Sa Pa, 1800m, 04.iii.2006, light trap [Z. Ecsedi and J. Oláh jr.] — 1 male.

***Rhyacophila olahi* ARMITAGE & AREFINA 2003**

Type country: Vietnam. Distribution: Vietnam

**New record:** Thua Thien Hue Province, Bach Ma National Park 1500m, 28.ii.2007, light trap [G. Simay] — 1 male.

***Rhyacophila scissa* MORTON 1900**

Type country: India. Distribution: India, Vietnam, Thailand, Myanmar, Nepal

**New record:** Vinh Phuc Province, Tamdao, 14.x.1986, [J. Oláh] — 1 male.

**GLOSSOSOMATIDAE**

***Glossosoma tuvien* new species (p.32)**

Ocelli present. Three pairs of compact setose warts discernible, widely separated on head dorsum: (1) postgenal compact setose warts, (2) occipital compact setose warts and (3) vertexal ocellar compact setose warts; the vertexal lateroantennal and vertexal medioantennal warts fused together on the anterior part of the dorsum forming a setose triangular elevation; on the face a pair of vertically elongated frontal lateral compact setose warts subdivided. Maxillary palp 5-segmented, first two segments short, second globose, both covered with strong erect setae slightly arched axially mesad; the last three segments longer and covered with short decumbent vestitular setae. Last segments of maxillary and labial palpi without pointed tips. Proepisternal setose wart absent, however small setose warts are present on cervical sclerites and on precoxale. Unguitractor lobe present on foreleg. Forewing length 6 mm, pterostigma well developed; crossvein r-m, terminal tip of Cu2 at arculus hyaline, larger hyaline patch present on primary M bifurcation extending to nearby m-cu crossvein; anal veins A1, A2 and A3 not thickened, anal region of forewing without any callosity.

Male genitalia. segment 9 almost regular quadrangular, higher than long; its ventral process steplike in lateral view and tongue-like only with short apical excision in ventral view. Segment 10 visibly membranous and retracted between cerci. Cerci long quadrangular in lateral view with trifid apices, well-visible in dorsal view. Gonopods retracted deep into segment 9 above the phallic organ comprising a pair of pointed setaless apices, setose broadened stalks and downwardly directed straps connected to the lower part of segment 9 and surrounding the phallic organ and forming almost a complete ring around it; however the dorsal surfaces of the gonopods have some semimembranous strap connecting also to the fulcrum where the lower corner of the

cerci meets the margin of segment 9. Phallic organ extremely elongated and composed of a thin walled phallocrypt surrounding the basal two third of the aedeagus and parameres, the more chitinized aedeagus and a pair of membranous parameres with axis of setal cluster; this unusually large tube of phallocrypt housing the aedeagus and parameres seems to be a continuation of the gonopodal ring.

This new species belongs to the subgenus *Muroglossa* and is close to *Glossosoma hemantajam* Schmid described from India, but differs by having a short ventral process of segment 9 excised apically and constricted basally, *not* long excised and broadening apically; cerci with trifid apices, *not* with pointed dorsal process only; gonopod clearly steplike and parameres without any spines, *not* with four slender spines.

**Holotype male:** Lamdong Province, Dalat, Monastery Balcony, 16.x.1988, light [J. Oláh] — 1 male.

Etymology: this single male was attracted by light to a monastery balcony on a hill top surrounded by secondary coniferous forest, and the name refers therefore to the monastery “tu vien” in Vietnamese.

**PHILOPOTAMIDAE**

***Kisaura cailona* new species (p.32)**

Medium-sized, brown species with brown wing membrane and darker brown veins. Forewing length 6.2 mm. On hindwing A1, A2 and A3 run free to the anal margin. This new species is similar to *Kisaura pectinata* ROSS described from China (Guangdong), but differs by having (1) segment 9 much deeper than short, *not* longer than shallow; (2) dorsal paraproctal processes rather plate-like, *not* ribbon-like in lateral view; (3) dorsal paraproctal processes appressed to the semisclerotized Xth segment with triangularly broadened apex, *not* suddenly angled mesad and pointed at the apex; (4) phallic apparatus fixed rather high below the membranous segment 10, however not fused with the membrane beneath the apex of segment 10 as was supposed by ROSS in *K. pectinata* (1956) as a rather novel feature of caddisfly morphology, but embraced by the ventral paraproctal process being sclerotized only basally and membranous afterwards. This is a rather common functional development of the ventral paraproctal processes in the superfamily *Psychomyioidea*, frequently the entire ventral paraproctal processes are sclerotized, often producing even subphallic sclerites.

**Holotype male:** Lam Dong Province, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 1 male. **Paratypes:** Lam Dong Province, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 2 males. Lam Dong Province, Baoloc, Baco stream, 26.x.1988, [J. Oláh] — 1 male.

Etymology: The name refers to the remarkable row of mesal comb composed of enforced setae; row “cai lon” in Vietnamese.

***Kisaura euandros* SUN & MALICKY 2002**

Type country: China (Henan). Distribution: China, Vietnam

**New records:** Quang Nam Province, Lo Xo Pass, 600 m, 15.ii.2006, light [Z. Ecsedi and J. Oláh jun] — 1 male. - Quang Nam Province, Lo Xo Pass, 600 m, 15.ii.2006, light [Z. Ecsedi and J. Oláh jun] — 9 males.

***Kisaura fansipana* new species (p.33)**

Medium-sized, brown species with brown wing membrane and darker brown veins. Forewing length 6.1 mm; forewing membrane with contrasting hyaline window-like pattern: (1) three hyaline vertical bars along crossveins s, r-m and m; (2) Y-shaped hyaline window around joining M, M1+2 and

crossvein m-cu; (3) hyaline bar along the very terminal section of Cu2 merging anal margin near arculus; fork I is absent from the forewing. On hindwing, A1, A2 and A3 run free to anal margin. This new species is similar to *Kisaura alveiformis* SUN described from China (Sichuan), but differs by having (1) Fork I lost on forewing; (2) apicodorsal margin of tergite 8 excised in dorsal view; (3) harpagones equal or longer than coxopodites, *not* shorter; (4) harpagones elongated shallow, *not* abbreviated deep; (5) setal comb on the mesal surface of harpagones very shallow comprising of very short enforced setae;

**Holotype male:** Lao Cai Province, Sa Pa, 1800 m, 04.iii.2006, light [Z. Ecsedi and J. Oláh jun] — 1 male.

**Paratypes:** Lao Cai Province, Sa Pa, 1800 m, 04.iii.2006, light [Z. Ecsedi and J. Oláh jun] — 1 male.

**Etymology:** The name refers to the type locality of the holotype.

***Dolophilodes burmana* KIMMINS 1955**

Type country: Myanmar. Distribution: Myanmar, Vietnam

**New record:** Lao Cai Province, Sa Pa, 1800 m, 04.iii.2006, light [Z. Ecsedi and J. Oláh jun] — 1 male.

***Dolophilodes lagarha* MALICKY 1995**

Type country: Vietnam. Distribution: Vietnam

**New record:** Vinh Phuc Province, Tamdao, 21.i.1986, [J. Oláh] — 1 male.

***Dolophilodes adnamat* MALICKY & CHANTARAMONGKOL 1993**

Type country: Thailand. Distribution: Thailand, Vietnam

**New records:** Lam Dong Province, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 1 male. - Lam Dong Province, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 4 males. Lam Dong Province, Baoloc, Duchma stream, 25.x.1988, [J. Oláh] — 1 male. Lam Dong Province, Baoloc, Duchma stream, 26.x.1988, [J. Oláh] — 4 males.

***Wormaldia daona* new species (p.33)**

Small-sized, medium-brown species with light brown wing membrane. Forewing length 4 mm. On hindwing R1 and R2 not confluent at or before wing margin, they run well-separated. This new species is most similar to *Wormaldia muoibon* MALICKY described from Vietnam (Tam Dao) but differs by having (1) R1 and R2 on hindwing not confluent running free to wing margin and well-separated; (2) apicodorsal projection of tergum 8 roofing over the segments 9 + 10 much longer and the inside dome much deeper; (3) segment 9 subquadrangular in lateral view, *not* subtriangular; (4) apical half of segment 10 posteriad of the pair of small pointed processes very narrow.

**Holotype male:** Vinh Phuc Province, Tamdao, 11.v.1987, at the waterfall of the main stream [J. Oláh] — 1 male.

**Etymology:** The name refers to the type locality of the holotype.

***Wormaldia relictia* MARTYNOV 1935**

Type country: India. Distribution: India, Sikkim, Nepal, Thailand, Vietnam, Laos

**New records:** Vinh Phuc Province, Tamdao, 13.x.1986, in a small deep dark forested spring valley running to the main stream [J. Oláh] — 1 male.

***Wormaldia hephoa* new species (p.33)**

Small, pale-brown species with light-brown wing membrane. Forewing length 3.6 mm. On hindwing R1 and R2 variously confluent before wing margin or running free. This new

species is most similar to *Wormaldia daona* n.sp. described from Vietnam (Tam Dao) but differs by having (1) R1 and R2 on hindwing variously confluent or running free to wing margin; (2) apicodorsal projection of tergum 8 roofing over the segments 9 + 10 narrow both in lateral and dorsal view; (3) the inside dome housing the dorsum of segments 9 and 10 short and shallow, *not* long and deep; (4) most striking difference is the narrowing triangular shape of the apicodorsal projection of tergite 8, *not* broad and apically excised; (5) apical half of the Xth segment posteriad of the pair of small pointed processes broad, *not* narrow.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 1 male. **Paratypes:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 7 males.

**Etymology:** The name refers to the narrow apicodorsal projection of VIIIth tergum as visible both in lateral and dorsal view.

***Wormaldia muoihai* MALICKY 1995**

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 21.i.1986, [J. Oláh] — 1 male. Vinh Phuc Province, Tamdao, 15.x.1986, [J. Oláh] — 4 males. Vinh Phuc Province, Tamdao, 10.v.1987, left tributary of the main stream [J. Oláh] — 2 males.

***Wormaldia muoisian* MALICKY 1995**

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1400 m, 13.x.1986, in deep dark forested valley of a small spring brook [J. Oláh] — 12 males. Vinh Phuc Province, Tamdao, 1300 m, 12.v.1987, along a medium sized stream flowing in a forested valley [J. Oláh] — 4 males.

***Wormaldia nyctimon* SCHMID 1991**

Type country: India. Distribution: India, Vietnam, Thailand

**New record:** Ha Son Binh Province, Hoabinh, 12 km towards Dabac, 30.i.1986, light [J. Oláh] — 1 male.

***Wormaldia sontama* new species (p.33)**

Small, pale-brown species with light-brown wing membrane. Forewing length 4 mm. On hindwing R1 and R2 confluent before the wing margin. This new species is most similar to *Wormaldia nyctimon* SCHMID described from India and recorded here from Vietnam but differs by having (1) more shallow or low tergite 8; (2) cerci straight spatulate, *not* upwardly directed on its apical half; (3) Xth segment with a high triangular middle ridge in lateral view, *not* quadrangular; (4) harpagones with irregular mesal profile, *not* simply tapering.

**Holotype male:** Cucphuong National Park, 18.x.1986, along karst spring brook in forested valley [J. Oláh] — 1 male.

**Etymology:** The name refers to the forested karst spring brook, the type locality of the holotype; forest "son lam" in Vietnamese.

***Gunungiella arinada* MALICKY 1995**

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1400 m, 13.x.1986, in deep dark forested valley of a small spring brook [J. Oláh] — 27 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, singled along small left tributary of the main stream flowing in a forested valley [J. Oláh] — 4 males, 2 females.

***Gunungiella bongai* new species (p.33)**

Medium-sized, pale-brown species with light-brown wing membrane. Forewing length 3.4 mm, both wings are shallow. The venation is greatly reduced; Forks I, II, V on forewing and II, V on hindwing present; on hindwing Sc merges with R1 at the middle of the wing; hyaline window pattern on forewing visible, but not very pronounced along crossveins s, r-m, m and m-cu. This new species is most similar to *Gunungiella lencao* n.sp. described from Vietnam but differs by having (1) two pairs of long filiform paraproctal processes fused to tergite 9 and to the base of segment 10, *not* only one pair, (2) Xth segment simple slender in lateral view, *not* broad, and *not* armed on middle with a pair of dorsal spine-like sensillae; (3) segment 10 without deep median keel as visible in lateral view; (4) harpagones divided into a larger dorsal and a smaller ventral lobe; (5) endotheca with two barely discernible short spines, *not* four stout spines, and *not* with numerous apical microtrichae.

**Holotype male:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, along a side spring brook [J. Oláh] — 1 male. **Paratypes:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, along a side spring brook [J. Oláh] — 3 males.

**Etymology:** The name refers to the four spine-like paraproctal processes, four “bon”; spine “gai” in Vietnamese.

***Gunungiella cao* new species (p.34)**

Medium-sized, pale-brown species with light-brown wing membrane. Forewing length 3.9 mm, both wings are rather shallow. The venation is greatly reduced; Forks I, II, V on forewing and II, V on hindwing present; on hindwing Sc merges with R1 at the middle of the wing; hyaline window pattern on forewing less visible along crossveins s, r-m, m and m-cu. This new species has an obvious suture separating tergite 9 from sternite 9 and is most similar to *G. sosau* n. sp. and *G. thuba* n.sp. described from Vietnam but differs by having (1) almost unmodified tergite 8 without apicomeral excision; (2) shorter and deeper sternite 9; (3) harpagones with constricted and slender basal half; (4) endotheca with two stout spines, *not* with four or six.

**Holotype male:** Lamdong Province, Baoloc, Baco stream, 26.x.1988, [J. Oláh] — 1 male. **Paratypes:** Lamdong Province, Baoloc, Baco stream, 25.x.1988, [J. Oláh] — 1 male. Lamdong Province, Baoloc, Duchma stream, 23.x.1988, [J. Oláh] — 1 male. Lamdong Province, Dalat, Datangla waterfall, 15.x.1988, [J. Oláh] — 1 male.

**Etymology:** The name refers to the slender basal part of the harpagones; slender “cao” in Vietnamese.

***Gunungiella dung* new species (p.34)**

Small, pale-brown species with light brown wing membrane. Forewing length 3.8 mm, both wings are straight and shallow. The venation is greatly reduced; Forks I, II, V on forewing and II, V on hindwing present; on hindwing Sc does not merge with R1; on both forewing and hindwing the base of Sc strongly thickened up to crossvein c-sc; very thin and atrophied afterwards running to C; desclerotized hyaline window pattern on forewing less-developed, almost lacking. This new species is most similar to *Gunungiella fiarafiazga* MALICKY & CHANTARAMONGKOL described from Thailand with (1) elongated dorsal processes on segment 9; (2) apical margin of coxopodite excised; (3) harpagones vertically elongated, but differs by having (1) a less modified tergum of segment 8; (2) coxopodite with deeply excised apical margin; (3) dorsoapical angle of the coxopodite produced into an elongated lobe; (4) ventroapical angle of the coxopodite pointed, *not* rounded.

**Holotype male:** Lamdong Province, Baoloc, Baco stream, 26.x.1988, [J. Oláh] — 1 male. **Paratypes:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, along a side spring brook [J. Oláh] — 2 males. Lamdong Province, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 1 male. **Etymology:** The name refers to the elongated straight process on the dorsum of the IXth segment; straight “dung” in Vietnamese.

***Gunungiella lencao* new species (p.36)**

Medium-sized, pale-brown species with light brown wing membrane. Forewing length 3.8 mm, both wings are shallow. The venation is greatly reduced; Forks I, II, V on forewing and II, V on hindwing present; on hindwing Sc merges with R1 at the middle of the wing; hyaline window pattern on forewing visible, and very pronounced along crossveins s, r-m, m and m-cu. This new species is most similar to *Gunungiella bongai* n.sp. described from Vietnam but differs by having (1) only one pair of long filiform paraproctal processes fused to tergite 9 and to the base of segment 10, *not* two pairs, (2) segment 10 broad in lateral view, *not* simple, slender, and armed on middle with a pair of dorsal spine-like sensillae; (3) segment 10 with a deep median keel as visible in lateral view; (4) harpagones subtriangular due to the apicoventral lobe, however this lobe is not cleft from the dorsal lobe; (5) endotheca with four stout spines, and with numerous apical microtrichae.

**Holotype male:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, along a side spring brook [J. Oláh] — 1 male.

**Paratypes:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, along a side spring brook [J. Oláh] — 1 male.

**Etymology:** The name refers to the upward produced dorsoapical lobe of the harpagones; upward “len cao” in Vietnamese.

***Gunungiella obendio* new species (p.34)**

Medium-sized, pale-brown species with light-brown wing membrane. Forewing length 4.5 mm, both wings are shallow. The venation is greatly reduced; Forks I, II, V on forewing and II, V on hindwing present; on hindwing Sc merges with R1 at the middle of the wing; hyaline window pattern on forewing well-developed along crossveins s, r-m, m and m-cu. This new species is most similar to *Gunungiella britomartis* MALICKY from Jawa but differs by having (1) sternal region of the fused segment 9 subquadrangular, *not* rounded; (2) segment 10 evenly tapering in dorsal view, *not* parallel-sided and rounded; (3) harpagones with produced rounded spiny apicoventral lobe, *not* without; (4) endotheca with six spines, *not* four.

**Holotype male:** Cucphuong National Park, 18.x.1986, along first order karst spring brook in forested valley [J. Oláh] — 1 male. **Paratypes:** Cucphuong National Park, 18.x.1986, along first order karst spring brook in forested valley [J. Oláh] — 8 males, 16 females.

**Etymology:** The name refers to it being the second discovered species of the genus in Vietnam; second “o ben dioi” in Vietnamese.

***Gunungiella sosau* new species (p.34)**

Medium-sized, pale-brown species with light-brown wing membrane. Forewing length 3.4 mm, both wings are shallow. The venation is greatly reduced; Forks I, II, V on forewing and II, V on hindwing present; on hindwing Sc merges with R1 at the middle of the wing; hyaline window pattern on forewing visible, but not very pronounced along crossveins s, r-m, m and m-cu. This new species is most similar to *Gunungiella thuba* n.sp. described from Vietnam (Ha Son

Binh Province) but differs by having (1) longer segment 10; (2) harpagones with much shorter ventrum; (3) the ventrum of harpagones convex in lateral view, *not* concave; (4) harpagones with produced rounded apicodorsal lobe, not with apicoventral lobe; (5) endotheca with six stout and curving spines, *not* with four.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 1 male. **Paratypes:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 18 males, 13 females.

**Etymology:** The name refers to it being the sixth discovered species of the genus in Vietnam; sixth “so sau” in Vietnamese.

#### *Gunungiella thuba* new species (p.34)

Small, pale-brown animal with light-brown wing membrane. Forewing length 3 mm, both wings are rather shallow. The venation is greatly reduced; Forks I, II, V on forewing and II, V on hindwing present; on hindwing Sc merges with R1 at the middle of the wing. This new species is most similar to *Gunungiella sosau* n.sp. described from Vietnam (Bac Thai Province) but differs by having (1) shorter segment 10; (2) harpagones with much longer ventrum; (3) the ventrum of harpagones concave in lateral view, *not* convex; (4) harpagones with produced rounded apicoventral lobe, *not* with apicodorsal lobe; (5) endotheca with four stout and curving spines, *not* with six. We have examined very carefully all the 19 males of *G. sosau* and found the lateral shape of harpagones to be very stable and conservative. Its shape differs very much both from *G. thuba* and also from *G. guni*. We also found the lateral shape of *Gunungiella* species to be very useful and stable character for other new South East Asian species.

**Holotype male:** Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 1 male.

**Etymology:** The name refers to it being the third discovered species of the genus in Vietnam; third “thuba” in Vietnamese.

#### *Chimarra*

We follow here SCHMID's principles (1998) in separating the usually small, semimembranous or fully membranous segment 10 without a specific shape from the well-developed and usually more sclerotized intermediate appendages of specifically characteristic shape; i.e. the paraproct in our appendicular and functional genital terminology (OLÁH & JOHANSON, 2008). Frequently the membranous segment 10 is almost indiscernible on cleared genitalia. We apply the term of phallosclerite complex as was interpreted by BLAHNIK (1998). Similarly we give special attention to the number and location of sensilla styloconica or sensilla coeloconica present on various parts of the paraproctal lobes. The number and position of endothecal spines and spine clusters depend on the protruded and retracted state of the endotheca. Large spine clusters in a retracted state may be fragmented into several smaller clusters if the endotheca is fully protruded. Elements of phallosclerite complex are drawn and mentioned in the literature as endothecal spines for some formerly described species. – The spur formula for all species described here is 144, and their wing membrane is pale-brown, except otherwise stated.

#### *Chimarra akkaorum* CHANTARAMONGKOL & MALICKY 1989

Type country: Thailand. Distribution: Thailand, Vietnam, Laos, Cambodia

**New records:** Ha Son Binh Province, Hoabinh, 8 km towards Dabac, 30-31.i.1986, light [J. Oláh] — 22 males. Ha Son

Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 13 males. Son La Province, Moch Chau, 24-26.x.1986, [J. Oláh] — 2 males. Vinh Phuc Province, Tamdao, 200 m, 12-13.x.1986, [J. Oláh] — 43 males. Ninh Binh Province, Cucphuong National Park, 400 m, 18.x.1986, [J. Oláh] — 19 males. Remarks. An abundant and widely distributed species having variations in the number and position of teeth on the lateral and dorsal paraproctal processes.

