

Denisia	29	243-275	17.07.2010
---------	----	---------	------------

New Xiphocentronidae species from Vietnam (Insecta, Trichoptera)¹

J. OLÁH & K.A. JOHANSON

Abstract: The following new xiphocentronid species are described from Vietnam: *Melanotrichia trona*, *Cnodocentron filamenta*, *Drepanocentron dabac*, *D. dem*, *D. mochau*, *D. phuong*, *D. tamdaona*, *D. vang*, *D. vangiong*, *D. vongana*, *Abaria catba*, *A. cuna*, *A. damra*, *A. dehena*, *A. dogoca*, *A. trunga*, *A. hintragionga*, *A. hintraia*, *A. hintratra*, *A. nua*, *A. quangcha*, *A. ratgaya*, *A. tamgiaca* and *A. dunga*. New species records are presented for the following species: *Melanotrichia attiaides* MEY, *M. samaconius* MALICKY & CHANTARAMONGKOL and *Drepanocentron jiska* MALICKY.

Key words: Trichoptera, Xiphocentronidae, new species, Vietnam, *Abaria*, *Cnodocentron*, *Drepanocentron*.

Introduction

The family Xiphocentronidae ROSS includes nearly 150 previously described species divided into seven genera (MORSE 2009) and are primarily represented in the Oriental and Neotropical Regions. A few species also reach the Nearctic and Palearctic Regions, and a single species (*Abaria electa* MARLIER), is recorded from the Afrotropical Region. The family has so far not been recorded from the Australian Region. Records of the family from Vietnam are scarce, and only five species, *Abaria hamatit* MALICKY, *Drepanocentron jezer* MALICKY, *D. jimna* MALICKY, *D. jiska* MALICKY, and *Melanotrichia attiaides* MEY, were previously published from the country (MALICKY 2009, MEY 1998).

In Vietnam, xiphocentronids are infrequently attracted to light, and the majority of the species in this study were collected by sweeping net into vegetation near water.

Material and methods

This research project on the Vietnamese Xiphocentronidae is a product from a formal bilateral scientific cooperation between the Hungarian Academy of Sciences and the Scientific Centre of Vietnam, on exchanging cultural relations and biodiversity research. In this framework our aim is to explore the water and soil animal communities and invertebrate faunas at various localities in Vietnam (see details in MAHUNKA & OLÁH 1986). All findings presented below are results from this initiative.

¹ This paper is dedicated to Prof. Dr. Hans Malicky on the occasion of his 75th birthday.

The material was collected by the first-author in 1986-1988 at four different occasions (MAHUNKA & OLÁH 1986, MÉSZÁROS et al. 1987, MATSKÁSI et al. unpublished, MAHUNKA et al. 1989). In all 342 specimens in four genera (i.e. 200 specimens of *Melanotrichia* ULMER, 1 specimen of *Cnodocentron* SCHMID, 66 specimens of *Drepanocentron* SCHMID, and 75 specimens of *Abaria* MOSELY) were sampled. This sample represents 27 species, of which 24 are new to science. With this report, the known species diversity of Xiphocentronidae increased by 16 %.

The animals were mainly preserved in 70-80 % ethanol directly after being collected. The few pinned specimens were relaxed and transferred to ethanol after 12-16 hours of treatment in 1 % Na₃PO₄ solution. Details in the genitalia were examined after removing the entire abdomen which was placed in a small glass beaker of 25 cm³ volume in a 10 % KOH solution and boiled for 5-15 minutes. Treatment duration depended on the effectiveness of the clearing process and frequently checked under transmission light. The abdomen was subsequently transferred to distilled water and the macerated tissue removed using fine-tipped forceps and needles. Each cleared abdomen was transferred from 80 % ethanol to glycerine for examination in light microscope. Different sized pins with ringed basal part were introduced into the abdomen and used to hold and stabilize the genitalia in lateral, dorsal and ventral positions for illustration. Here we emphasize the importance of the plane and angle of view, which when vary may change the shape and ratio of structures considerably as demonstrated by MALICKY (1988). All genital structures were drawn exactly as seen in the microscope, and the drawings were prepared in left lateral view with separate drawings of the phallic organ. Separate drawings were produced of the left gonopod in ventral view and of segment X, cerci and paraproct in dorsal view. The genitalia were traced in pencil on white paper by using a drawing tube mounted on a WILD MZ3 microscope at 260x to 416x magnification. Final illustrations were prepared by enlarging the original pencil drawings and re-drawn on transparent paper in Black India Ink. The inked illustrations were scanned on an Epson expression 1680 Pro scanner in grayscale and 800 dpi resolution. The plates were finally arranged, and brightness and contrast edited in Adobe® Photoshop© 8.0 on a Macintosh G5.