#### *Chimarra alcornice* MALICKY 1995

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 13-16.x.1986, [J. Oláh] — 11 males. Vinh Phuc Province, Tamdao, 1300 m, 12.v.1987, [J. Oláh] — 37 males.

#### *Chimarra andrikovicsi* new species (p.35)

Small light-brown species. Forewing length 3.8 mm; forewing discoidal, median and thyridial cells with similar length; but discoidal cell almost three times wider; RS slightly sinuate, far from M, but a small sclerous plate in the middle of the sinus; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, forming a sclerous plate on the bifurcation; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Segment 8 unmodified. The new species is close to *C. monorum* CHANTARAMONGKOL & MALICKY from Thailand, but differs by having (1) no tergal apodeme on segment 9; (2) lateral paraproctal plate with a tapering elongated process in lateral view, *not* parallel-sided and broad; (3) apices of lateral plates of paraproctal complex hooked laterad in dorsal view; (4) dorsal structure of paraproctal complex short, not long in lateral view; (5) dorsal structure of paraproctal complex with two sensilla styloconica located dorsad; (6) gonopods more robust in lateral view and slightly upwardly curving, *not* downwards; (7) gonopods regularly arching in ventral view, *not* flattened middle; (8) ventroapical process of phallosclerite long, stout and heavily sclerotized, *not* small and *not* pointed; (6) endotheca with one medium-sized and with one long spine, *not* one medium-sized spine only.

**Holotype male:** Ha Son Binh Province, Hoabinh Reservoir, River Suoi, 22-23.i.1991, light leg [S. Andrikovics] — 1 male. **Paratypes:** Ha Son Binh Province, Hoabinh Reservoir, River Suoi, 22-23.i.1991, light [S. Andrikovics] — 2 males.

**Etymology:** It is with great pleasure that we name this species after Sándor Andrikovics who collected the type specimen.

#### *Chimarra atara* MALICKY & CHANTARAMONGKOL 1993

Type country: Thailand. Distribution: Thailand, Vietnam, Peninsular Malaysia

**New records:** Quang Tri Hue Province, Huong Hoa Nature Reserve, near Cup village, 16°56'15N 106°34'52E, 400 m, 7-10.xi.2007, light [G. Csorba] — 2 males.

#### *Chimarra bachmana* new species (p.35)

Medium-sized dark-brown, almost castaneous species. Wing membrane dark-brown; forewing length 6.1 mm; forewing discoidal median and thyridial cells having similar length; but discoidal cell one third wider; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; hyaline window pattern present on crossveins s, r-m, m, m-cu, along almost the entire Cu2 and on the arculus; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite 8 slightly modified developing a median depression channel on the dorsoapical area and covered with microtrichia. Most similar to *Chimarra aneca* MALICKY & CHANTARAMONGKOL described from

Thailand, but differs by having (1) dorsoapical area of tergite 9 with a single median depression of narrow channel, *not* with a more complex depression and setal brush structure; (2) anterior margin of segment 9 concave, *not* convex; (3) tergum of segment 9 very short, *not* long in lateral view; (4) lateral paraproctal plate broad-based triangular, *not* elongated with bilobed apex in lateral view; (4) dorsal digitiform process of paraproct very short, almost hidden between and behind the lateral paraproctal plates; (5) gonopods similarly triangular in ventral view, but slightly narrowing apicad in lateral view and geniculate basoventrad; (6) endotheca with a less sclerotized, but discernible phallosomal sclerite complex.

**Holotype male:** Thua Thien Hue Province, Bach Ma National Park, 1165 m, 16.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male.

**Etymology:** The name refers to the type locality.

#### *Chimarra bancha* new species (p.36)

Small brown species. Forewing length 4.0 mm; forewing discoidal, median and thyridial cells with similar length; but discoidal cell twice the width of the median and similarly the median thyridial; RS slightly sinuate, running far from M; anterior tip of discoidal cell, i.e. the primary RS fork hypertrophied, thickened, but mostly on the very tip of RS4-5; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite VIII unmodified except its apicodorsal surface slightly depressed; sternite VIII short and armed with a short apicoventral pointed process. Closest to *Chimarra thaiorum* CHANTARAMONGKOL & MALICKY from Thailand, but differs by having (1) different contour of segment 9 in lateral view; (2) ventroapical median vertical keel on segment 9 quadrangular, *not* blunt triangular; (3) lateral plate of paraproctal complex with downward directed double hooked and heavily sclerotized, unusual apex, *not* simple blunt apex; (4) The lateral paraproctal plate without any visible sensillum styloconicum; (5) gonopoda with very characteristic and unique mesal brush on the apex; (8) endotheca with two medium-sized upwardly sinuous spines, *not* long and downwardly sinuous.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 male. **Paratypes:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 3 males.

**Etymology:** The name refers to the unusual brush formation on the apex of the gonopods; brush “ban chai” in Vietnamese.

#### *Chimarra caimochina* new species (p.37)

Medium-sized dark-brown, almost castaneous species. Wing membrane dark-brown; forewing length 5.9 mm; forewing discoidal median and thyridial cells with the following lengths; shortest median, followed by thyridial and longest discoidal; moreover the discoidal cell one third wider; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, i.e. the primary RS fork hypertrophied, thickened, forming a small V-shaped plate; hyaline window pattern present on crossveins r-m, m, m-cu, along almost the entire Cu2 and on the arculus; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite 8 slightly modified developing a median dorsoapical area covered with denser microtrichia, neighbored by two lateral patches of less dense microtrichia. Belongs to species complex with similarly constructed lateral paraproctal plates. Most similar to *Chimarra juliatra* n.sp. described here from Vietnam, but differs by having (1) blunt and robust anteroventral apodeme, *not* slender; (2) anterior margin of segment 9 straight, *not* concave; (3) lateral paraproctal plate with shorter parallel dorsal margin in lateral view; (4) the area with sensilla

coeloconica on the lateral paraproctal plates linear, *not* triangular; (5) dorsal digitiform process of paraproct shorter; (6) gonopods swollen in lateral view and its apex bird-beak-shaped both in lateral and ventral view; (6) endotheca with a pair of small stout spines and two pairs of spine clusters, one pair of spine clusters smaller in size.

**Holotype male:** Thua Thien Hue Province, Bach Ma National Park, 700 m, 22.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male.

**Paratypes:** Thua Thien Hue Province, Bach Ma National Park, 700 m, 22.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 3 males.

**Etymology:** The name refers to the bird-beak shaped gonopods as visible both in lateral and ventral view; bird „chim” and beak „caimo” in Vietnamese. Due to this distinctive shape, the species is easy to distinguish from the closely related species having similarly constructed and shaped lateral paraproctal plates.

#### *Chimarra spinifera* KIMMINS 1957

Type country: Myanmar. Distribution: Myanmar, Thailand, Laos, Vietnam, Peninsular Malaysia

**New records:** Ha Son Binh Province, Hoabinh, 8 km towards Dabac, 31.i.1986, light [J. Oláh] — 1 male. Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 31.i.1986, [J. Oláh] — 1 male. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, [J. Oláh] — 4 males (two of these in coll. Malicky). Son La Province, Moch Chau, 24-26.x.1986, [J. Oláh] — 1 male. Thua Thien Hue Province, Bach Ma National Park, 1450 m, 27.ii.2007, light [G. Simay] — 1 male. Quang Tri Province, Da Krong Nature Reserve, 2 km SE of HQ, light trap at forest stream, 16.v.2007 (G. Csorba) — 2 males.

#### *Chimarra cucphuonga* new species (p.40)

Medium-sized dark-brown species. Wing membrane dark-brown; forewing length 5.0 mm; forewing discoidal, median cells almost equal in length, thyridial cell shorter, discoidal cell twice as wide; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, i.e. the primary RS fork hypertrophied, thickened, producing a V-shaped small sclerite; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite 8 modified on the apicodorsum with two setose tufts. Close to *Chimarra yaorum* CHANTARAMONGKOL & MALICKY from Thailand, but differs by having (1) setose tuft of tergite 8 shorter; (2) lateral plate of paraproctal complex bulbous basad; (3) dorsal structure of the paraproct with a single subapical tooth dorsad, *not* bifid; (4) ventral margin on the dorsal structure of the paraproct serrated, *not* smooth; (5) gonopods narrowing apicad with upward curving tip in lateral view; (6) lateral contour of phallosoma different; (7) apex of phallosoma with a unique dark pigmented subapical ventral lobe; (8) endotheca without setal clusters.

**Holotype male:** Ninh Binh Province, Cucphuong National Park, 400 m, 27.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male. **Paratypes:** Ninh Binh Province, Cucphuong National Park, 400 m, 27.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male.

**Etymology:** The name refers to the type locality.

#### *Chimarra cumata* MALICKY & CHANTARAMONGKOL 1993

Type country: Thailand. Distribution: Thailand, Vietnam

**New record:** Nr. 68, 1971 light [Topál and Matskási] — 1 male.

***Chimarra dakronga* new species (p.36)**

Small brown species. Forewing length 3.8 mm; forewing discoidal, median cells with similar length, thyridial cell longer, but discoidal cell twice as wide; RS straight, not sinuate; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite and sternite 8 short, sternite armed with short apicoventral pointed process. This new species is most similar to *C. motranga* n.sp. described here from Vietnam. The new species differs by having (1) anterior blunt lobe of the tergum of segment 9 more developed; (2) a more pigmented darker line which is short and broad, turning downwards at a right angle, this downward turning segment is narrow, *not* broad; (3) apex of paraproctal complex with lateral flank meeting at median keel long, *not* short; (4) two sensilla styloconica which are rather elevated, present on both sides on the lateral plates, *not* on the apical flanks.

**Holotype male:** Quang Tri Province, Da Krong Nature Reserve, 2 km SE of HQ, light trap at forest stream, 16.v.2007 (G. Csorba) — 1 male.

**Etymology:** The name refers to the type locality.

***Chimarra motranga* new species (p.36)**

Small brown species. Forewing length 3.8 mm; forewing discoidal, median and thyridial cells with similar length, but discoidal cell twice as wide; RS straight, not sinuate; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite and sternite 8 short, sternite armed with short apicoventral pointed process. This new species is similar to *C. thanglena* n.sp. described here from Vietnam. The new species differs by having (1) anterior blunt lobe of the tergum of segment 9 less developed; (2) the more pigmented darker broad line, turning downwards at a right angle, *not* narrow and straight; (3) apex of paraproctal complex with lateral flank meeting at median keel, *not* separated by a rounded area; (4) two sensilla styloconica rather elevated and present on both sides laterally on the apical flanks, (5) gonopods slender, both in lateral and ventral view. If we rely upon the shape of the cerci, gonopods and phallic organ the differences between *dakronga* and *motranga* are not very striking. However the paraproctal complex differs significantly: (1) the meeting of lateral plates and apical flanks is very clearly different in dorsal view; (2) the position of the sensilla is different.

**Holotype male:** Lamdong Province, Baoloc, Duchma stream, 26.x.1988, [J. Oláh] — 1 male. **Paratypes:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, [J. Oláh] — 27 males. Lamdong Province, Baoloc, Duchma stream, 26.x.1988, [J. Oláh] — 3 males. Lamdong Province, Baoloc, Baco stream, 26.x.1988, [J. Oláh] — 4 males.

**Etymology:** The name refers to the single tooth on the gonopods; one tooth “mot rang” in Vietnamese.

***Chimarra damqua* new species (p.35)**

Medium-sized dark-brown, almost castaneous species. Wing membrane dark-brown; forewing length 5.0 mm; forewing median and thyridial cells longer than discoidal cell, but discoidal cell one third wider; RS slightly sinuate, far from M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; hyaline window pattern present on crossveins s, r-m, m, along the stem of M and almost along the entire Cu2 and on the arculus; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite and sternite 8 unmodified except shortened and the dorsoapical area of tergite slightly depressed. This new species with its unusually

shaped gonopods has some similarity to *Chimarra vibena* MALICKY & CHANTARAMONGKOL from Thailand; at least the lateral paraproctal plates and the unusually long lance-shaped spines in the endotheca are similar; moreover the dorsal paraproctal structural element is lacking; but differs by having (1) sclerous tergal lobes of segment 9 meeting mesally on the dorsum, usually this area is membranous or vestigial; (2) no anterodorsal apodeme developed on segment 9; (3) ventral apodeme of segment 9 short and blunt, *not* long and acute; (4) mesal ventroapical keel on segment 9 minute, *not* extremely large; (5) apical half of the dorsum of the lateral paraproctal plate almost touching in dorsal view, *not* far from each other; (6) dorsal corner of the posterior margin of segment 9 produced into a narrow triangular lobe; gonopods unusually produced lateroapical in ventral view, *not* bending mesad as usual; (7) phallosome straight and very thin, *not* downward curving and stout, (8) endotheca with two very long lance-like spines, filling almost the entire length of the phallosome.

**Holotype male:** Thua Thien Hue Province, Bach Ma National Park, 1165 m, 16.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male. **Paratype:** Thua Thien Hue Province, Bach Ma National Park, 850 m, 17.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male.

**Etymology:** The name refers to the unusually very long lance-like pair of spines; lance “dam qua” in Vietnamese.

***Chimarra dexara* new species (p.35)**

Small brown species. Forewing length 4.0 mm; forewing discoidal, median and thyridial cells with similar length; but discoidal cell twice as wide; RS slightly sinuate, far from M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, but only at the very tip; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite 8 strongly modified into a pair of long upwardly directed dorsoapical lobes with fully spiny posterior margin. Similarly developed and spiny tergite 8 present in *Chimarra haimuoi* MALICKY from Vietnam. However the new species is rather isolated by having (1) these extremely elongated spiny lobes which may have a stimulatory function during copulatory mechanisms in the sexual selection processes; (2) both the lateral and dorsal paraproctal processes plate-shaped; (3) lateral plate of paraproctal complex supplied with two sensilla styloconica; (4) gonopods three-toothed, at least clearly visible in ventrocaudal view; (5) phallosome short robust; (6) endotheca with one medium-sized and with one extremely long spine.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 1 male. **Paratypes:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 9 males.

**Etymology:** The name refers to the isolated nature of this species; isolate “de xa ra” in Vietnamese.

***Chimarra doisongta* new species (p.35)**

Medium-sized pale-brown species. Forewing length 4.8 mm; forewing discoidal and thyridial cells have similar length, median cell shorter; discoidal cell three times wider than the thyridial and two times wider than the median cell; RS slightly sinuate, producing a small sclerous plate in the middle of the sinus; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, forming a V-shaped small plate; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite and sternite 8 unmodified except for a small mesal excision on the apicodorsum of the tergite. Close to *Chimarra namcatiena*



n.sp. described here from Vietnam, but differs by having (1) apicoventral keel of segment 9 broad, *not* narrowing apicad; (2) paraproctal complex in two parts, *not* in three parts; (3) apical upward curving pointed process well-developed, *not* small and blunt; (4) single sensilla styloconica present on each lateral paraproctal plate; (5) gonopods producing a ventral lobe, *not* bulging in lateral view; (6) the ventral lobe of the gonopods well visible in ventral view, (7) horizontal tube of phallosome with two constrictions; (8) endotheca with two longer and one shorter spines, no visible spine clusters present.

**Holotype male:** Thua Thien Hue Province, Bach Ma National Park, 100 m, 22.ii.2007, light [G. Simay] — 1 male.

**Paratypes:** Quang Tri Province, Da Krong Nature Reserve, 2 km SE of HQ, light trap at forest stream, 15.v.2007 (G. Csorba) — 18 males.

**Etymology:** The name refers to the ventral lobe of the gonopods being very similar to the apicoventral keel of the IXth segment, double “doi” keel “song tau” in Vietnamese.

### *Chimarra guiva* new species (p.38)

Medium-sized brown species. Forewing length 5.0 mm; forewing median cell little longer than discoidal cell and thyridial cell little shorter; but discoidal cell twice as wide; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, but only at the very tip; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite and sternite 8 unmodified except for ist shortened length. Close to *Chimarra juliana* n.sp. described here from the same habitat in Vietnam (Tam Dao), but differs by having (1) fused segment 9 without any anteroventral apodeme; (2) posterior margin of segment 9 angulate, *not* rounded; (3) lateral plate of paraproctal complex with an additional side-flank; (4) dorsal structure of the paraproct short, stout and hooked, *not* long and digitiform; (5) lateral plate, side-flank and dorsal structure supplied with a few sensilla coeloconica, but without any elevated sensilla styloconica; (6) cerci reduced to a setose rounded surface, *not* vertically elongated in lateral view; (7) gonopods shorter; (8) lateral contour of phallosome different; (9) phallic organ with four stout spines and two spine clusters.

**Holotype male:** Vinh Phuc Province, Tamdao, 1300 m, 16.x.1986, [J. Oláh] — 1 male. **Paratypes:** Vinh Phuc Province, Tamdao, 1300 m, 13.x.1986, [J. Oláh] — 4 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, [J. Oláh] — 2 male.

**Etymology:** Named in honour of the first author’s wife; wife “nguoi vo” in Vietnamese.

### *Chimarra haimuoiba* MALICKY 1995

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 13-16.x.1986, [J. Oláh] — 10 males. Vinh Phuc Province, Tamdao, 1300 m, 12.v.1987, [J. Oláh] — 6 males.

### *Chimarra haimuobon* MALICKY 1995

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 20-21.i.1986, light [J. Oláh] — 13 males. Vinh Phuc Province, Tamdao, 1300 m, 11-16.x.1986, [J. Oláh] — 4 males. Vinh Phuc Province, Tamdao, 1300 m, 10-12.v.1987, [J. Oláh] — 8 males.

### *Chimarra haimuoihai* MALICKY 1995

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 13.x.1986, [J. Oláh] — 3 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, [J. Oláh] — 2 males.

### *Chimarra haimuoimot* MALICKY 1995

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 21.i.1986, light [J. Oláh] — 52 males. Vinh Phuc Province, Tamdao, 1300 m, 13.x.1986, [J. Oláh] — 19 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, [J. Oláh] — 12 males. Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 3 males.

### *Chimarra haimuoinam* MALICKY 1995

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 13-16.x.1986, [J. Oláh] — 31 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, [J. Oláh] — 4 males. Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 males.

### *Chimarra huonghoa* new species (p.37)

Medium-sized light-brown species. Forewing length 5.2 mm; forewing discoidal and median cells having similar length, thyridial cell shorter; but discoidal cell twice as wide; RS slightly sinuate, far from M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; hyaline window pattern present on crossveins r-m, m, m-cu, along almost the entire Cu2 and on the arculus; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite and sternite 8 unmodified except shortened and the dorsoapical area of tergite depressed and covered with microtrichia of various density. Close to *Chimarra vitona* n.sp. described here from Vietnam, but differs by having (1) mesal ventroapical keel of segment 9 short, *not* long and *not* running up to the articulation of the gonopods; (2) posterior margin of segment 9 with two concavities in lateral view, *not* convex; (3) lateral paraproctal plate without a pronounced dorsal hump, as a result *not* duckhead-shaped; (4) dorsal digitiform process of paraproct longer than the paraproctal plate, *not* shorter; (5) dorsal digitiform process of paraproct seems rooted posteriad on the mesal surface of lateral paraproctal plate, *not* anterior; however the digitiform paraproctal process has some connection to the phallosome and its root position depends on the state of phallic organ i.e. whether it is protruded or retracted; (6) dorsal digitiform process of paraproct directed anterad, *not* posterad, however again depending on the state of the phallic organ; (7) gonopods with a small tooth visible also in lateral view; (8) mesal margin of gonopod almost straight, slightly concave, *not* deeply excised and wavy; (9) mesal cavity of gonopods narrow in ventral view; (10) horizontal tube of phallosome constricted anterad and broadening apicad, *not* parallel-sided; (11) endotheca with four pairs of spine clusters, *not* only two. *Chimarra huonghoa* differs from *C. argeia* by having (1) mesal ventroapical keel of segment 9 triangular, *not* flat; (2) ventrobasal lobe broad-based in lateral view, *not* narrow-based; (3) lateral paraproctal plate with oblique and flat dorsoapical slope in lateral view, *not* with a rounded hump; (4) dorsal digitiform process of paraproct longer than the paraproctal plate, *not* shorter; (5) dorsal digitiform process of paraproct seems rooted posteriad on the mesal surface of lateral paraproctal plate, *not* anterior; however the digitiform paraproctal process has some connection to the phallosome and its root position depends on the state of phallic organ i.e. whether it is protruded or retracted; (6) dorsal digitiform process of paraproct directed anterad, *not* posterad, however again depending on the state of the phallic organ; (7) mesal



margin of gonopod almost straight, slightly concave, *not* deeply excised and wavy; (8) mesal cavity of gonopods narrow in ventral view; (9) endotheca with four pairs of spine clusters, *not* with only two.

**Holotype male:** Quang Tri Hue Province, Huong Hoa Nature Reserve, near Cup village, 16°56'15N 106°34'52E, 400 m, 7-10.xi.2007, light leg [G. Csorba] — 1 male. **Paratypes:** Quang Tri Hue Province, Huong Hoa Nature Reserve, near Cup village, 16°56'15N 106°34'52E, 400 m, 7-10.xi.2007, light leg [G. Csorba] — 1 male. Quang Tri Province, Da Krong Nature Reserve, 2 km SE of HQ, light trap at forest stream, 15.v.2007 (G. Csorba) — 18 males.

Etymology: The name refers to the type locality

***Chimarra jaroschi* MALICKY 1994**

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 21.i.1986, light [J. Oláh] — 12 males. Vinh Phuc Province, Tamdao, 1300 m, 11.x.1986, [J. Oláh] — 3 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, [J. Oláh] — 1 male.

***Chimarra jolivetii* JACQUEMART 1979**

Type country: Thailand. Distribution: Thailand, Vietnam, Laos

**New records:** Lamdong Province, Baoloc, Da Nga River, 21.x.1988, light [J. Oláh] — 1 male. Kon Tum Province, Lo Xo Pass, 600m, 15.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male. Kon Tum Province, Lo Xo Pass, 600m, 25.ii.2007, light [Simay G.] — 2 males.

***Chimarra juliana* new species (p.37)**

Medium-sized brown species. Wing membrane pale-brown; forewing length 7.0 mm; forewing discoidal and median cells with similar length, thyridial cell little longer; but discoidal cell twice as wide; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, but only at the very tip; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite 8 unmodified except its apicodorsal surface desclerotized; sternite VIII short and armed with short apicoventral pointed process. Close to *Chimarra ravanna* MALICKY & CHANTARAMONGKOL from Thailand, but differs by having (1) apicodorsal area of segment 8 without setal ring-like formation; (2) segment 9 longer, *not* short; (3) lateral plate of paraproctal complex with blunt apex, *not* tapering; (4) cerci reduced to a setose vertically oriented surface in lateral view; (5) gonopods short and broad, *not* long and slender in ventral view; (6) lateral contour of phallosome different; (7) phallic organ with five short spines, *not* with only two spines.

**Holotype male:** Vinh Phuc Province, Tamdao, 1300 m, 21.i.1986, [J. Oláh] — 1 male. **Paratypes:** Vinh Phuc Province, Tamdao, 1300 m, 13.x.1986, [J. Oláh] — 2 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, [J. Oláh] — 3 males.

Etymology: Named in honour of the first author's wife.

***Chimarra juliatra* new species (p.37)**

Small brown species. Forewing length 4.5 mm; forewing discoidal, median and thyridial cells with similar length; but discoidal cell twice as wide; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, but only at the very tip; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite 8 unmodified except that its apicodorsal surface is desclerotized; sternite 8 short and armed with a short apicoventral pointed process. Close to *Chimarra juliana*

n.sp. described here from Vietnam, but differs by having (1) significantly smaller size; (2) ventroapical median vertical keel more developed and triangular; (3) lateral plate of paraproctal complex with downward directed ventroapical apex, *not* blunt; (4) the lateral paraproctal plate without any sensillum styloconicum; (5) the lateral flank on the lateral plate covered with numerous sensilla coeloconica running almost up to the apex, *not* to the middle only; (6) cerci reduced further to a very thin vertical area in lateral view; (7) lateral contour of phallosome different; (8) phallic organ with two spines and with 2-6 spine clusters, the number of spine clusters depends on the eversion state of the endotheca; in intruded or invaginated state the spine clusters may clump together and in extruded or evaginated state spread into 6 smaller clusters. Compared to *C. argeia*, it differs by having (1) segment 9 long, *not* short; (2) ventroapical median vertical keel of segment 9 more developed and triangular, *not* flat; (3) lateral plate of paraproctal complex with downward directed, obliquely-cut ventroapical apex, *not* with a ventroapical separate lobe; (4) lateral plate of paraproctal complex with tapering apex in dorsal view, *not* with an additional ventroapical lateral lobe; (5) gonopods with rounded and tapering apex, without any visible tooth in lateral view; (6) gonopods in ventral view narrow, almost parallel-sided, *not* narrowing abruptly at apex; (7) phallosome short, *not* long; (8) phallic organ with two spines and with 2-6 spine clusters, the number of spine clusters depends on the eversion state of the endotheca; in intruded or invaginated state the spine clusters may clump together and in extruded or evaginated state may spread into 6 smaller clusters.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 1 male. **Paratypes:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 6 males.

Etymology: The name refers to the similarity with *Chimarra juliana* n.sp.; similar "traï voi" in Vietnamese.

***Chimarra kella* new species (p.38)**

Medium-sized yellow species. Forewing length 5.2 mm; forewing discoidal, median and thyridial cells with similar length, but discoidal cell wider; RS strongly sinuate; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; hyaline vertical window visible along anastomosis of crossveins s and r-m; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite 8 strongly modified producing a pair of spine clusters on apicodorsum. This new species is close to *Chimarra corangira* n.sp. described here from Vietnam, but easy to separate. The new species has (1) yellow colour, *not* brown; (2) the modified tergite 8 produced as a pair of spine clusters, not serrated circular arches; (3) the long lateral paraproctal lobes slender and strongly constricted in the middle; (4) digitiform dorsal paraproctal processes slightly S-form in lateral and C-form in dorsal view, *not* straight. (5) gonopods rather quadrangular in lateral view, not rounded; (6) gonopods with subapical mesal tooth, not apical.

**Holotype male:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, [J. Oláh] — 1 male. **Paratypes:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, [J. Oláh] — 2 males. Lamdong Province, Baoloc, Loc Chau stream, 24.x.1988, [J. Oláh] — 1 male. Lamdong Province, Baoloc, Baco stream, 26.x.1988, light [J. Oláh] — 6 males.

Etymology: The name refers to the unified spine cluster on the VIIIth tergite; unify "ket lai" in Vietnamese.

***Chimarra khula* new species (p.38)**

Small brown species. Forewing length 4.5 mm; forewing discoidal and median cells have similar length, thyridial cell shorter; but discoidal cell twice as wide as the others; RS only slightly sinuate, far from M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, forming almost a V-shaped small plate; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite 8 modified and forming a desclerotized dorsoapical area with two patches of noncellular and non-innervated tooth-shaped cuticular microtrichia denticles. Close to *Chimarra schwendingeri* CHANTARAMONGKOL & MALICKY from Thailand, but differs by having (1) patches of microtrichia on the dorsoapical area differently shaped; (2) lateral flank packed with sensilla coeloconica on the lateral paraproctal plate located basad, *not* at the middle; (3) dorsal digitiform process of paraproct shorter and more slender; (4) additional dorsal spiny paraproctal process with a large basal flank, *not* a simple spine. Compared to *C. suadulla*, it differs by having (1) patches of microtrichia on the dorsoapical area of segment 8 elongated with a triangular point, *not* rounded; (2) segment 9 without pronounced anteroventral lobe in lateral view; (3) ventroapical median vertical keel differently shaped; (4) lateral paraproctal plate robust in lateral view with midlateral hump, *not* slender with basal hump; (5) dorsal digitiform process of paraproct longer and more arching downwards; (6) additional dorsal spiny paraproctal process with subapical small lateral tooth and with a large basal flank; (7) gonopods with small and short subapical mesal excision in ventral view.

**Holotype male:** Lamdong Province, Baoloc, Duchma stream, 22.x.1988, [J.Oláh] — 1 male. **Paratypes:** Lamdong Province, Baoloc, Duchma stream, 23.x.1988, light [J.Oláh] — 1 male. Lamdong Province, Baoloc, Baco stream, 26.x.1988, light [J.Oláh] — 12 males.

**Etymology:** The name refers to the general horse-head shape of the paraproctal complex in lateral view; horse “*khula*” in the language of the local Lolo tribe.

***Chimarra bimbltona* MALICKY 1979**

Type country: South Andaman. Distribution: Andaman Islands, Thailand, Perak, Hongkong, Vietnam

**New records:** Ha Son Binh Province, Hoabinh, 2 km towards Dabac, 30.i.1986, [J. Oláh] — 1 male. - Vinh Phuc Province, Tamdao, 200 m, 13.x.1986, [J. Oláh] — 4 males. Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 27.x.1986, along a third order stream [J. Oláh] — 1 male. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, [J. Oláh] — 1 male. Lamdong Province, Baoloc, large stream, 14.x.1988, [J.Oláh] — 1 male.

***Chimarra lacaya* new species (p.40)**

Medium-sized dark-brown species. Wing membrane dark brown; forewing length 5.8 mm; forewing discoidal, median cells with similar length, thyridial cell longer, but discoidal cell twice as wide; RS arching, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; hyaline window pattern on crossveins *r-m*, *m*, *m-cu* and along *Cu2* and *arculus*; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite and sternite 8 short. This new species is similar to *C. crepidata* KIMMINS from India but differs by having (1) almost straight anterior margin on segment 9, *not* produced ventrally; (2) lateral plate of the paraproctal complex leaf-shaped with leaf stem both in lateral and dorsal view, without an apicomeral process; (3) dorsal process of the paraproctal complex upwardly directed and very long; (4)

dorsal process of the paraproctal complex with a short hook on the apex, *not* bifid, but with an additional very small spine subapical; (5) no sensilla styloconica visible; (6) there are numerous sensilla coeloconica on the lateral paraproctal plate, on the very apices.

**Holotype male:** Quang Tri Province, Da Krong Nature Reserve, 2 km SE of HQ, light trap at forest stream, 16.v.2007 (G. Csorba) — 1 male.

**Etymology:** The name refers to the leaf-shaped lateral plate of the paraproctal complex in dorsal view; leaf “*la cay*” in Vietnamese.

***Chimarra loanga* new species (p.36)**

Small brown species. Forewing length 4.3 mm; forewing discoidal, median and thyridial cells with similar length, but discoidal cell twice as wide; RS strongly sinuate, almost touching M; on the middle of the sinus RS vein thickened forming almost a small sclerous plate; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened into a V-shaped sclerous plate; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite and sternite 8 almost fused, and strongly shortened. Compared to *C. gether* the new species differs by having (1) dorsal paraproctal process more abbreviated with clearly bifid apex both in lateral and dorsal views; (2) gonopods much longer and more slender; (3) phallosome without apicoventral process; (4) endotheca with a medium-sized S-forming spines and a with a single spine cluster composed of six small spines. Compared to *C. monorum* the new species differs by having (1) dorsal paraproctal process with clearly bifid apex both in lateral and dorsal view; (2) lateral paraproctal process slender with hooked apex, *not* broad with rounded apex; (3) gonopods longer and straight, *not* curving downwards; (4) phallosome without spine-like apicoventral process; (4) endotheca with a medium-sized S-forming spines and a with a single spine cluster composed of six small spines.

**Holotype male:** Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 27.x.1986, [J. Oláh] — 1 male. **Paratypes:** Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 27.x.1986, [J. Oláh] — 37 males. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, [J. Oláh] — 1 male. Lamdong Province, Baoloc, Duchma stream, 22.x.1988, along a side spring brook [J. Oláh] — 1 male. Lamdong Province, Baoloc, Baco stream, 26.x.1988, light [J. Oláh] — 1 male.

**Etymology:** The name refers to the elongated thin gonopods; thin “*loang*” in Vietnamese.

***Chimarra maoga* new species (p.38)**

Medium-sized brown species. Forewing length 5.6 mm; forewing discoidal, median and thyridial cells with similar length, but discoidal cell twice as wide; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite 8 strongly modified producing apicodorsum with a pair of comb-like setal structure, separated by a deep median less pigmented and microtrichia-free excision. The new species is close to *C. haimuimot* MALICKY from Vietnam and the widespread and slightly variable *Chimarra spinifera* but easy to separate by the apicodorsum of tergite 8. The new species has (1) a pair of comb-like setal structure on apicodorsum of segment 8, without a ventrally elongated serrated process as in the other two. Otherwise they are extremely similar.

**Holotype male:** Quang Tri Hue Province, Huong Hoa Nature Reserve, near Cup village, 16°56'15N 106°34'52E, 400 m, 7-

10.xi.2007, light [G. Csorba] — 2 males. **Paratypes:** Quang Tri Province, Da Krong Nature Reserve, 2 km SE of HQ, light trap at forest stream, 16.v.2007 (G. Csorba) — 5 males (one of these in coll. Malicky).

**Etymology:** The name refers to the comb-shaped setal structure on VIIIth segment, comb “*mao ga*” in Vietnamese.

***Chimarra meorum*** CHANTARAMONGKOL & MALICKY 1989

Type country: Thailand. Distribution: Thailand, Vietnam

**New Records:** Lamdong Province, Baoloc, Duchma stream, 26.x.1988, [J. Oláh] — 10 males. Lamdong Province, Baoloc, Baco stream, 26.x.1988, light [J. Oláh] — 1 male.

***Chimarra muoichin*** MALICKY 1995

Type country: Vietnam. Distribution: Vietnam, Cambodia

**New Record:** Lamdong Province, Baoloc, Baco stream, 26.x.1988, light [J. Oláh] — 1 male.

***Chimarra muoitam*** MALICKY 1995

Type country: Vietnam. Distribution: Vietnam

**New Record:** Thua Thien Hue Province, Bach Ma National Park, 100 m, 22.ii.2007, light [G. Simay] — 2 males.

***Chimarra khamuorum*** CHANTARAMONGKOL & MALICKY 1989

Type country: Thailand. Distribution: Thailand, Vietnam

**New record:** Dong Nai Province, Nam Cat Tien National Park, 9.ii.2006, light [Z. Ecsedi and J. Oláh jr] — 1 male.

***Chimarra alleni*** CHANTARAMONGKOL & MALICKY 1989

Type country: Thailand. Distribution: Thailand, Peninsular Malaysia, Vietnam

**New records:** Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 31.i.1986, [J. Oláh] — 1 male. Vinh Phuc Province, Tamdao, 200 m, 13.x.1986, [J. Oláh] — 2 males. Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 31.i.1986, [J. Oláh] — 5 males. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, [J. Oláh] — 19 males. Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 27.x.1986, along a third order stream [J. Oláh] — 29 males. Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 5 males. Lamdong Province, Baoloc, Baco stream, 26.x.1988, [J. Oláh] — 2 males. Son La Province, Moch Chau, 24-26.x.1986, [J. Oláh] — 1 male.

***Chimarra okuilhorum*** MEY 1998

Type country: Vietnam. Distribution: Vietnam, Thailand

**New records:** Ha Son Binh Province, Hoabinh, 12km towards Dabac, 30.i.1986, light [J. Oláh] — 1 male. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 5 male. Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 27.x.1986, [J. Oláh] — 1 male. Son La Province, Moch Chau, 26.x.1986, light [J. Oláh] — 6 males. Hai Phong, Halong Bay, Cat Ba Island, spring brook, 17.v.1987, [J. Oláh] — 1 male. Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 2 males. Bac Thai Province, Phuluong, River Dong Dat, 26.v.1987, light [J. Oláh] — 2 males.

***Chimarra quyenta*** new species (p.40)

Small brown species. Forewing length 4.8 mm; forewing discoidal, median and thyridial cells almost equal in length, but discoidal cell twice as wide; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened, but only at the very tip; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite and sternite 8 unmodified except shortened

length and V-shaped desclerotization on the apicodorsum of the tergite. Close to *Chimarra devva* MALICKY & CHANTARAMONGKOL from Thailand, but differs by having (1) very long and thin anteroventral apodeme on segment 9; (2) apical lobe on the posterior margin of segment 9 more produced; (3) lateral plate of paraproctal complex triangulate and deep in lateral view, not parallel-sided; (4) lateral plate constricted basally in dorsal view; (5) digitiform dorsal structure of the paraproct robust; (6) lateral plate and the tip of dorsal rod-like structure supplied with several sensilla coeloconica, but without any elevated sensilla styloconica; (7) cerci more produced; (8) gonopods broad, *not* narrowing apicad in ventral view; (9) lateral contour of phallosome different; (10) phallic organ without spines.

**Holotype male:** Ninh Binh Province, Cucphuong National Park, 400 m, 18.x.1986, [J. Oláh] — 1 male. **Paratypes:** Ninh Binh Province, Cucphuong National Park, 400 m, 18.x.1986, [J. Oláh] — 3 males.

**Etymology:** The name refers to the rod-like dorsal paraproctal processes; rod “*quyen the*” in Vietnamese.

***Chimarra gether*** MALICKY 2009

Type country: Vietnam. Distribution: Vietnam

**New record:** Bac Thai Province, Quang Chu, 24-25.v.1987, light [J. Oláh] — 1 male.

***Chimarra sirdiqua*** new species (p.38)

Large brown species. Forewing length 7.2 mm; forewing discoidal, median and thyridial cells with similar length, but discoidal cell twice as wide; RS strongly sinuate, almost touching M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite 8 strongly modified producing a semicircular serrated apicodorsum similar to *C. haimuoi* MALICKY and *C. corangira* n.sp. described both from Vietnam. Closer to *Chimarra haimuoi* MALICKY, but easy to separate. The new species has (1) serrated structure on apicodorsum of segment 8 elongated and close to the body of tergite 8; (2) lateral paraproctal lobes longer than gonopods in lateral view, *not* shorter; (3) digitiform dorsal paraproctal processes crossing the lateral paraproctal lobes, *not* running parallel; (5) digitiform dorsal paraproctal processes with constricted apical third and tapering apices, *not* with a rounded apex; (6) gonopods with broad mesal cavity.

**Holotype male:** Vietnam 1971 Nr. 45 [Topál and Matskási] — 1 male.

**Etymology:** The name refers to the crossing digitiform dorsal paraproctal processes; crossing “*sir di qua*” in Vietnamese.

***Chimarra spitzeri*** MALICKY 1994

Type country: Vietnam. Distribution: Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 11-16.x.1986, [J. Oláh] — 49 males. Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, [J. Oláh] — 17 males.

**Remarks.** The membranous segment 10 is almost indiscernible, vestigial. The modified tergite 8 is deeply excised dorsoapical producing slightly mesad curving, parallel-sided and robust lateral lobes with serrated apical surfaces. Phallic organ located high moving up to the lateral lobes of segment 8 or even fits into the dorsoapical excision of tergite 8. Paraproctal complex surrounding the phallic organ laterally and ventrally composed of a pair of lateral rods and of a pair of branching structures located above the rods; two elevated sensilla styloconica present on the rods laterad and subapicad; however 8-10 light-spotted sensilla coeloconica are also present and scattered on the rods; the

branching structure of the paraproct is variously developed in nearly every specimen.

***Chimarra thanglena* new species (p.36)**

Small brown species. Forewing length 3.8 mm; forewing discoidal, median and thyridial cells with similar length, but discoidal cell twice as wide; RS only slightly sinuate, almost straight; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; on hindwing 2A diagnostic looping to join the 1A, forming a closed cell. Tergite and sternite 8 short. The new species is similar to *C. pipake* MALICKY & CHANTARAMONGKOL from Thailand. The new species differs by having (1) a shallow paraproctal complex in lateral view, *not* deep; (2) the more pigmented darker line is straight horizontal and running long beyond the middle of the paraproct in lateral view, *not* curving; (3) apex of paraproctal complex with lateral flank; (4) two sensilla present on both sides laterally on the apical flanks; (5) gonopods slender, especially in ventral view; (6) phallosome without a long apicoventral process.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 male.

**Etymology:** The name refers to the sloping Xth segment and paraproct complex in lateral view; slope “thang len” in Vietnamese.

***Chimarra lannaensis* CHANTARAMONGKOL & MALICKY 1989**  
Type country: Thailand. Distribution: Thailand, Laos, Cambodia, Vietnam

**New records:** Vinh Phuc Province, Tamdao, 1300 m, 21.i.1986, light [J. Oláh] — 1 male. Vinh Phuc Province, Tamdao, 1300 m, 14.x.1986, light [J. Oláh] — 2 males. Vinh Phuc Province, Tamdao, 1300 m, 14.x.1986, [J. Oláh] — 1 male. Son La Province, Moch Chau, 24-26.x.1986, [J. Oláh] — 1 male. Lamdong Province, Baoloc, Duchma stream, 22.x.1988, [J. Oláh] — 4 males. Lamdong Province, Baoloc, Duchma stream, 23.x.1988, light [J. Oláh] — 25 males. Lamdong Province, Baoloc, Baco stream, 26.x.1988, light [J. Oláh] — 14 males.

***Chimarra uppita* MALICKY & CHANTARAMONGKOL 1993**

Type country: Thailand. Distribution: Thailand, Vietnam, Laos, Cambodia

**New records:** Ha Son Binh Province, Hoabinh, 2 km towards Dabac, 30.i.1986, [J. Oláh] — 1 male. Ha Son Binh Province, Hoabinh, 20 km towards Tanlac, 27.x.1986, [J. Oláh] — 2 males. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, [J. Oláh] — 4 males. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 5 males.

***Chimarra vitcona* new species (p.37)**

Medium-sized dark-brown, almost castaneous species. Wing membrane dark brown; forewing length 6.2 mm; forewing discoidal and median cells having a similar length, thyridial cell shorter; but discoidal cell twice as wide; RS slightly sinuate, far from M; anterior tip of discoidal cell, that is the primary RS fork hypertrophied, thickened; hyaline window pattern present on crossveins r-m, m, m-cu, along almost the entire Cu2 and on the arculus; on hindwing 2A diagnostic looping to join 1A, forming a closed cell. Tergite and sternite 8 unmodified except shortened and the dorsoapical area of tergite depressed and covered with microtrichia of various densities. Compared to *C. berenike* MALICKY from Jawa, it differs by having (1) mesal ventroapical keel of segment 9 long and shallow running up to the articulation of the gonopods, *not* produced into an outstanding hump in lateral

view; (2) ventral apodeme of segment 9 short, *not* long; (3) lateral paraproctal plate duckhead-shaped with tall dorsal lobe, *not* low without dorsal lobe; (4) cerci tall, almost similar size to the basement of the lateral paraproctal plate, *not* low; (5) gonopods slightly S-forming, *not* straight; (6) mesal cavity of gonopods broad, *not* narrow; (7) endotheca with one long and one short spine clusters and without a pair of medium-sized spines; (8) phallosome sclerite complex differently shaped. However the differences are weak and may be subject to variation.