The examination of the head and thoracic characters was carried out with animals in deep glycerine column, and by applying different sized pins with supporting basal ring to establish and stabilise the appropriate views. The head or thoracic details were drawn as seen in the microscope. In addition to the spur formula, we used a maxillary palp segment length formula to simplify the presentation of the length ratio of the 5 palpal segments. The segment sequence represents increasing segmental length, with equally long segments given in parenthesis. Careful studies of wing venation were carried out on the right wings permanently dry-mounted on microscope slides or on freshly detached right wings if permanent preparation was not available. The cut and denuded right wings were carefully manipulated under cover slips in a glycerine solution for optimal extension. The wing shape and pattern was presented as contour and dotted pattern lines. Colour information was not included in the drawings.

Species descriptions were standardized to ensure consistently formatted and comparable description according to EVENHUS (2007). The following terms were used to qualify the dimensions and extensions of genitalia structures: (1) *short* or *long* for length dimension on the longitudinal direction of coronal plane along the anteroposterior axis; (2) *low* or *tall* (traditionally *shallow* or *deep* especially for incisions) for height dimension on the vertical direction of the sagittal plane along the dorsoventral axis and (3) *narrow* or *wide* (broad) for width dimension on the lateral direction of the transversal plane along the mediolateral or left-right axis. The forewing length was given to indicate the size of the species.

The material in this study is stored in 80 % ethanol and deposited in Oláh Private Collection under national protection and belongs to the Hungarian Natural History Museum.

Results

All species described below have the characteristics given below, except when otherwise stated:

Head: with pair of enlarged frontal lateral compact setose warts dominating on face, occupying almost entire surface of frontal area; touching medially on posterior or dorsal section; separate and diverging laterad on anterior or ventral area. Head dorsum with four pairs compact setose warts: small postgenal compact setose warts; large occipital compact setose warts; vertexal ocellar compact setose warts; and vertexal lateroantennal compact setose warts. Single frontal interantennal compact setose wart shifted dorsad between scapes and coronal groove, delineated by frontal grooves. Compact setal warts absent on cervix and cervical sclerites. Maxillary palp formula: I-II-III-IV-V, gradually increasing in length from segment I to segment IV, segment V much shorter than segment I-II-III-IV together.

Thorax: Mesoprescutum narrowing posterad, separated by distinct sutures.

Melanotrichia attiaides MEY 1998

Type locality: Vietnam.

New records: Vietnam, Vinh Phuc Province, Tamdao, 1300 m, 20.i.1986, leg. J. Oláh, 122♂♂; Vietnam, Vinh Phuc Province, Tamdao, 1300 m, 11.x.1986, leg. J. Oláh, 61♂♂; Vietnam, Vinh Phuc Province, Tamdao, 1300 m, 10-12.v.1987, leg. J. Oláh, 4♂♂.

Melanotrichia samaconius MALICKY & CHANTARAMONGKOL 1992

Type locality: Thailand.

New record: Vietnam, Lamdong Province, Baoloc, Loc Chau stream, 24.x.1988, leg. J. Oláh, 11♂♂.

Melanotrichia trona nov.sp. (Figs 1-3)

This species is most similar to *Melanotrichia polydeukes* MALICKY from Indonesia (Borneo), from which it differs by having sternite IX more rounded along its ventral margin in lateral view; the cerci are thinner and elongate sigmoid with clavate apex; each gonopod has an apical, filiform process in right angle to the base of the harpagones in lateral view, not in obtuse angle.