**Holotype male:** Thua Thien Hue Province, Bach Ma National Park, 1165 m, 16.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 1 male. **Paratypes:** Kon Tum Province, Lo Xo, 600m, 15.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 4 males. Thua Thien Hue Province, Bach Ma National Park, 1165 m, 16.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 2 males. Thua Thien Hue Province, Bach Ma National Park, 850 m, 17.ii.2006, light [Z. Ecsedi and J. Oláh jr.] — 2 males.

**Etymology:** The name refers to the duckhead-shaped lateral paraproctal plate; duckling “vit con” in Vietnamese.

**STENOPSYCHIDAE**

***Stenopsyche angustata* MARTYNOV 1930**

Type country: China. Distribution: China, Vietnam

**New records:** Vinh Phuc Province, Tam Dao, 11.x.1986, light [J. Oláh] — 1 male. — Vietnam No 20, 1998 [Peregovits-Vásárhelyi] — 1 male.

***Stenopsyche babeana* new species (p.39)**

Medium-sized, fine reticulate-patterned light-brown species. Forewing length 20 mm, almost evenly reticulated. This new species belongs to the *Stenopsyche marmorata* group of SCHMID (1969) with long and narrow segment 10 and endotheca packed with numerous small spines. Most similar to *Stenopsyche fukienica* SCHMID described from China (Fujian), but differs by having differently formed dorsal paraproctal processes. The variously vestigial paraproct of *Stenopsyche* is usually fused to the basal part of segment 10 lateroventrally and of the cerci mesoventrally. Frequently it is difficult to differentiate processes of paraproctal origin from possible processes of segment 10. *Stenopsyche babeana* n.sp. has (1) single pair of well-sclerotized paraproctal processes, *not* two pairs; (2) this paraproctal process well-developed, *not* short; (3) the apices of the paraproctal processes obliquely-cut sloping ventrally in lateral view, *not* obtuse and *not* pointed; (4) apices slightly capitate subapical with mesad directed apical points, *not* rounded or needle-shaped.

**Holotype male:** Bac Kan Province, Ba Be National Park, near park headquarter, 1.v. 2007, collected at light [G. Csorba] — 1 male.

**Etymology:** The name refers to the type locality of the holotype.

***Stenopsyche conthienga* new species (p.39)**

Medium-sized, reticulate-patterned brown species. Forewing length 18 mm, almost evenly reticulated. This new species belongs to the *Stenopsyche martynovi* group and is most similar to *Stenopsyche banksi* MOSELY described from China (Fujian), but differs by having (1) a very pronounced dorsoapical median lobe on segment 9 present and well-visible both in lateral and dorsal view, absent in *S. banksi*; (2) digitiform apical lobe on posterolateral margin of segment 9 shorter than the dorsal paraproctal process (intermediate appendages) and as segment 10, longer in *S. banksi*; (3) dorsal paraproctal processes are swan-shaped with well-developed apical beak visible both in lateral and dorsal view,

not simply capitate or clavate; (4) basal half of the gonopods with dorsal broadening.

**Holotype male:** Quang Tri Province, Huang Hoa District, Huang Hoa Nature Reserve, near Cup Village, centered at 16°56'15N 106°34'52E, 400m, 7-10.xi. 2007, collected at light [G. Csorba] — 1 male. **Paratype.** Vietnam No. 20, 1998, [Peregoviits-Vásárhelyi] — 1 male (Natural History Museum London, in alcohol).

**Etymology:** The name refers to the swan-shaped dorsal paraproctal processes on the Xth segment; swan "conthienga" in Vietnamese.

***Stenopsyche laminata* ULMER 1926**

Type country: China (Guangdong). Distribution: China, Vietnam, Laos

**New records:** Ha Son Binh Province, Hoabinh, 23.x.1986, light [J.Oláh] — 1 male .

***Stenopsyche siamensis* MARTYNOV 1931**

Type country: Thailand. Distribution: Thailand, Vietnam, Peninsular Malaysia, Cambodia

**New records:** Quang Tri Province, Huang Hoa District, Huang Hoa Nature Reserve, near Cup Village, centered at 16°56'15N 106°34'52E, 400m, 7-10.xi. 2007, collected at light [G. Csorba] — 3 males, 3 females .

***Stenopsyche uncinata* NAVÁS 1930**

Type country: Vietnam. Distribution: Vietnam

**New Records:** Vinh Phuc Province, Tam Dao, 20.i.1986, light [J.Oláh] — 1 male. Vinh Phuc Province, Tam Dao, 9-14.x.1986, light, one male was found daytime as hiding on a tree trunk, other on stone wall [J.Oláh] — 3 males, 3 females. Vinh Phuc Province, Tam Dao, 10-12.v.1987, light [J.Oláh] — 1 male, 1 female. Quang Tri Province, Huang Hoa District, Huang Hoa Nature Reserve, near Cup Village, centered at 16°56'15N 106°34'52E, 400m, 7-10.xi. 2007, collected at light [G. Csorba] — 1 male.

**Remarks.** This species was described from a male collected in Vietnam (Chapa = Sapa) and redrawn by SCHMID (1949), first from a non-type male collected in Vietnam (Tam Dao) and later (1969) from the type specimen of Chapa found in the collection of the Muséum national d'Histoire naturelle de Paris. Schmid has noted significant differences between the two males in the form of segment 10. We collected five males in North Vietnam (Tam Dao) and one male in Central Vietnam and found even more differences in the specimen collected in Central Vietnam. The enlarged lateral angle on segment 10 is well visible in dorsal view, is densely packed with elevated alveoli, possibly the vestigial paraproct is very much enlarged in all the Tam Dao specimens similarly to the single Tam Dao male examined by SCHMID. Segment 10 of the specimen collected in Central Vietnam is almost without this angle, the vestigial paraproct is reduced to a pair of the setose lateral surfaces. This specimen from Central Vietnam may represent a new species, however more material from various localities would indicate the variability of *Stenopsyche uncinata*.

**ECNOMIDAE**

According to our appendicular and functional genital terminology (OLÁH & JOHANSON, 2008) we apply NIELSEN'S results (1957) also in the genital terminology of Ecnomidae. His conclusions were based on a detailed comparative study of the genital segments and their appendages as well as their muscles. Tergite 9 and especially segment 10 are frequently membranous, abbreviated, reduced, fused or entirely lacking

in *Philopotamoidea* and *Psychomyioidea* superfamilies. According to NIELSEN (1957) segment 10 in *Ecnomus* is fused partially or entirely to the upper lip (tergite, tergum, dorsum) of segment 9, or present as a reduced vestigial membranous median lobe (SCOTT 1963). Moreover it is also possible that the entire upper lip of segment 9 has arisen by secondary sclerotization of the membranous middle lobe of segment 10 (NIELSEN 1957) and segment 10 is represented by this highly sclerotized upper lip, and only the lower lip (sternite, sternum, ventrum) represents segment 9, or the upper lip is composed of the fused tergum 9 and segment 10. This is suggested by the following: (1) the anus is located immediately below the posterior edge of the upper lip; (2) the cerci are sclerotically continuous with the upper lip; (3) the paraproctal complex is located on the ventral side of the upper lip; (4) origins of the posterior phallic muscles; (5) origin of 9-10 muscles. However until more studies document structural homologies, we use the upper lip as tergite and lower lip as sternite of segment 9 and consider segment 10 as reduced to the vestigial membranous median lobe, sometimes almost indiscernible on the cleared preparations, but visible on the intact genitalia.

Following Nielsen we treat the sclerite complex, withdrawn deep inside the upper lip (tergite) of segment 9 of *Ecnomus*, as the vestigial paraproctal complex and not as the remnants of segment 10 (GIBON 1992; LI & MORSE 1997). This paraproctal complex is represented by pairs of external and internal sclerites fused together and symmetric in dorsoventral view. The internal structure is a pair of broad, but more frequently strip-like anterolateral arms projecting ventrad or anterad and fused to the mesal region of the upper lip and/or to the cercal basement, the internal structure is actually the fused basement of the external paraproctal process. The usually specific and diagnostically important external structure of the paraproctal complex is a pair of posterior ventral projections located basally ventromesad between the cerci, long in some species, short and broad in other species usually with a few setae (LI & MORSE, 1997).

In most *Ecnomus* species, the phallic organ is fixed and operated sclerotically in the genital chamber or phallocrypt by four hinge or pivot joints: (1) dorsad by a pair of sclerotized strips from lateral margin of tergum 9 around the fulcrum and joining with phallobase dorsolaterally; (2) ventrad by a pair of tendons of the phallobase joining ventrolaterally to posterior part of the very large and broad basal plate, the anterior extension of the dorsal surface of the gonopods, supporting phallus from beneath as the sclerotized wall of the phallic chamber. The four joints are not clearly discernible in all species, its visibility depends on the degree of sclerotization, on overlapping with more sclerotized structures; their detection more productive in caudal view. The phallic organ consisting of phallic apodeme, sclerotized phalotheca, endotheca, sclerotized dorsobasal lobe, variously developed parameres; parameres and dorsobasal lobe frequently lacking. The phallic apparatus is drawn separately from the drawing of the genital organ. This separate illustration of the phallic organ is usually achieved without dissection of the holotype. If phallic structures are underpigmented or membranous and the wall of IXth sternite and gonopods overpigmented as well as fragments of the gut content remaining during the clearing procedure, it is not easy to distinguish exactly among the structural elements of the phallic organ even if we have properly cleared genitalia.

*Ecnomus argonautos* LAUDEE & MALICKY 1999

Type country: Thailand. Distribution: Thailand, Vietnam  
**New records:** Thanh Hoa Province, Ngoc Lac, 25.i.1986, light [J. Oláh] — 1 male. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 1 male. Hanoi, West Lake, 7.v.1987, light [J. Oláh] — 2 males.

*Ecnomus bintin* new species (p.41)

Medium-sized light-brown species. Foretibial spurs complete, three: spur formula 3:4:4. Second segment of maxillary palp slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale-brown; forewing length 3.7 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 basal two thirds; fork of R1 indistinct due to the granulated pterostigmal area; median cell twice as long as discoidal or thyridial cells. Closest to *Ecnomus iotio* MALICKY & CHANTARAMONGKOL from Thailand, but differs by having (1) gonopods with a long ventral subapical process in lateral view, *not* dorsally hooked apicad; (2) gonopods with three triangular mesal lobe in ventral view, *not* a single broad plate; (3) phallic organ with a large middle hump dorsad.

**Holotype male:** Ha Son Binh Province, Hoabinh, 8 km to Dabac, 31.i.1986, light [J. Oláh] — 1 male. **Paratypes:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 2 males.

**Etymology:** The name refers to the rather composed structure of the gonopods; composed “bin tinh” in Vietnamese.

*Ecnomus bou* MALICKY & CHANTARAMONGKOL 1993

Type country: Thailand. Distribution: Thailand, Vietnam  
**New records:** Lamdong Province, Dalat, Prens waterfall, 19.x.1988, light [J. Oláh] — 12 males. Lamdong Province, Baoloc, Dai Binh River, 22.x.1988, light [J. Oláh] — 4 males.

*Ecnomus cationg* new species (p.41)

Medium-sized light-brown species. Foretibial spurs complete, three: spur formula 3:4:4. Second segment of maxillary palp slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale-brown; forewing length 4.4 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 basal two thirds; fork of R1 indistinct due to the granulated pterostigmal area; median cell twice as long as discoidal or thyridial cells. Closest to *Ecnomus longicaudatus* LI & MORSE described from China (Yunnan) but differs by having (1) sternum 9 with convex dorsum in lateral view, *not* flat; (2) external long paraproctal process filiform and upward curving; (3) gonopods geniculate ventrobasad in lateral view, *not* flat; (4) gonopods lance-shaped, especially in dorsoventral view; (5) phallic apparatus straight in lateral view, *not* curving upwards.

**Holotype male:** Son La Province, Moch Chau, 26.x.1986, light [J. Oláh] — 1 male. **Paratypes:** Son La Province, Moch Chau, 26.x.1986, light [J. Oláh] — 2 males.

**Etymology:** The name refers to the lance-shaped gonopods, which are very suggestive especially in dorsal and ventral view, lance “cai thiong” in Vietnamese.

*Ecnomus coalitus* LI & MORSE 1997

Type country: China (Sichuan). Distribution: China, Vietnam

**New record:** Bac Thai Province, Thain Guyen, Song Cau River, 23.v.1987, light [J. Oláh] — 1 male.

*Ecnomus volovicus* MALICKY & CHANTARAMONGKOL 1993

Type country: Thailand. Distribution: Thailand, Laos, Cambodia, Vietnam

**New records:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 male. Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 5 males. Lamdong Province, Baoloc, Da Gna River, 21.x.1988, light [J. Oláh] — 2 males. Lamdong Province, Baoloc, Dai Binh River, 22.x.1988, light [J. Oláh] — 4 males.

*Ecnomus condao* new species (p.41)

Medium-sized light-brown, yellowish animal. Foretibial spurs complete, three: spur formula 3:4:4. Second segment of maxillary palp slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale; forewing length 3.8 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; fork of R1 indistinct due to the granulated pterostigmal area; median cell more than twice as long as discoidal or thyridial cells. Closest to *Ecnomus alkestis* MALICKY & CHANTARAMONGKOL from Thailand but differs by having (1) tergite 9 low in lateral view, *not* high; (2) sternum 9 very high along its posterior half, producing a large dorsal lobe on its posterior half; (3) external paraproctal process long pointed filiform, starting from an extended base and positioned transversally laterad as visible in dorsal view; (4) segment 10 short membranous; (5) cerci constricted on middle third, *not* parallel-sided; (6) gonopods with shallow dorsal middle excision in lateral view, *not* deep; (7) gonopods without a middle ventral hump in lateral view; (8) gonopods only slightly narrowing apically, *not* subtriangular in ventral view.

**Holotype male:** Lamdong Province, Dalat, Prens waterfall, 19.x.1988, light [J. Oláh] — 1 male. **Paratypes:** Lamdong Province, Dalat, Prens waterfall, 19.x.1988, light [J. Oláh] — 5 males.

**Etymology:** The name refers to the straight knife-shaped cerci in lateral view; knife “con dao” in Vietnamese.

*Ecnomus daibinh* new species (p.41)

Medium-sized light-brown species. Second segment of maxillary palp slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale-brown; forewing length 3.8 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; fork of R1 distinct and well-visible on the granulated pterostigmal area; median cell twice as long as discoidal cell, thyridial cell slightly longer and lower than median cell. Closest to *Ecnomus lapithos* MALICKY & PROMMI from Thailand, but differs by having (1) sternite 9 short, *not* long; (2) cerci slightly arching mesad, almost straight, *not* directed mesad apically; (3) external paraproctal process long slender in lateral and broad with bilobed apex in dorsal view, *not* robust in lateral and *not* monolobed in dorsal view; (4) gonopods very broad based and constricted in the middle in lateral view, *not* long subtriangular; (2) gonopods more complex with mesal cavity in ventral view, *not* simply triangular; (3) phallic organ with a pair of robust parameres.

**Holotype male:** Lamdong Province, Baoloc, Dai Binh River, 22.x.1988, light [J. Oláh] — 1 male.

**Etymology:** The name refers to the type locality.



*Ecnomus ellipticus* LI & MORSE 1997

Type country: China (Anhui). Distribution: China, Vietnam  
**New record:** Vinh Phuc Province, Tamdao, 200 m, 12.x.1986, light [J. Oláh] — 3 males.

*Ecnomus hendersoni* MOSELY 1932

Type country: Malaysia (Peninsular). Distribution: Peninsular Malaysia, Sumatra, Vietnam  
**New records:** Ho Shi Minh City, Than Lac Fishponds, 12.x.1988, light [J. Oláh] — 17 males. Lamdong Province, Baoloc, Loc chau stream, 24.x.1988, light [J. Oláh] — 1 male. Lamdong Province, Baoloc, Dai Binh River, 22.x.1988, light [J. Oláh] — 5 males.

*Ecnomus jojachin* MALICKY & CHANTARAMONGKOL 1993

Type country: Thailand. Distribution: Thailand, Vietnam  
**New records:** Ha Son Binh Province, Hoabinh, 12 km towards Dabac, 30.i.1986, light [J. Oláh] — 3males. Son La Province, Moch Chau, 26.x.1986, light [J. Oláh] — 1 male. Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 8 males.

*Ecnomus mammus* MALICKY & CHANTARAMONGKOL 1993

Type country: Thailand. Distribution: Thailand, Vietnam  
**New records:** Ho Shi Minh City, Than Lac Fishponds, 12.x.1988, light [J. Oláh] — 1 male.

*Ecnomus puro* MALICKY & CHANTARAMONGKOL 1993

Type country: Thailand. Distribution: Thailand, Vietnam, Cambodia  
**New records:** Thanh Hoa Province, Ngoc Lac, 25.i.1986, light [J. Oláh] — 1 male. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 6 males.

*Ecnomus sirtang* new species (p.40)

Medium-sized brown species. Second segment of maxillary palp slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale-brown; forewing length 3.8 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 discernible on the granulated pterostigmal area; median cell twice as long as discoidal cell, thyridial cell low and only slightly longer than discoidal.

Male genitalia. Tergum 9 concave anteriorly and narrowing both ventrally and dorsally in lateral view; sclerotized strips, the skeletal holder connecting tergum 9 to phallobase well-visible as originating near the fulcrum; sternum 9 long subquadrangular, obliquely cut at tergal margin in lateral view without longitudinal median suture in ventral view. Vestigial segment 9 is discernible as small a membranous mesal lobe slightly excised in the middle. Cerci parallel-sided digitiform with rounded apex in lateral view, cercal basement with a long ventrally directed filiform setose projection; cercal stout setae black, small to medium-sized and limited to the apical and subapical mesal surface. External paraproctal processes short, stout and rod-like with several small apical setae, located deep medianly and partially covered by the basoventral lobe of the cerci in lateral view. Gonopods upward arching at apex in lateral view, straight slender with mesad directed broad base in ventral view. Phallic apparatus starts from a ringlike phallic apodeme followed by the thumb-like dorsobasal lobe and by the pair of downward curving blunt parameres in lateral view; aedeagus high with slightly tapering apex; tendons connecting phallobase to the basal plate of the gonopods well-visible.

Close to *Ecnomus projectus* LI & MORSE described from China (Jianxi) but differs by having (1) straight and parallel-sided cerci, *not* broad-based and narrowing apicad; (2) cercal basement with long basoventral filiform process, *not* with short process; (3) cercal apex without a subapical constriction; (4) gonopod with upward curving apex in lateral view.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 male. Paratypes: Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1male.

**Etymology:** The name refers to the straight cerci; straightness "sirthang" in Vietnamese.

*Ecnomus topgom* new species (p.41)

Medium-sized light-brown species. Second segment of maxillary palp slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale-brown; forewing length 4.4 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 basal two thirds; fork of R1 indistinct due to the granulated pterostigmal area; median cell twice as long as discoidal or thyridial cells.

Male genitalia. Tergum 9 convex anteriorly and narrowing ventrally in lateral view, sclerotized strips originating from their apicoventral margin associated with the phallobase; sternum 9 long quadrangular in lateral view without longitudinal median suture in ventral view, its dorsoapical margins produced each into a mesally directed lobe-like flank partially covering the phallic organ dorsad. Vestigial segment 10 is discernible as a small membranous mesal lobe. Cerci elongated parallel-sided slightly downward arching in lateral view and narrowing on their apical half in dorsal view, without any basoventral projection; cercal stout setae small to medium-sized and limited to the mesoapical region. External paraproctal processes short, high, broad and bilobed in dorsal view; mesal lobes rounded with two mesally directed small setae, lateral lobes small and pointed, however both look somehow pointed in lateral view. Gonopods short and high, constricted midway ending in triangular apex in lateral view, with large mesal cavity visible in ventral view, basal plate indiscernible. Phallic apparatus consists of a well-defined ring-shaped short phallic apodeme, short dorsobasal lobe, a pair of large petiolated hammer-shaped parameres and the unusually formed aedeagus with triad apex, the triad apex of aedeagus is composed of the median basal lobe and the two lateral spine-like lobes.

Close to *Ecnomus coalitus* LI & MORSE described from China (Sichuan) and *E. connatus* LI & MORSE described from China (Anhui) but differs from both by having (1) rather high quadrangular IXth sternite with a mesad curving dorsoapical lobe partially roofing the phallic organ; (2) parallel-sided cerci in lateral view, *not* narrowing on apical half; (3) cerci have no basoventral projection, present in *E. coalitus* and *E. connatus*; (4) gonopods with triangular apex in lateral view, *not* blunt; (5) phallic dorsobasal lobe free rounded robust, *not* fused to the parameres; (6) parameres petiolated, hammer-shaped, *not* simple long processes; (7) aedeagus with triad apex, *not* monad.

**Holotype male:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 male.

**Etymology:** The name refers to the trifid apex of the phallic apparatus; triad "top gom" in Vietnamese.



***Ecnomus uttu* MALICKY & CHANTARAMONGKOL 1993**

Type country: Thailand. Distribution: Thailand, Vietnam

**New records:** Lamdong Province, Dalat, Prenn waterfall, 19.x.1988, light [J.Oláh] — 1 male.

***Ecnomus purogiong* new species (p.40)**

Medium-sized light-brown species. Second segment of maxillary palp slightly longer than first and only slightly shorter than third; third segment positioned apically on second. Wing membrane pale brown; forewing length 4.4 mm; forewing forks complete, F1 present; corneous nygmæ present and well-visible in F2 and in thyridial cell; forewing vein R1 strongly hypertrophied, thickened along its basal two thirds; fork of R1 indistinct due to the granulated perostigmal area; median cell twice as long as discoidal or thyridial cells. Close to *Ecnomus puro* MALICKY & CHANTARAMONGKOL described from Thailand, but differs by having (1) cerci deep and almost parallel-sided in lateral view, *not* constricted middle; (2) external lobe of paraproctal complex rounded in lateral view, *not* pointed; (3) apex of gonopods rounded in lateral view, *not* tapering; (4) mesal lobe of gonopods directed posterad in ventral view, *not* anterad; (5) parameres T-shaped plate in lateral view, *not* digitiform.

**Holotype male:** Son La Province, Moch Chau, 26.x.1986, light [J. Oláh] — 1 male.

**Etymology:** The name refers to its similarity with *E. puro*; similar “giong” in Vietnamese.

**PSYCHOMYIIDAE*****Lype atria* MALICKY & CHANTARAMONGKOL 1993**

*Lype vietnamella* Mey 1996: 58. Judging from the figures, *vietnamella* has no real difference to *atria*. **New Synonym**

Type country: Thailand. Distribution: Thailand, Sumatra, Vietnam

**New records:** Ninh Binh Province, Cucphuong National Park, 400 m, 18.x.1986, [J. Oláh] — 1 male. Son La Province, Moch Chau, 24-26.x.1986, [J. Oláh] — 2 males. Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 4 males. Lamdong Province, Baoloc, Duchma stream, 23.x.1988, light [J.Oláh] — 1 male.

***Psychomyia bacthaia* new species (p.42)**

Small pale-brown species. Dorsal thoracic sclerites pale-brown, setal warts both on head and thorax lighter, grooves are darker. Maxillary palp formula is I-IV-III-II-V. There is no compact setal wart present on the cervix or on the cervical sclerite. Proepisternal setal wart absent. Spur formula is 244. Forewing length 3 mm, thyridial cell on forewing small.

Male genitalia. Abdominal segment 9 represented by robust, subquadrangular short sternite in lateral view, delineated posteriad by a vertical less pigmented groove separating it from the fused coxopodite. The dorsal complex of the fused tergite 9, cerci and paraproct is composed of the higher (broader) subtriangular basal and the lower (narrower) subtriangular apical half, as visible in lateral view; they are delineated by a weakly discernible suture; basal half represents the fused tergite 9 having more sclerotized ventral strap, possibly the vestigial paraproct, bracing the dorsal complex to sternum 9; the setal pattern on the mesal surface of the cerci characterised by numerous erect, straight and long setae and there is a very stout subapical tooth, the characteristic psychomyiid “rostrum” in dorsal view. Coxopodites of the gonopods discernible as a continuation of the sternite 9, separated by the less pigmented vertical groove and fused medially; harpagones composed of the setose

ventrolateral lobe elongated and slender both in lateral and dorsal view and the heavily sclerotized spine-shaped dorsomesal branch with bifid apex. Phallic apparatus is dominated by the large, less sclerotized subtriangular phallic apodeme fixed to the fulcrum, where sternite 9 and the dorsal complex of tergite 9, cerci and paraproct are hinged together, by a pair of short straps; the aedeagus directed dorsad from the posterior portion of the phallic apodeme and produced as a sagittate compressed flat head, visible as a broad plate with undulating posterior margin and with the short digitiform projection of ductus ejaculatorius.

This new species, having its IXth tergite completely fused to the cerci with weakly discernible suture, belongs to the *Psychomyia flavida* species group of SCHMID (1997). Closest to *Psychomyia armitagei* SCHMID from India, but differs by having dorsal complex of the fused tergite 9, cerci and paraproct with less produced dorsal projection of the fused tergite 9; the single and very stout mesal subapical teeth present on both halves of the dorsal complex, lacking in *P. armitagei*; the spine-like and setaless inner dorsomesal branch of gonopods has bifid apex and has no additional ventral arm midway; the head of the phallic apparatus differently shaped in lateral view.

**Holotype:** Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 male.

**Etymology:** The name refers to the Northern Bac Thai Province where the holotype was collected.

***Psychomyia eriphyle* MALICKY & SAENGPRADAB 2001**

Type country: Thailand. Distribution: Thailand, Vietnam

**New record:** Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 1 male.

***Psychomyia samanaka* MALICKY & CHANTARAMONGKOL 1993**

Type country: Thailand. Distribution: Thailand, Vietnam

**New record:** Lamdong Province, Baoloc, Dai Binh River, 22.x.1988, light [J.Oláh] — 1 male.

***Psychomyia sonlana* new species (p.42)**

Small pale-brown species. Dorsal thoracic sclerites pale-brown, setal warts both on head and thorax lighter, grooves are darker. Maxillary palp formula is I-IV-III-II-V. There is no compact setal wart present on the cervix or on the cervical sclerite. The pair of lateral cervical sclerites are gammon-shaped; the slender anterior arm broadening from midway almost gradually and broadest subapical then slightly curving ventrad towards the articulation with the proepisternum. They are composed of the narrow slender anterior arm articulating anteriorly to the back of the head with the occipital condyle above the posterior tentorial pits and fused to the posterior cervical sclerites; the posterior cervical sclerite, forming the gammon-shaped plate, reaching the prothoracic episternum, but articulating also to the weakly sclerotized anteromedian band of the prothoracic eusternum by the very thin ventral intercervical sclerites. Proepisternal setal wart absent. Forewing length 3.2 mm, thyridial cell on forewing and fork 3 on hindwing small.

Male genitalia. Abdominal segment 9 represented by robust, subquadrangular short sternite in lateral view, delineated posteriad by a vertical less pigmented broad groove separating it from the coxopodite. The dorsal complex of the fused tergite 9, cerci and paraproct subtriangular with a low and tapering ventroapical lobe in lateral view, its dorsal margin undulating with a long concavity; the fused paraproct modified into a pair of transverse plates and hidden mesally but visible as a dark internal ridge in lateral view; the apices

of the dorsal complex aviform with mesad directed rostrum and high head in dorsal view, there are subapical 4-5 stout mesad directed setae below the rostrum followed anteriorly by the transversal paraproctal plates on the mesal surface of the complex. Coxopodites of the gonopods discernible as a continuation of sternite 9 separated by the less pigmented vertical groove and partially fused medially; harpagones composed of the setose ventrolateral lobe and the heavily sclerotized spine-shaped doubled dorsomesal branch with bifid apex; the shape of ventrobasal lobe short and high; dorsomesal branch of harpagones arching low and composed of the spine-like and bifid ventral arm and a less sclerotized, almost hyaline dorsal arm with numerous setae, especially apicad. Phallic apparatus is dominated by the large, less sclerotized subtriangular phallic apodeme fixed to the fulcrum, where sternite 9 and the dorsal complex of tergite 9, cerci and paraproct hinged together, by a short strap; the filiform and S-shaped aedeagus is very thin with very high S-curves and with a small hump on the ventral margin of the second curve.

This new species, having its tergite 9 completely fused to the cerci without a discernible suture belongs to the *Psychomyia capillata* species group of MALICKY (1993) which constitutes a species cluster in the *Psychomyia flavida* species group of SCHMID (1997). Closest to *Psychomyia amphiaraos* MALICKY & CHANTARAMONGKOL from Thailand, but differs by having differently shaped aedeagus and the spine-like and setaless inner dorsomesal branch of gonopods has bifid apex.

**Holotype:** Son La Province, Moch Chau, 24-26.x.1986, [J. Oláh] — 1 male.

**Etymology:** The name refers to the type locality.

#### *Psychomyia vietnama* new species (p.42)

Small pale-brown species. Dorsal thoracic sclerites pale-brown, setal warts both on head and thorax lighter, grooves are darker. Maxillary palp formula is I-IV-III-II-V. There is no compact setal wart present on the cervix or on the cervical sclerite. The pair of lateral cervical sclerites are gammon-shaped; the slender anterior arm broadening from midway almost gradually and broadest subapicad where slightly curving ventrad towards the articulation with the proepisternum. They are composed of the narrow slender anterior arm articulating anteriorly to the back of the head with the occipital condyle above the posterior tentorial pits and fused to the posterior cervical sclerites; the posterior cervical sclerite forming the gammon-shaped plate reaching the prothoracic episternum, but articulating also with the weakly sclerotized anteromedian band of the prothoracic eusternum by the very thin ventral intercervical sclerites. Proepisternal setal wart absent. Forewing length 3.6 mm, thyridial cell on forewing and fork 3 on hindwing small.

**Male genitalia.** IXth abdominal segment represented by robust, subquadrangular sternite in lateral view, delineated posteriorly by a vertical less pigmented broad groove separating it from the coxopodite. The dorsal complex of the fused IXth tergite, cerci and paraproct subtriangular with a high and rounded ventroapical lobe in lateral view, its dorsal margin with a short concavity; the fused paraproct modified into a pair of transverse plates and hidden mesally but visible as a dark internal ridge in lateral view; the apices of the dorsal complex aviform with mesad directed rostrum in dorsal view, there are a subapical short finger-shaped process below the mesad directed rostrum followed anteriorly by the transversal paraproctal plates on the mesal surface of the complex. Coxopodites of the gonopods discernible as a continuation of the IXth sternite separated by the less pigmented vertical groove and partially fused medially;

harpagones composed of the setose ventrolateral lobe and the heavily sclerotized spine-shaped dorsomesal branch with bifid apex; the shape of ventrobasal lobe elongated, but directed somehow laterad, therefore looking shortened in lateral drawings; dorsomesal branch of harpagones arching at a right angle. Phallic apparatus is dominated by the large, less sclerotized subtriangular phallic apodeme fixed to the fulcrum, where the IXth sternite and the dorsal complex of the IXth tergite, cerci and paraproct hinged together, by a short strap; the filiform and S-shaped aedeagus is very complex, supplied basoposteriad with a longer single lobe directed posterad and just above it a pair of shorter lobes; the apex of the aedeagus clearly bifid with subapical broadening and very thin thread-like endings.

This new species, having its tergite 9 completely fused to the cerci without a discernible suture, belongs to the *Psychomyia capillata* species group of MALICKY (1993) that constitutes a species cluster in the *Psychomyia flavida* species group of SCHMID (1997). Its very unique complex aedeagus with bifid apex distinguishes this species from all the known members of the *P. capillata* species cluster; it is similar to *P. nevoissi*, but differs by having (1) lateral profile of the fused tergite 9, cerci and paraproct complex more simple, *not* produced elongated lobes; (2) the heavily sclerotized spine-shaped dorsomesal branch has bifid apex differently shaped; (3) phallic organ supplied basoposteriad with a longer single lobe directed posterad and just above it a pair of shorter lobe, lacking in *P. nevoissi*; (4) phallic organ with bifid apex producing subapical broadening and very thin thread-like endings on both terminal branches, in *P. nevoissi* the ventral branch less developed.

**Holotype male:** Ha Son Binh Province, Hoabinh, 2 km towards Dabac, 30.i.1986, light [J. Oláh] — 1 male.

**Paratypes:** Ha Son Binh Province, Hoabinh, 2 km towards Dabac, 30.i.1986, light [J. Oláh] — 3 males. Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, light [J. Oláh] — 1 male. Son La Province, Moch Chau, 24-26.x.1986, [J. Oláh] — 18 males.

**Etymology:** The name refers to the type locality. This was the first *Psychomyia* species collected by the first author in Vietnam.

#### *Tinodes prisatkayukta* SCHMID 1972

The specimen shows a few minor differences with the figure by Schmid, but this may be because of the different drawing styles.

**Type country:** India (Manipur).

**New record:** Lamdong Province, Lamdong, Baoloc, Baco stream, 26.x.1988, light leg [J. Oláh] — 1 male.

#### *Tinodes dungdera* new species (p.42)

Small yellow species, forewing length 4 mm. Sclerites and setal warts both on head and thorax pale, grooves are dark. Maxillary palp formula is I-IV-II-III-V. Cephalic warts are represented on the face by a single rounded frontal medial compact setose wart, by a pair of slightly horizontally elongated clypeal compact setose warts almost fused mediad; four pairs of setose warts visible on the head dorsum (1) rather large and wide postgenal compact setose warts on the enlarged postgenal area, (2) large compact occipital setose warts, (3) vertexal ocellar compact setose warts, (4) vertexal lateroantennal compact setose warts fused with the vertexal medioantennal compact setose wart. Coronal, occipital grooves are well developed and visible as dark brown lines on the head dorsum; occipital grooves obliquely running between occipital and ocellar warts. The bifurcation of frontal grooves is visible on head dorsum as merging at the coronal

groove. It is probable that the vertexal medioantennal compact setose wart listed here is the frontal interantennal median compact setose wart. There is no compact setal wart present on the cervix or on the cervical sclerite. The pair of lateral cervical sclerites are gammon-shaped; the slender anterior arm broadening from midway almost gradually and broadest subapical where it is slightly curving ventrad towards the articulation with the proepisternum. They are composed of the narrow slender anterior arm articulating anteriorly to the back of the head with the occipital condyle above the posterior tentorial pits and fused to the posterior cervical sclerites; the posterior cervical sclerite forming the gammon-shaped plate reaching the prothoracic episternum, but articulating also to the weakly sclerotized anteromedian band of the prothoracic eusternum by the very thin ventral intercervical sclerites. Proepisternal swollen setal wart absent.

Male genitalia. Abdominal segment 9 represented by the sternite, subtriangular in lateral view and produced laterad directed anterodorsal flaps on each side and posteroventral marginal flange; this flange, like a template, receives the coxopodite of the gonopods; this flange like development has an unusual ventral membranous conjunctiva connecting the flange to the ventral posterior margin of segment 8. The cerci are unusual in that they are furcated into a dorsal long and downward bent spine, and a ventral large section in the shape of a spread fan. Paraproct is represented by a pair of ventral paraproctal process present and less sclerotized, almost hyaline, just discernible, with few distal hairs. In the place of a normally triangular or rounded tergite 9, there is a very large bulbous and semi-membranous structure which is probably tergite 9 because it is in immediate contact with tergite 8, but it is possible that segment 10 is also involved. An additional pair of small, but heavily sclerotized ventroapical lobes of the fulcrum below the basal part of phallic apparatus, the median bridge of LI & MORSE (1997) or sclerite of genital chamber of BOTOSANEANU (1992) are present; these lobes almost meet medially giving a ventral support to the phallic apparatus. The gonopods, which usually are the largest genital structural element in *Tinodes*, are reduced in size. It is not clear whether the apical parts are the fused harpagones with downcurving apex, or whether these are reduced. Basal plate extending anterad and tapering in ventral view. Phallic apparatus forms a simple downcurving filiform process with bulbous basement.

This new species is close to *Tinodes furcata* LI & MORSE described from China (Jiangxi, Hubei, Sichuan), having expanded and compressed cerci, a character that is unusual in the genus. Normally *Tinodes* species have digitiform, elongated rod-shaped cerci. *Tinodes retorta* ULMER from Taiwan possibly has also distally expanded cerci, but the drawing by Ulmer is poor. *Tinodes dungdera* n.sp. can be easily distinguished by having the vertically expanded and flattened cerci clearly spatulate, not just expanded subapical like in *T. furcata* and not with the downcurving apical expansion of *T. retorta*.

**Holotype male:** Vinh Phuc Province, Tamdao, 1300 m, 10.v.1986, along the main stream [J. Oláh] — 1 male.  
**Paratypes:** Vinh Phuc Province, Tamdao, 200 m, 13.x.1987, along a small tributary of the main stream [J. Oláh] — 2 males. Bac Thai Province, Quang Chu, 24-25.v.1987, [J. Oláh] — 1 male.

**Etymology:** The name refers to the unusual spatulate cerci; spatula "dung de ra" in Vietnamese.

***Tinodes cryptophallicata* LI & MORSE**

Type country: China (Jiangxi). New record:  
**Holotype male:** Vinh Phuc Province, Tamdao, 1300 m, 14.x.1986, light leg [J. Oláh] — 1 male.

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### Lactic acid method

In the Proceedings of the 12<sup>th</sup> Int.Symp. in Mexico, only recently in my possession, I read with much attention the paper on the lactic acid method for clearing Trichoptera genitalia. I have used lactic acid all my life and learned the method from Dirk Geijskes, who was in close contact with Frans Fischer. I think that he also used this method.

We use lactic acid of a much weaker percentage than BLAĀNIK, HOLZENTHAL and PRATHER (2007). I do not remember the exact formula, but I use 10-20 percent of lactic acid in test tubes with abdomens or complete animals, and these are put in a pan with boiling water (aux bain marie) on the gas. After about 30-40 minutes, most specimens are cleaned and ready to be examined in alcohol. Putting them away for several days in such a (cold) lactic acid solution without boiling generally also works well.

Geijskes put the material after boiling as described, first in xylol and after that in creosote (to make the chitinous parts brown in colour).

I have done that too, but recently not any more. Both xylol and creosote promote cancer and are only used for making beautiful preparations.

My method is not so sophisticated, but effective enough for examination of hydroptilids and the genitalia of viz. Leptoceridae.

Bert Higler

### Book review

WICHARD, W., GRÖHN, C., SEREDSZUS, F., 2009: *Aquatic Insects in Baltic Amber/ Wasserinsekten im Baltischen Bernstein*. 335 pp., Verlag Kessel, Remagen – Oberwinter. ISBN 978-3-941300-10-1

This is the long-awaited modern scientific summary of the water insects of Baltic Amber. This amber from the Eocene period (55- 34 million years ago) preserved, as is well known for a long time, a remarkably rich insect fauna which is not very different from the present-day one. Most species are part of recent genera, and if one or the other of these amber species could fly around today, it would be described as a new species, and nobody would be much surprised.

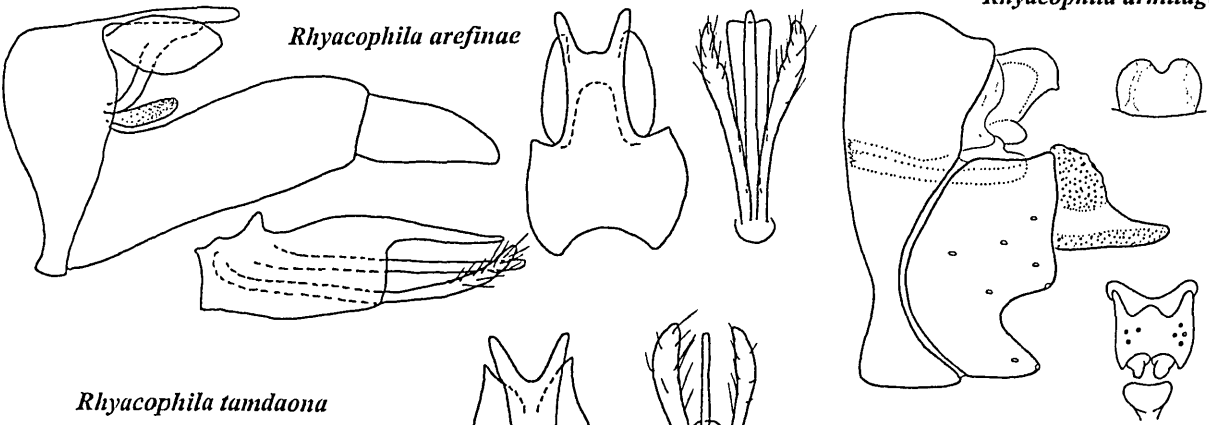
The book is produced to a high quality, with many colour photos, each accompanied by a fine drawing of the same object to show more details. Included are Odonata, Ephemeroptera, Plecoptera, Heteroptera, Megaloptera, Neuroptera, Coleoptera, Diptera and even a few crustaceans (Ostracoda, Isopoda, Amphipoda). For Trichoptera, only a summary is given because another detailed volume especially for this order will be published soon by the authors; Trichoptera are more than 20% of the insects in Baltic Amber. - The book includes descriptions of new taxa: one new genus and three new species of Neuroptera (Nevrothidae) and 2 new genera and 12 new species of Diptera (Chironomidae). A list of all insect species known from Baltic amber is included. The text is in English and German, running parallel in two columns on every page, but the explanations of the figures and descriptions of new taxa are in English only. Ma.

### Buchbesprechung

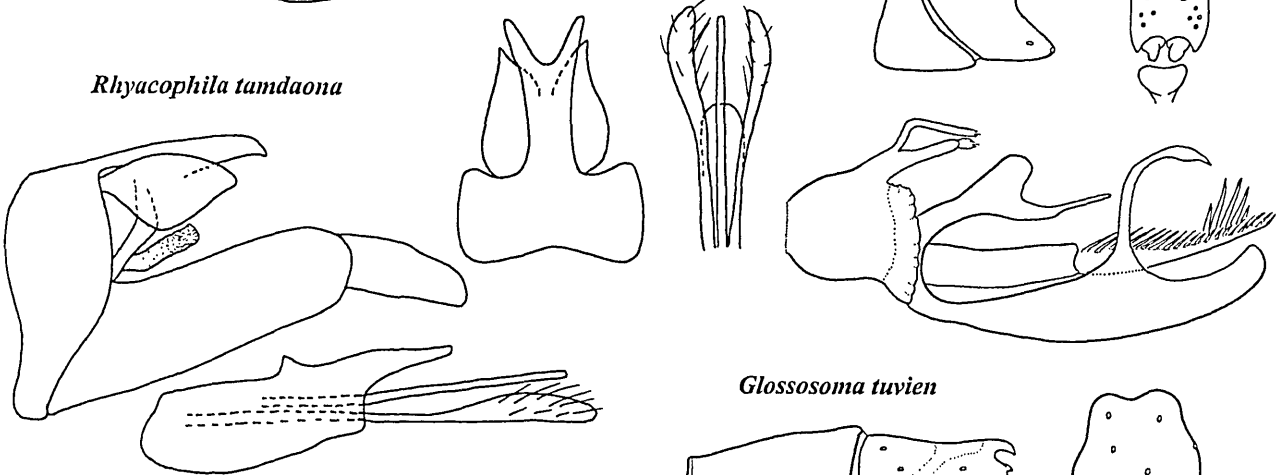
Thomas EHLERT, 2009: *Flugaktivität, Eiablage und Habitatbindung von Köcherfliegen (Trichoptera) an Fließgewässern*. – *Essener ökologische Schriften* 27, 187 pp. ISBN 3-89432-119-9

Das Buch faßt die Ergebnisse einer mehrjährigen Untersuchung an einem Bach des Ruhrgebietes über eine Strecke von 3 km mit Hilfe von Malaisefallen, Klebfallen und gezielten Freilandbeobachtungen zusammen. Ziel der Untersuchung war, die Wichtigkeit der Flugaktivität der Adulten für die Habitatbindung der Arten zu dokumentieren. Parallel dazu wurden die üblichen physikalischen Faktoren ermittelt: Lufttemperatur, Luftfeuchtigkeit, Einstrahlung. In der Einleitung wird eine Übersicht über die Literatur zur Imaginalbiologie von Köcherfliegen gegeben. Dabei fällt auf, daß das Buch von Reisinger & al. (2002, siehe die Besprechung in *Braueria* 29:30) nicht erwähnt wird, obwohl es eine Fülle von Daten zum Thema enthält. Ergebnisse umfassen die räumliche Verteilung des Fluges über und neben dem Bach, die jahreszeitliche Verteilung von ca. 20 Arten, die Flugaktivität im Tagesverlauf von über 30 Arten, Beobachtungen über Paarung und Eiablage. Für fünf Arten (*Rhyacophila nubila*, *Micrasema longulum*, *Silo nigricornis*, *Athripsodes bilineatus* und *Odontocerum albicorne*) wird eine Übersicht in Form von Steckbriefen gegeben. Das Buch enthält eine Fülle von Details, die für die Beurteilung von ökologischen Zusammenhängen wichtig sind, und eine ausführliche Diskussion, deren detaillierte Besprechung den Rahmen einer Buchbesprechung sprengen würde. Das Buch ist ein wichtiger Beitrag zur Kenntnis der Biologie der Adultstadien von Köcherfliegen. Ma.

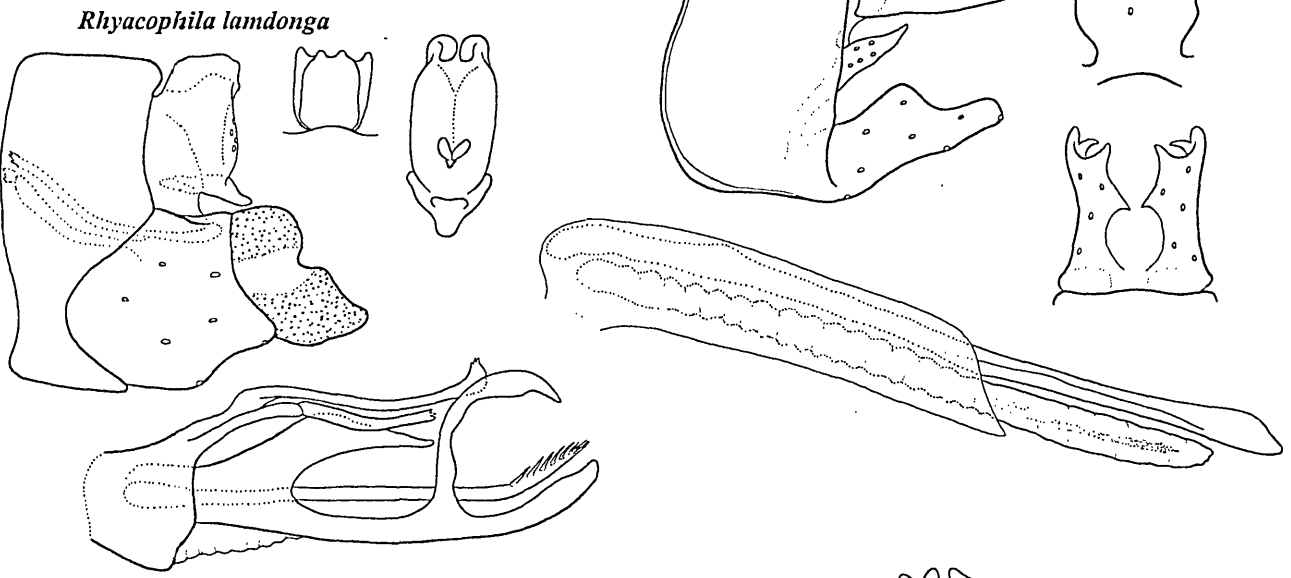
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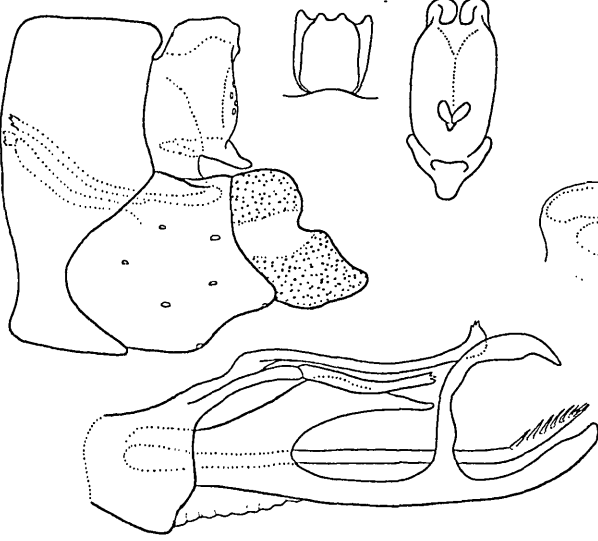
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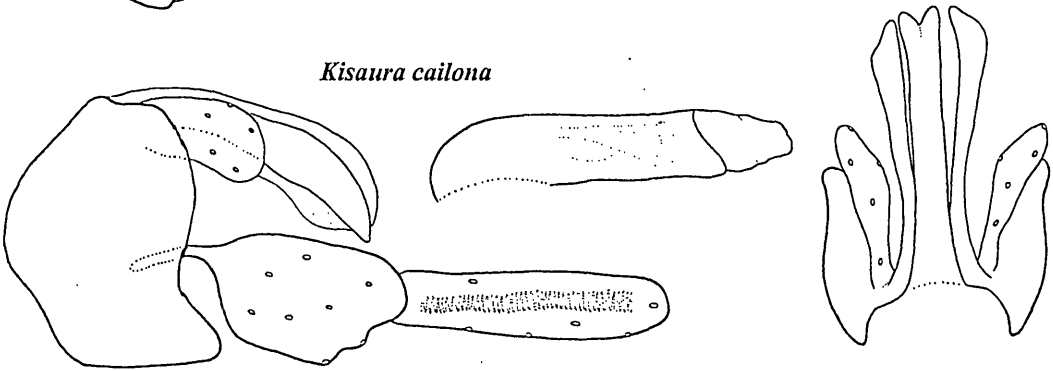
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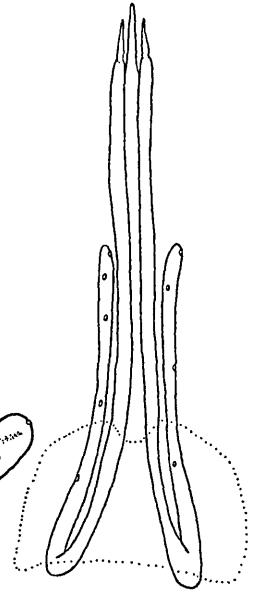
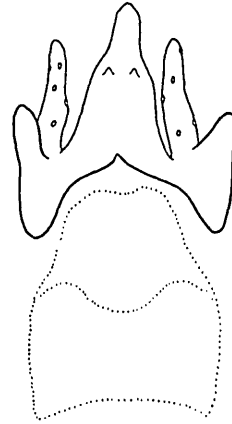
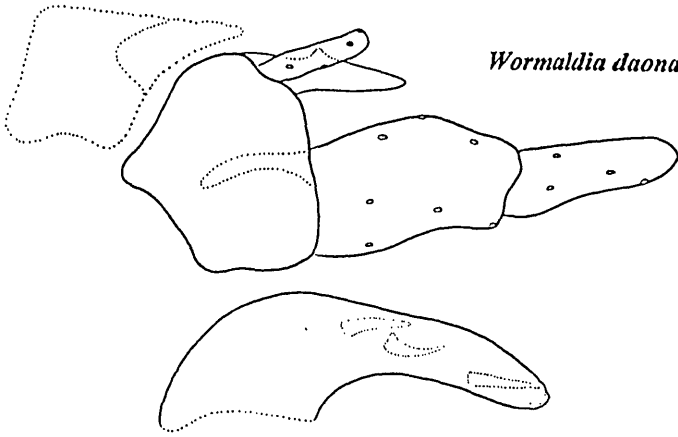


*Rhyacophila lamdonga*



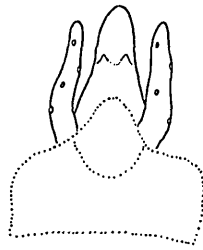
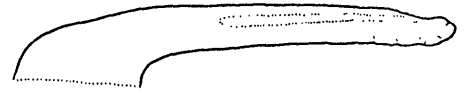
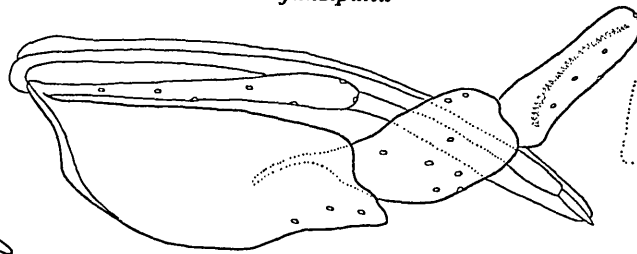
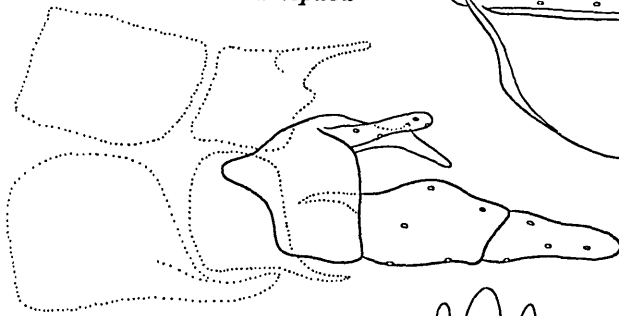
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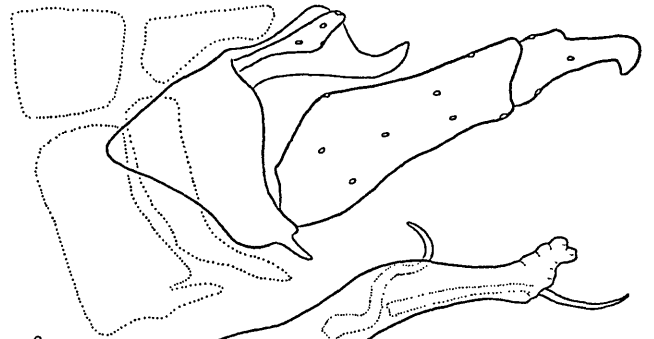


*Kisaura fansipana*

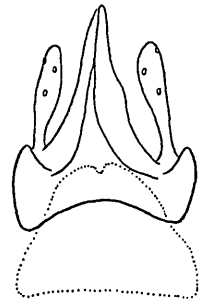
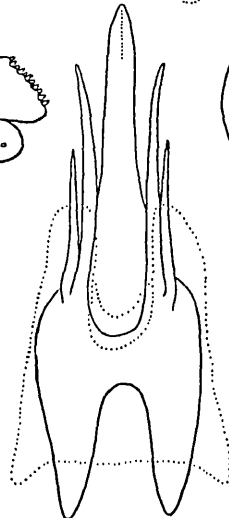
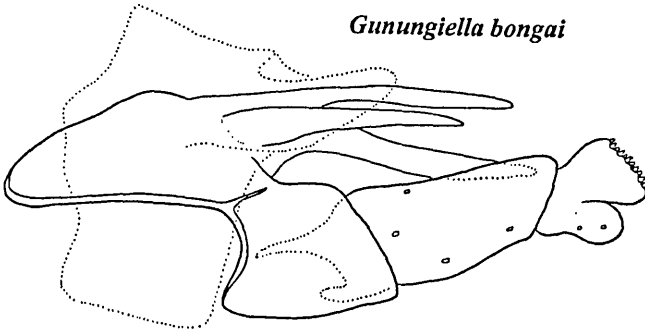
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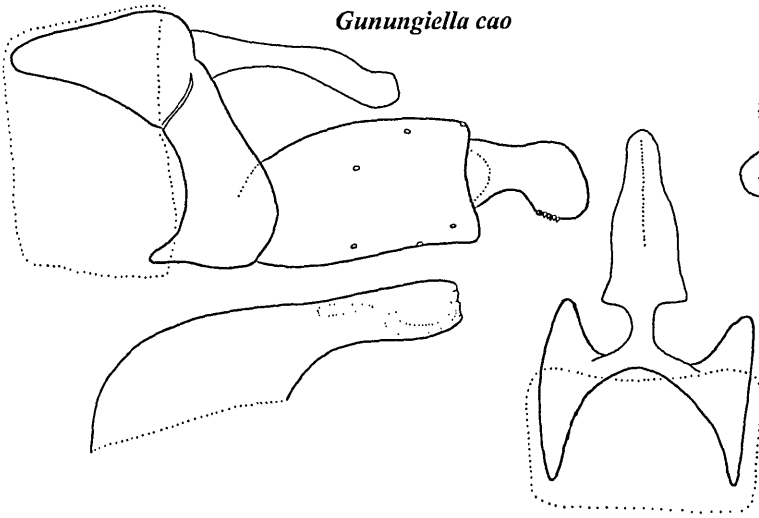
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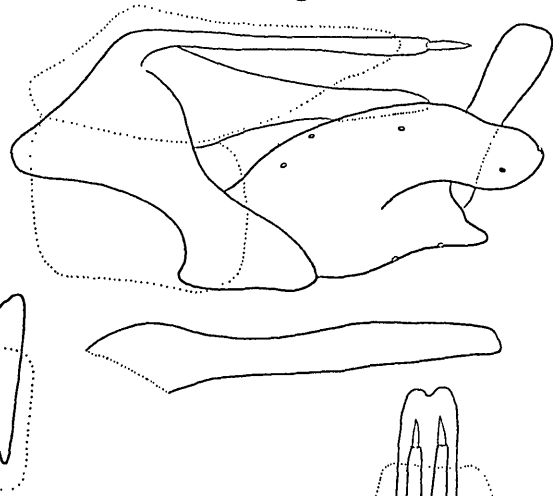
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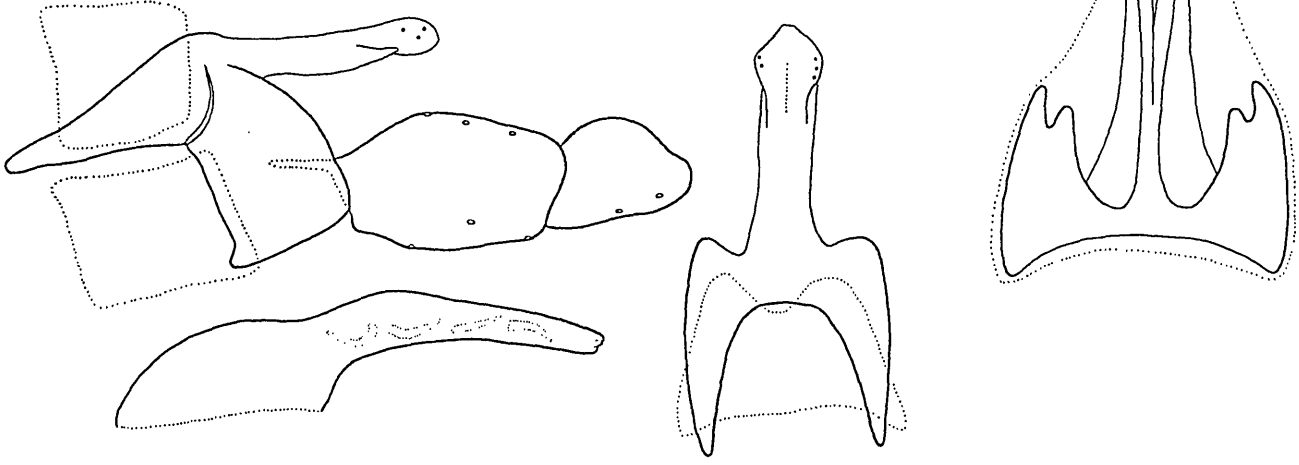
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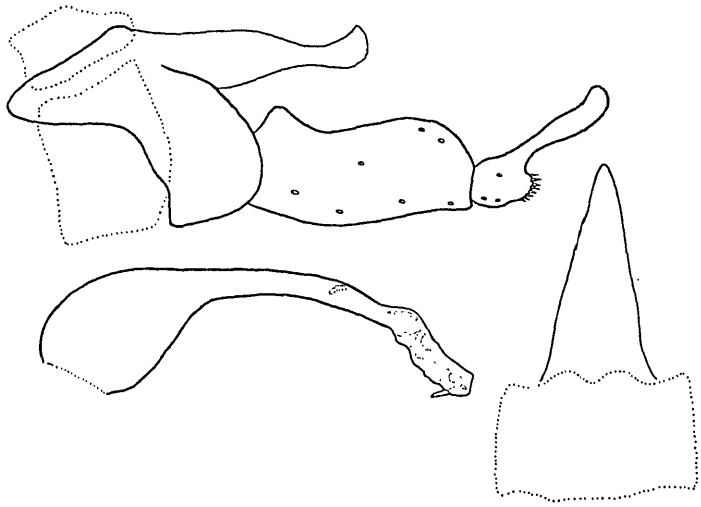
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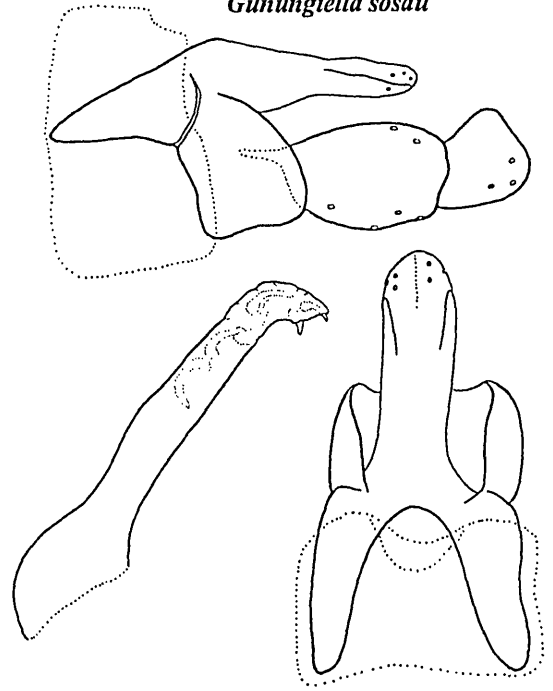
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*Gunungiella obendio*

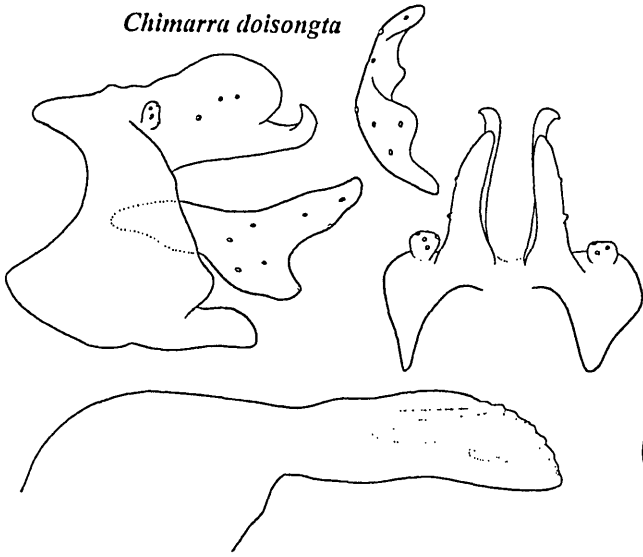


*Gunungiella sosau*

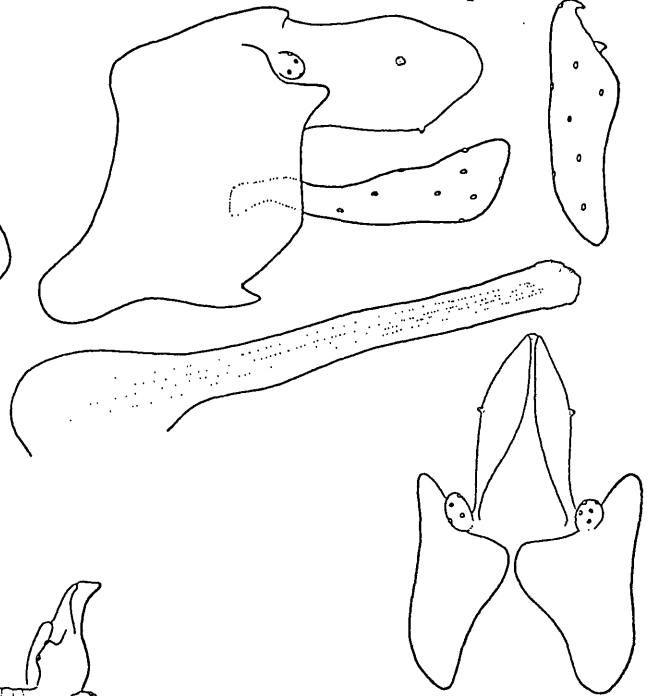




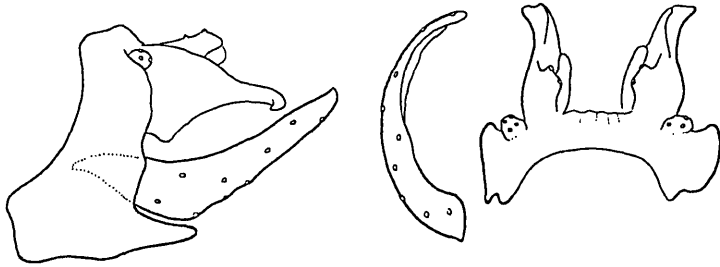
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*Chimarra damqua*



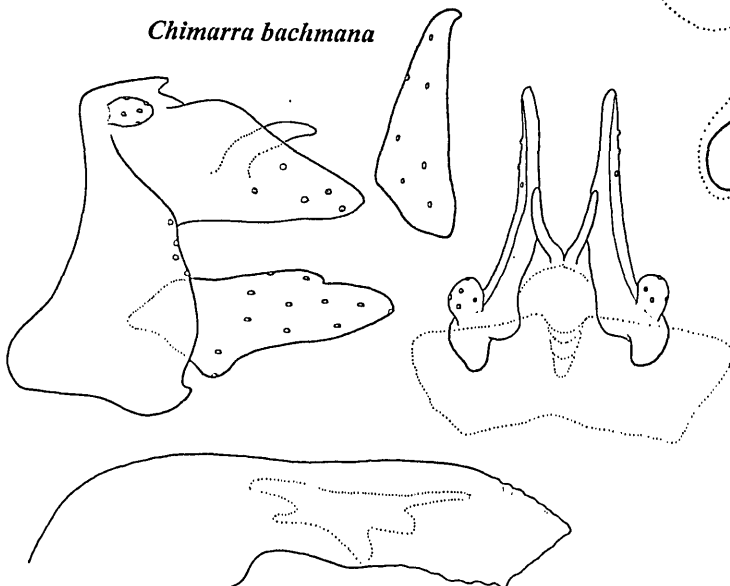
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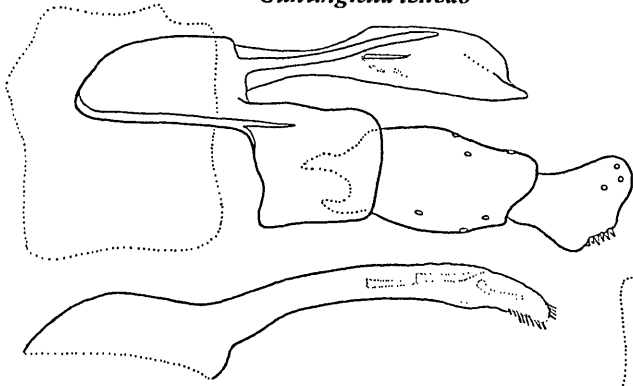
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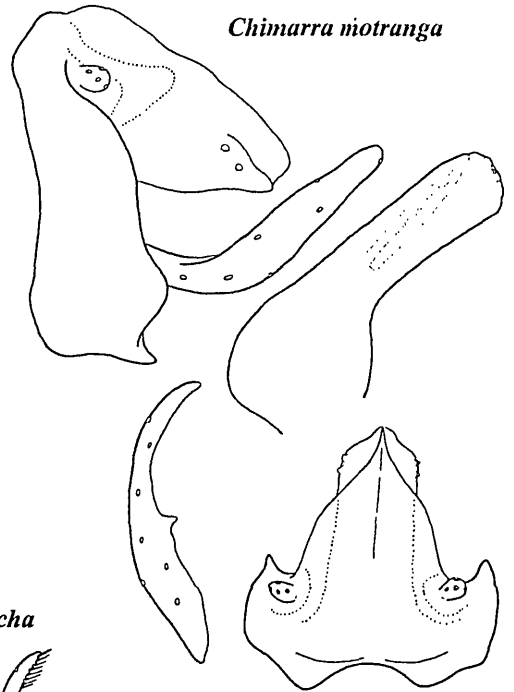
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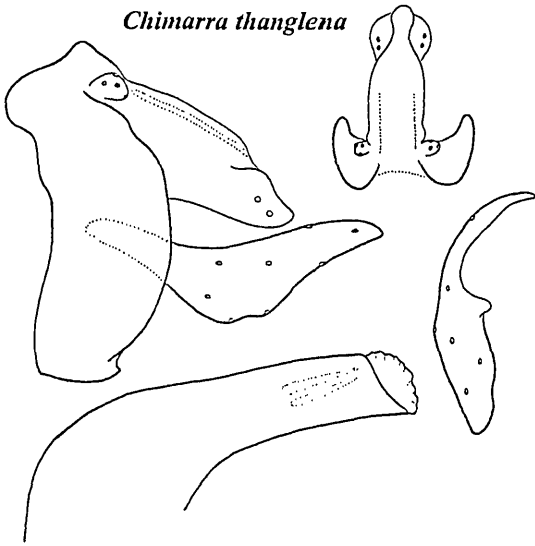
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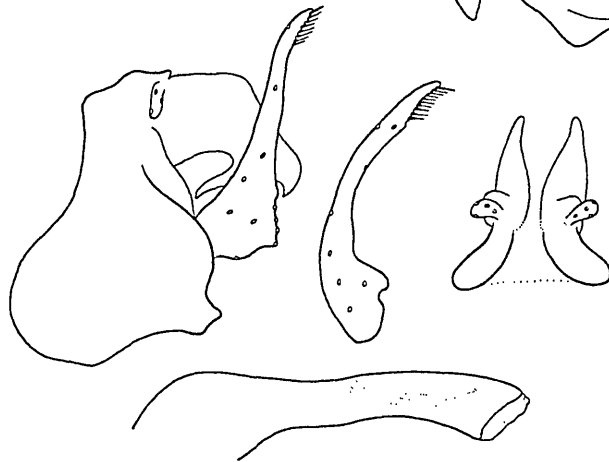
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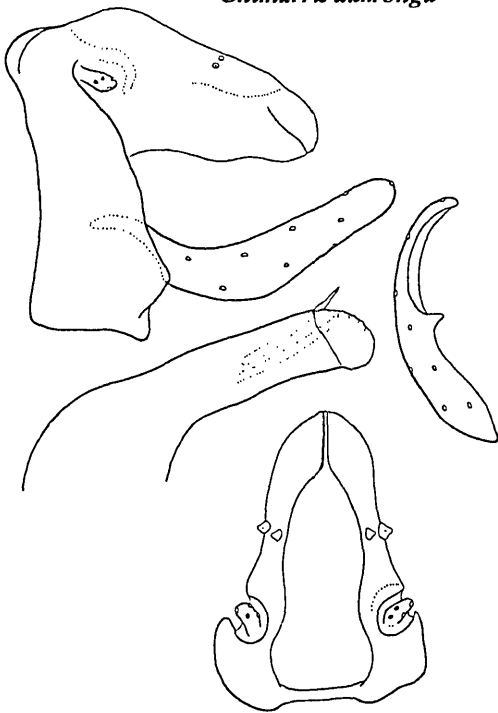
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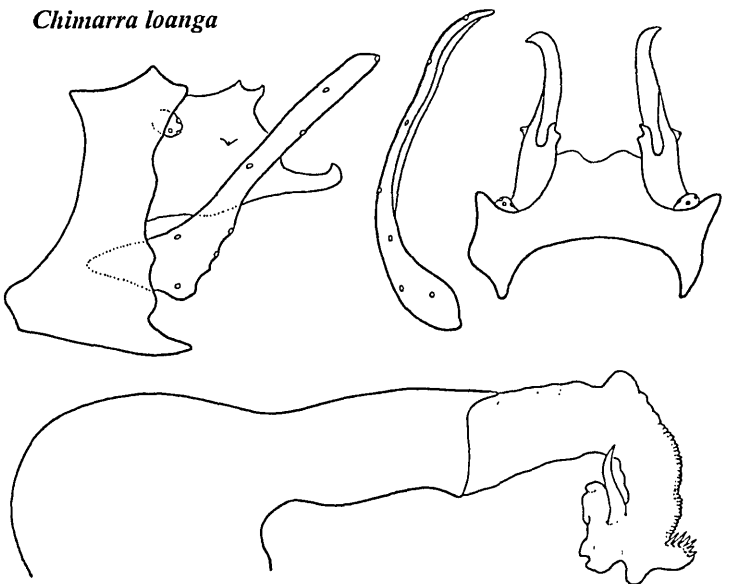
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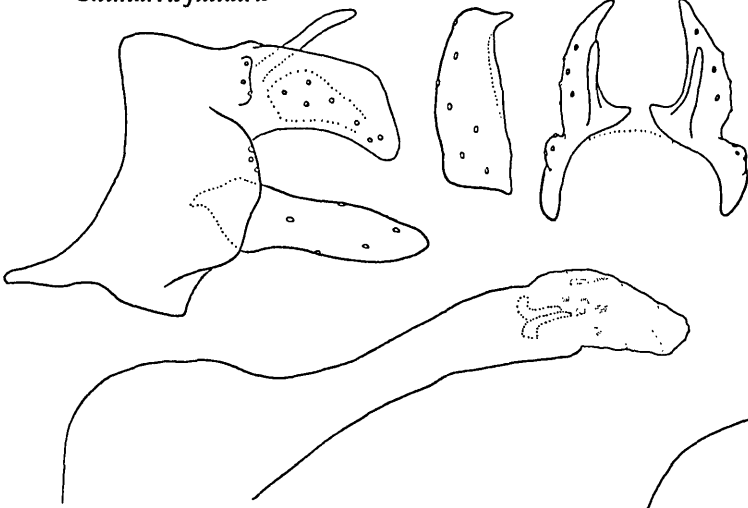
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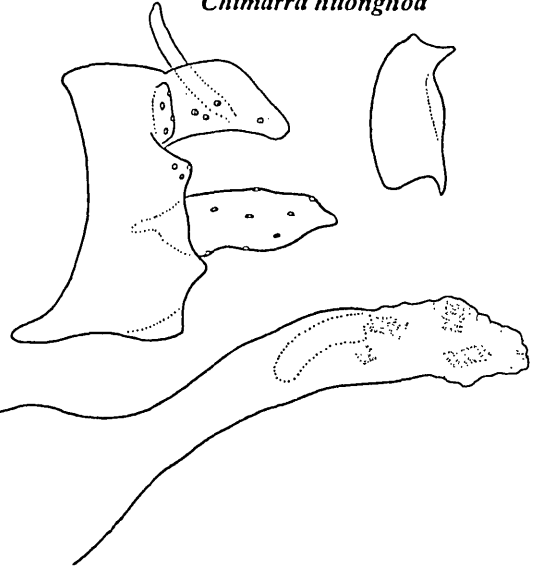
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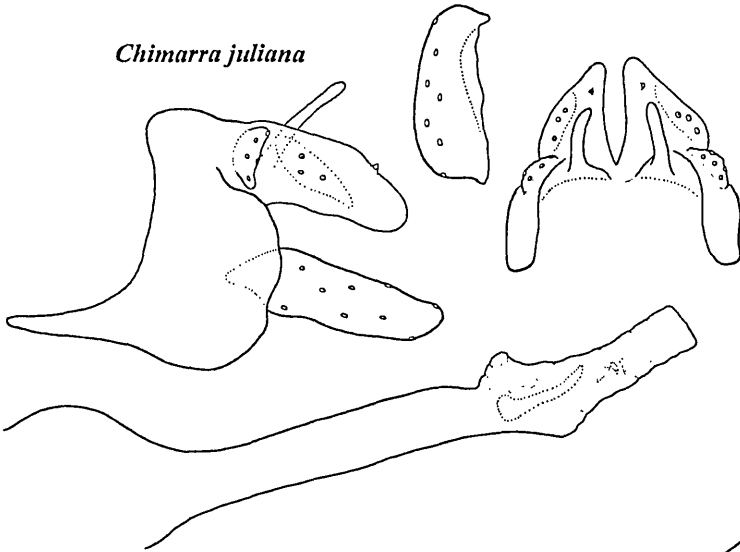
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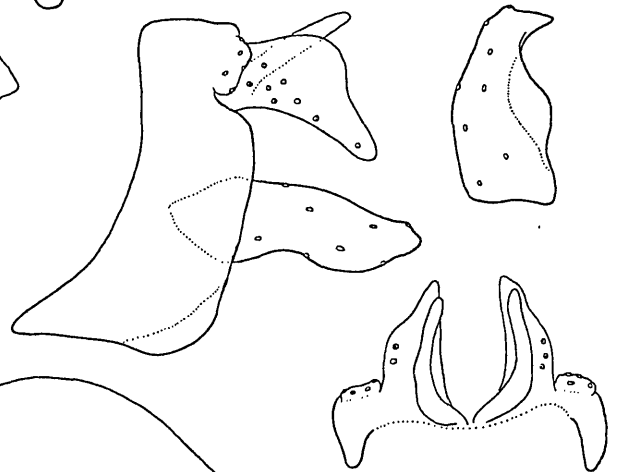
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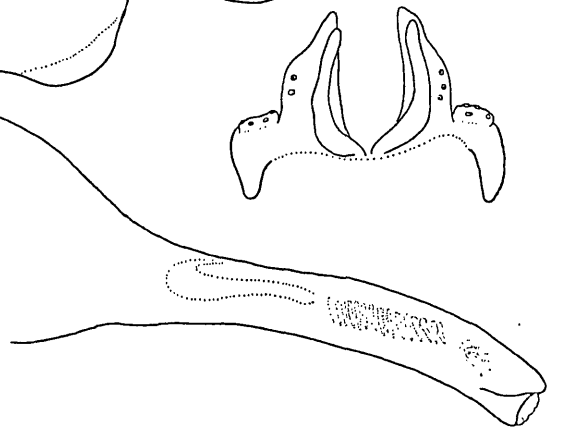
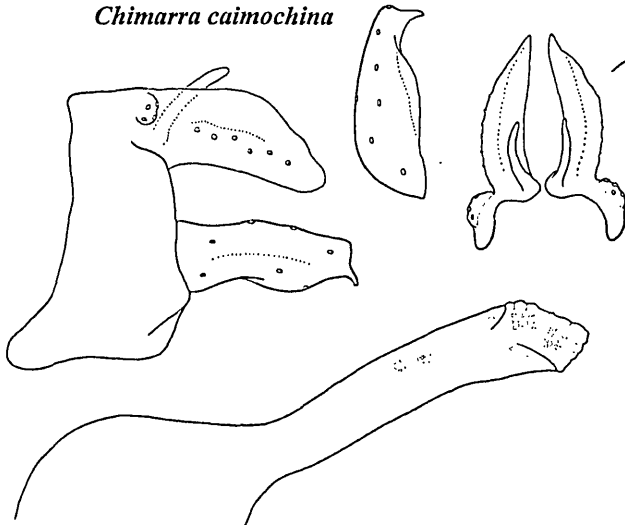
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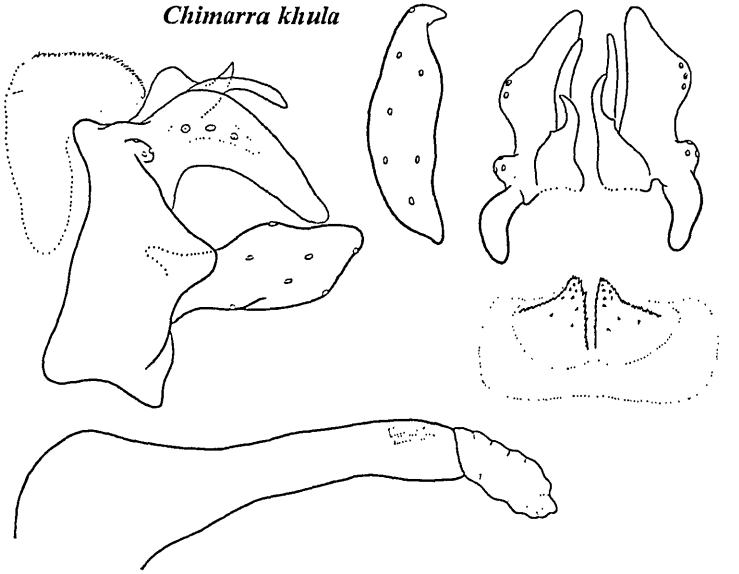
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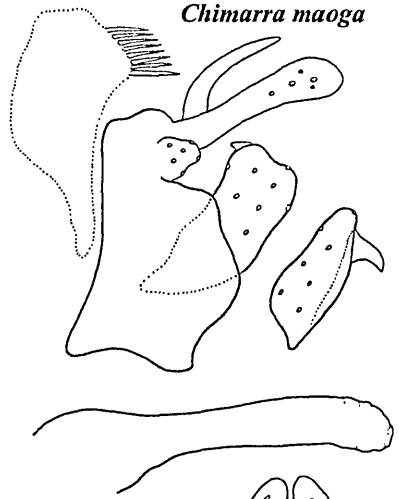
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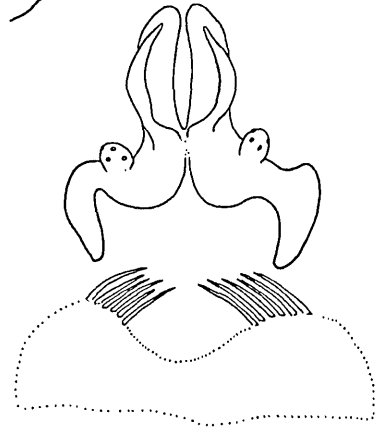
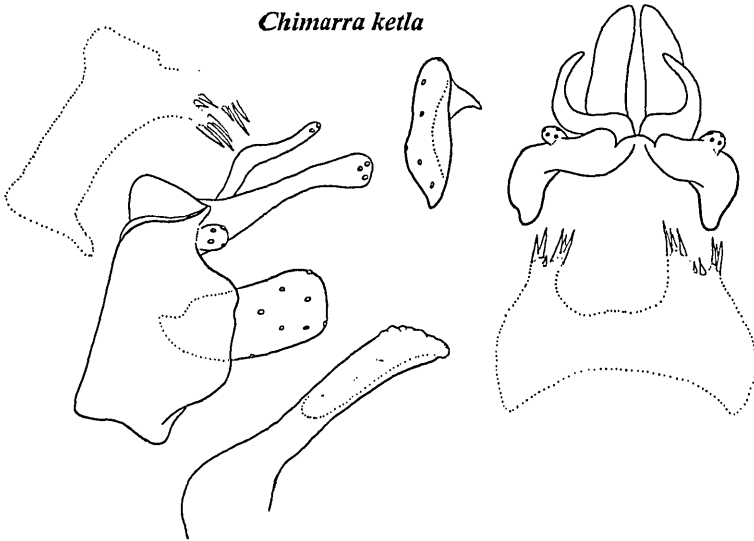
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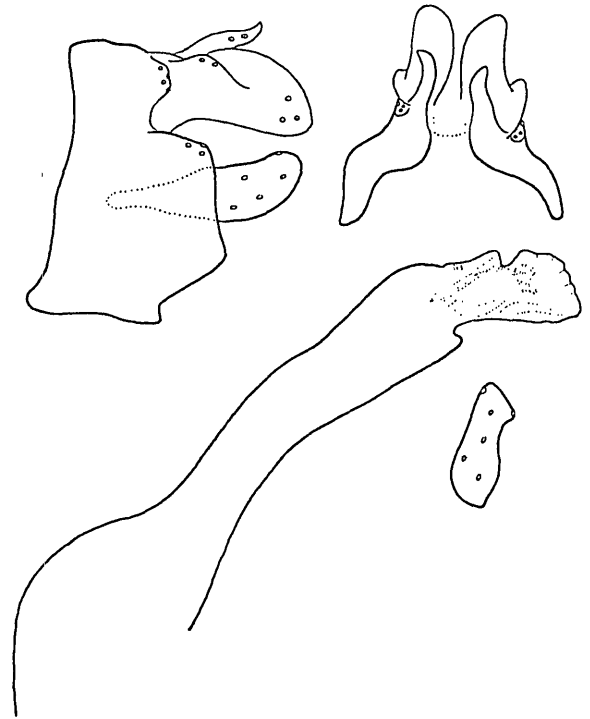
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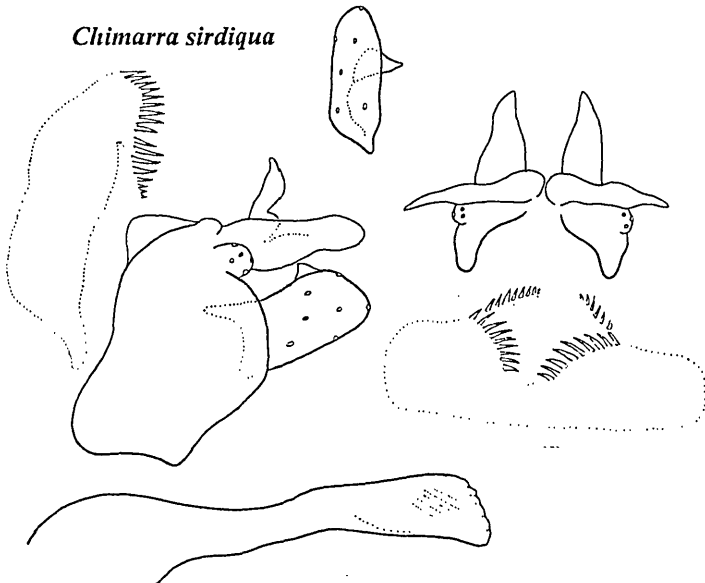
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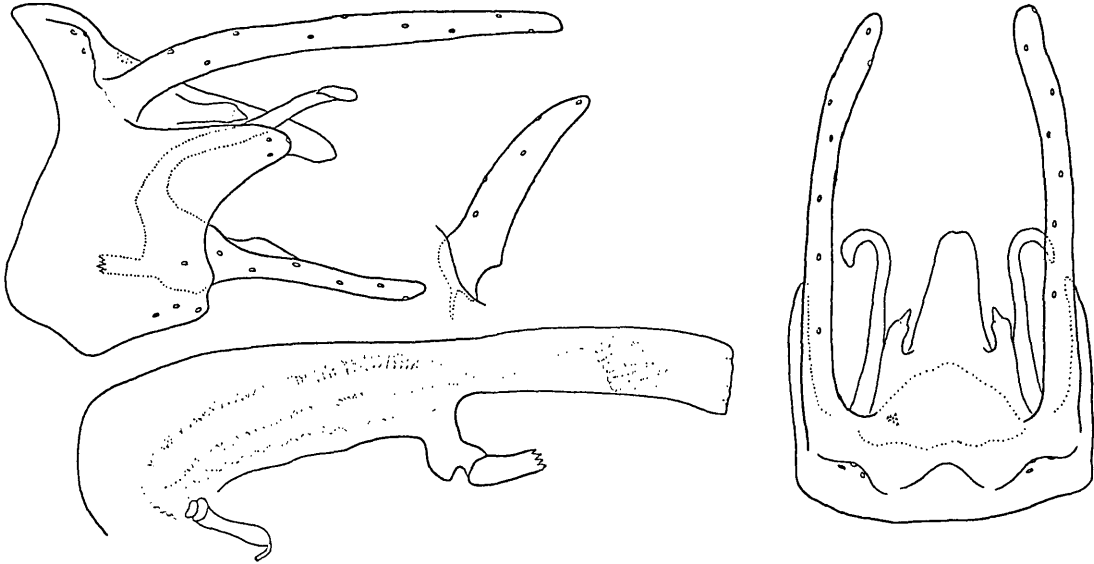
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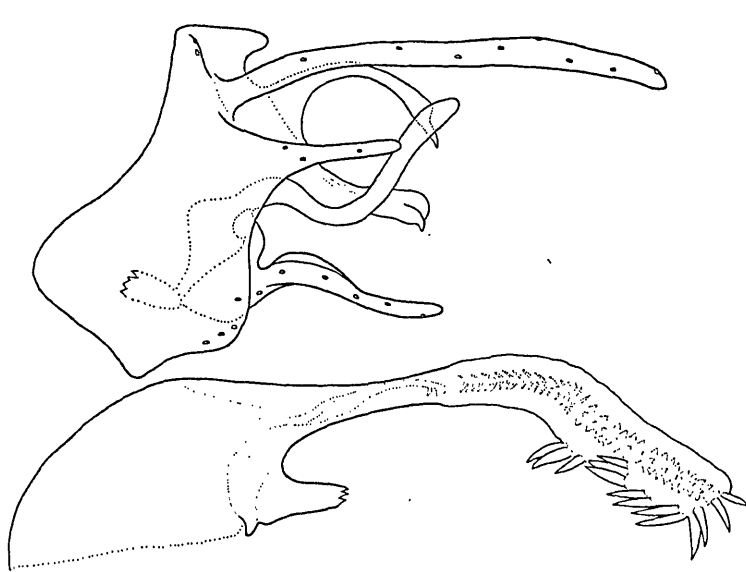
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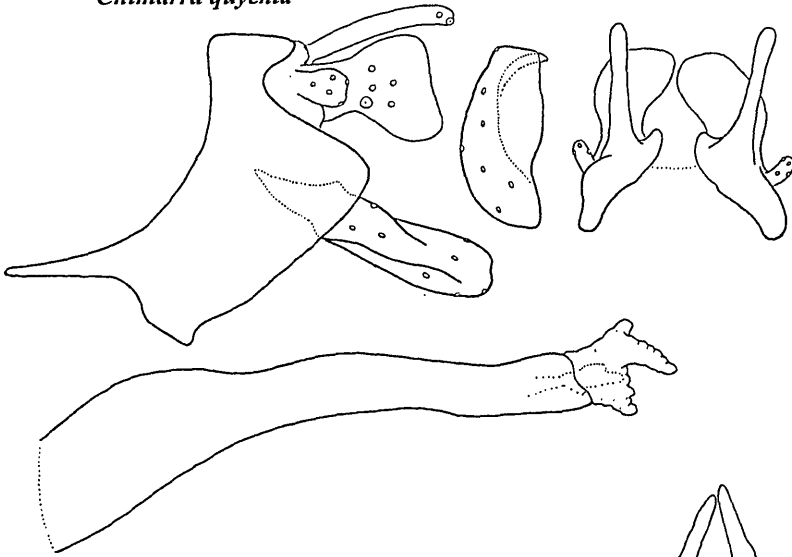
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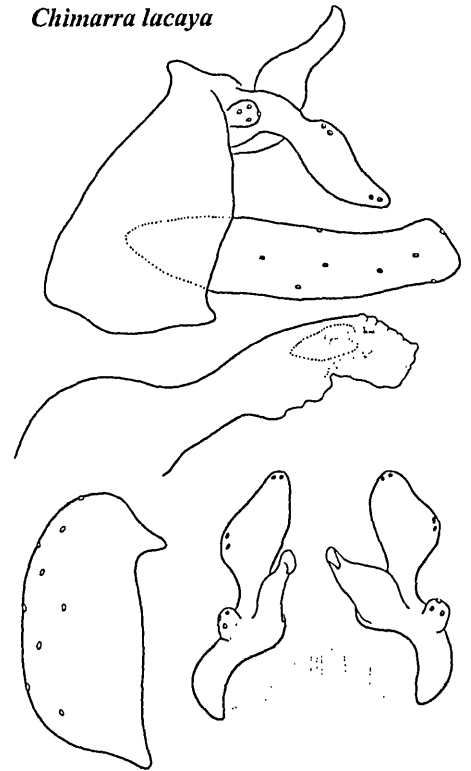
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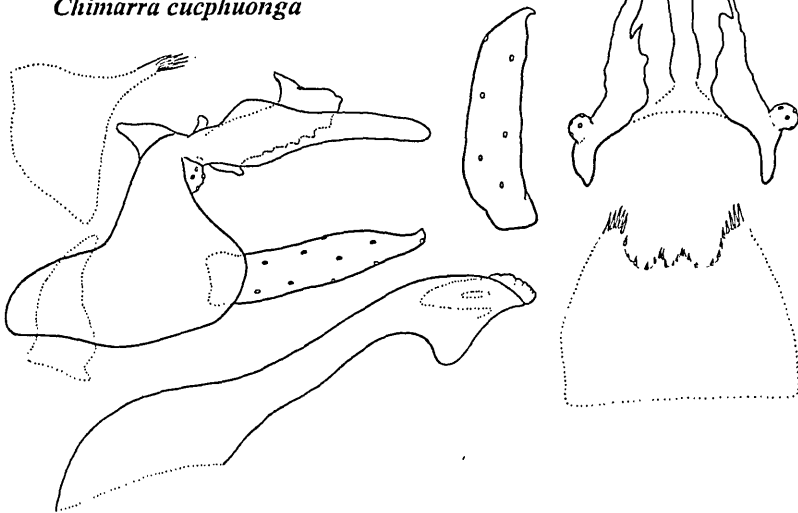
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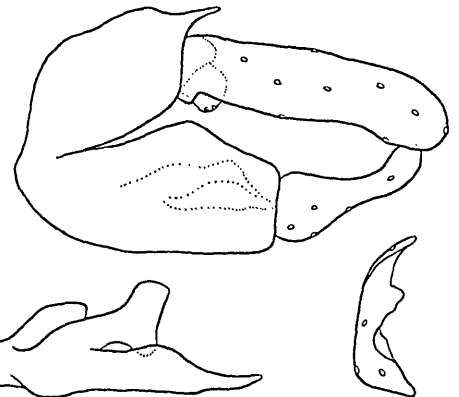
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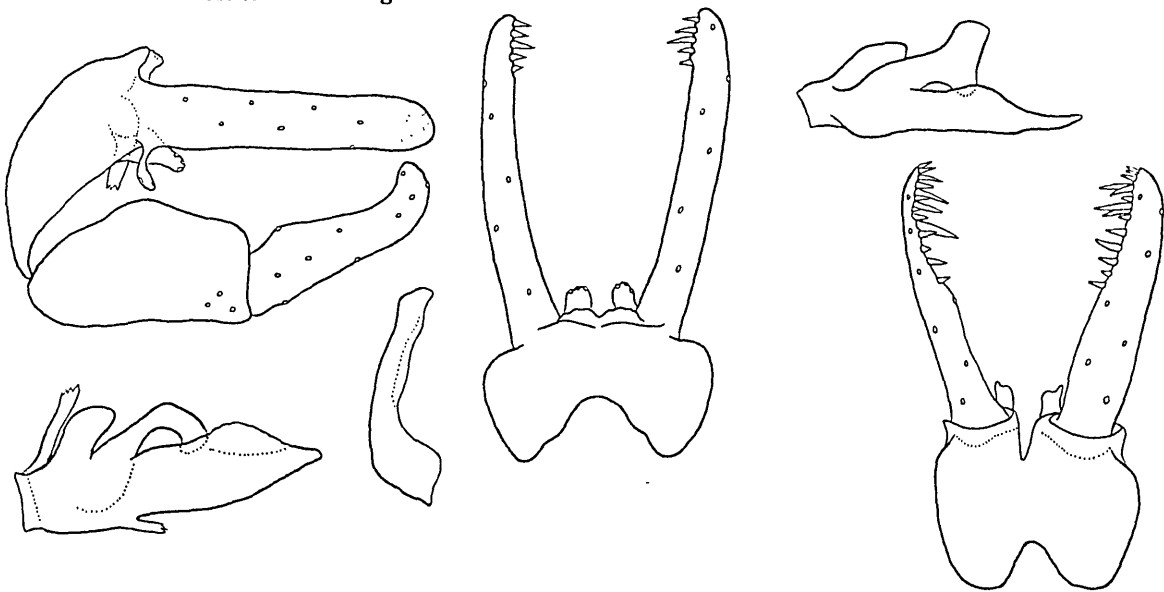
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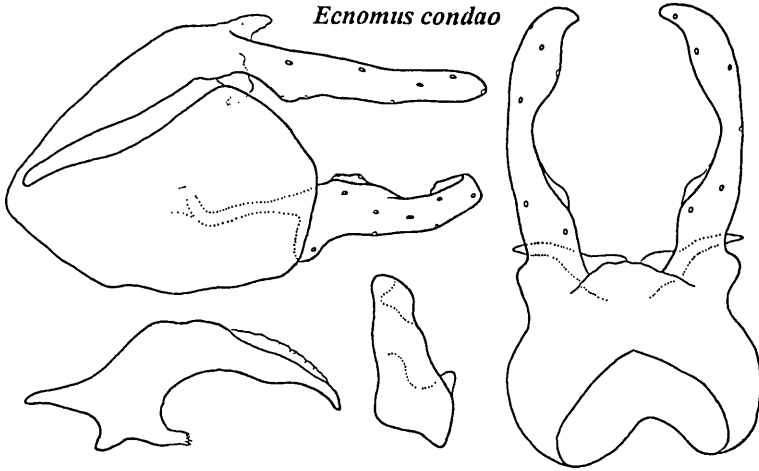
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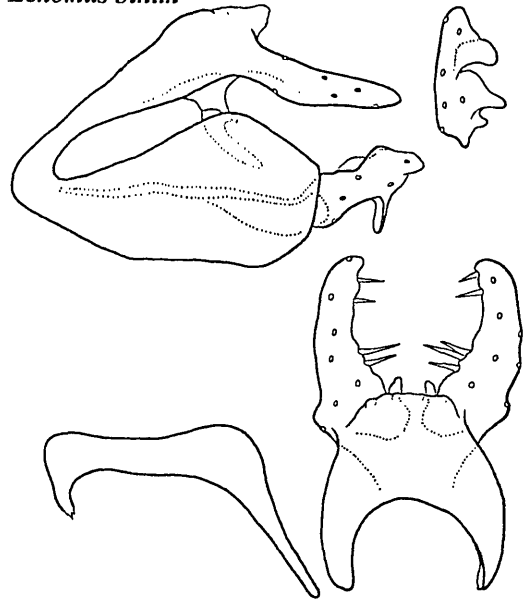
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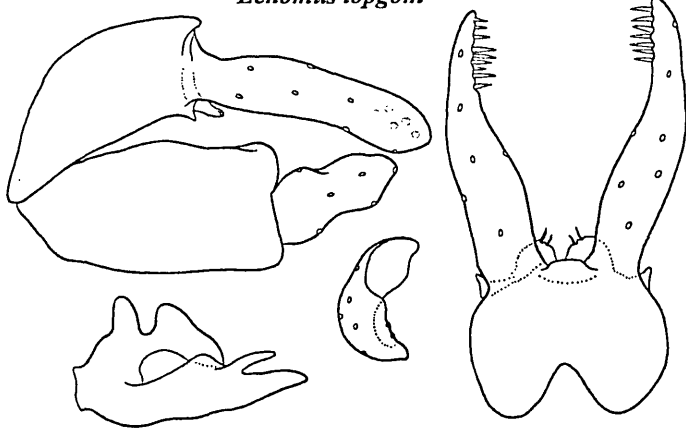
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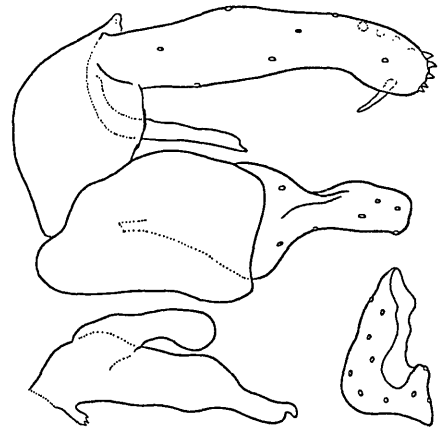
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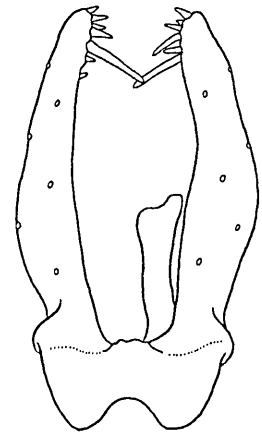
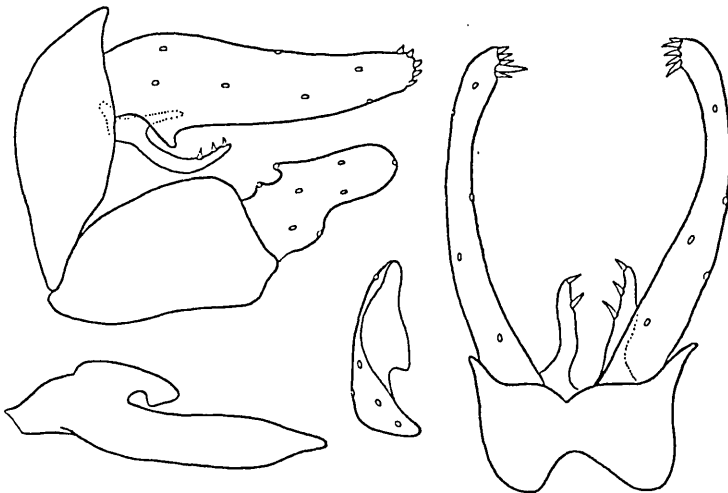
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*Ecnomus daibinh*

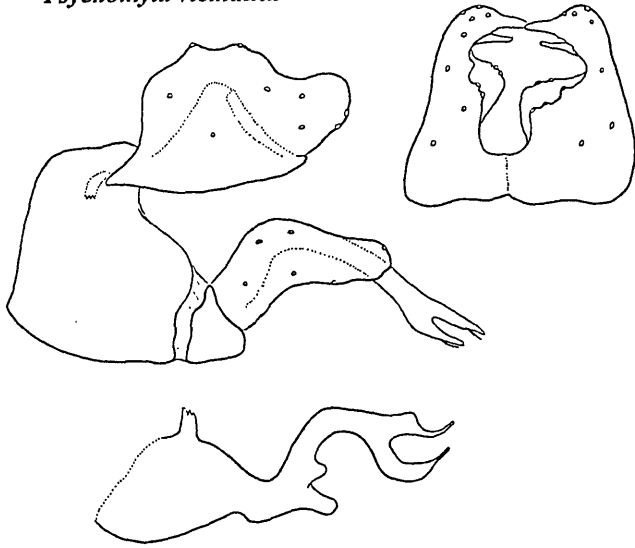


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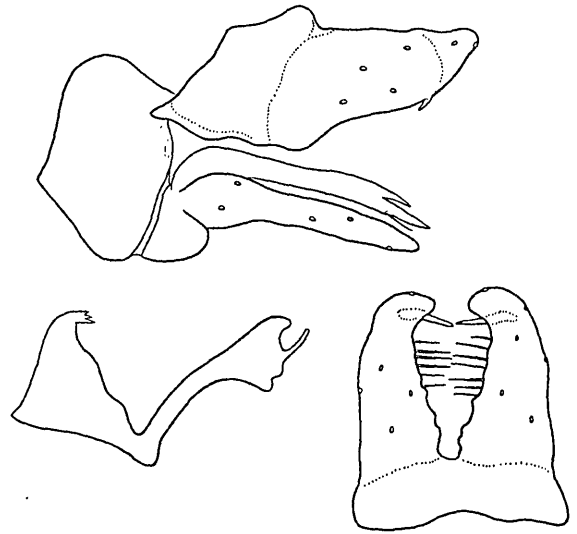




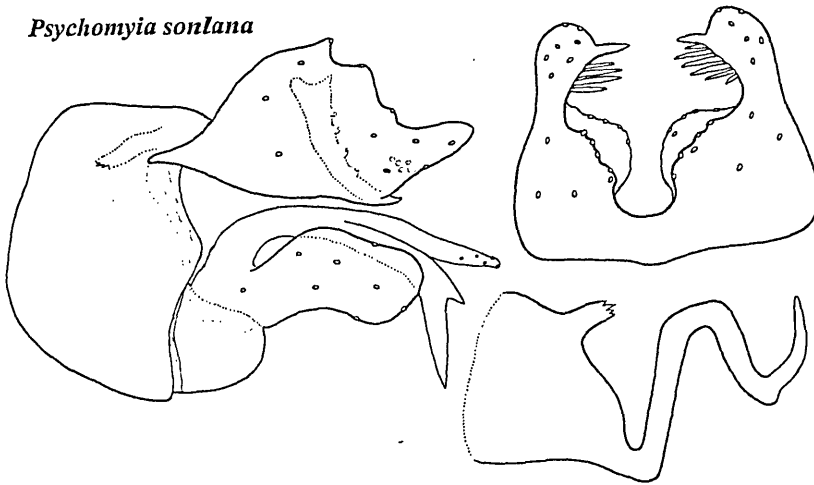
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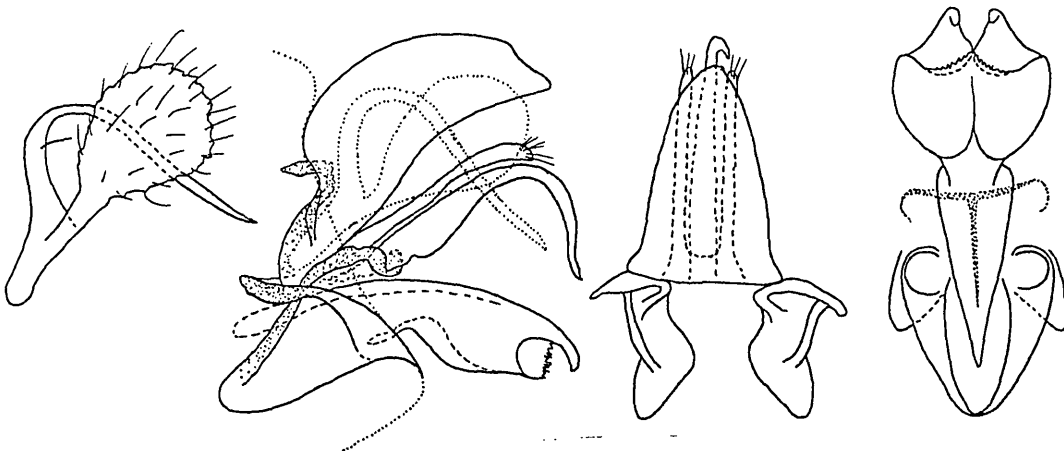
*Psychomyia bacthaia*



*Psychomyia sonlana*



*Tinodes dungdera*



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Digitale Literatur/Digital Literature

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Autor(en)/Author(s): Olah Janos, Malicky Hans

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