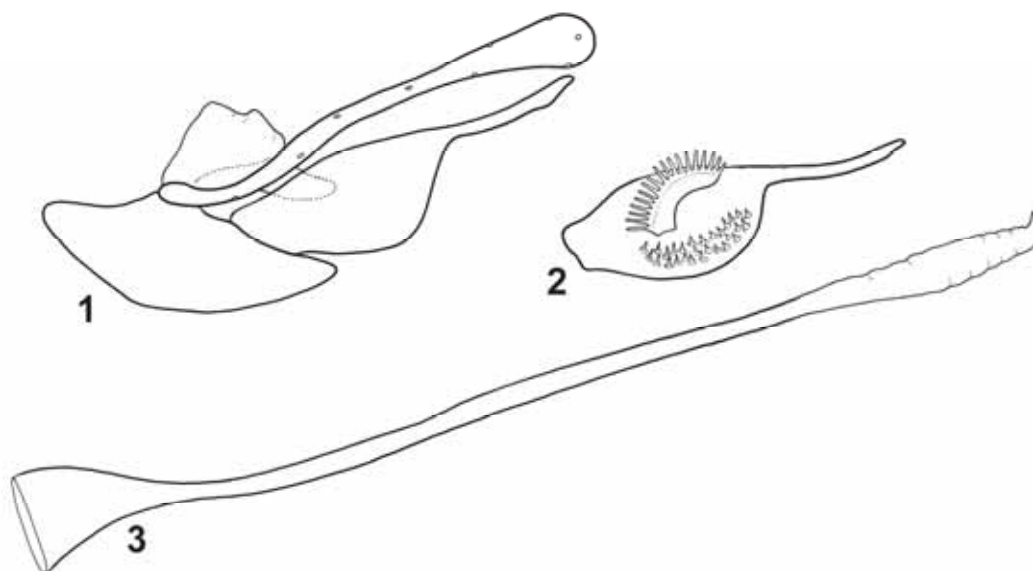
♂ small, pale brown in alcohol. Head pronotal and mesonotal sclerites brown, especially at mesoprescutum. Maxillary palp formula I-III-II-IV-V, segment I very short, segment IV shorter than sum of segments I-II-III. Mesoprescutum longer than broad, rounded subquadrangular, divided by median suture. Proepisternal setal warts present. Spur formula 243; hind legs with unmodified apical spur. Forewing 3.6 mm; fork 2 and fork 4 present; fork 2 long, point of bifurcation of R4+5 sessile at crossveins; three anal veins present; thyridial cell wider and longer than discoidal cell. Hind wing fork 2 and fork 5 present.

♂ genitalia (Figs 1-3): Body of sternite IX longer than high in lateral view; anterior and posterior parts sharply triangular; tergite IX weakly sclerotized, dorsum supplied with small, trans-

verse ridge visible in lateral view (Fig. 1). Segment X weakly sclerotized, elongate, located low in lateral view (Fig. 1); basal part orienting ventrad to fulcrum. Paraproctal structures invisible. Cerci slender, elongate, slightly sigmoid in lateral view; apex clavate. Coxopodites and harpagones fused, without visible separating sutures. Digitate apical process of harpagones filiform, slightly dilated subapically, joining basal body of harpagones in almost right angle; spinate, mesal sclerite narrow, falciform (Fig. 2). Phallic organ (Fig. 3) long, thin, straight; phallobase wide; endotheca membranous, aedeagus slightly dilated and curving dorsad at apex.

H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh. P a r a t y p e : same data as holotype, 1♂.

E t y m o l o g y . *Trona*, derived from "tron", round in Vietnamese, refers to many rounded structures in the genitalia: the ventral margin of sternite IX; the ventral margin of the gonopods; and the clavate apex of the cerci.



Figs 1-3: *Melanotrichia trona* nov.sp., holotype. (1) Genitalia, lateral view.(2) Gonopods, mesal view. (3) Phallic organ, lateral view.

***Cnodocentron filamenta* nov.sp. (Figs 4-8)**

This new species is most similar to *Cnodocentron brogimarus* MALICKY & CHANTARAMONGKOL from Thailand, from which it differs in having tergite IX produced into a single long filament; the body of sternite IX is higher than long in lateral view; the anterior margins of sternite IX are deeply concave; the pair of ventromesal, long, filiform processes are more sigmoid and converging in ventral view; segment X is more elongate and located low in genitalia in lateral view; the gonopods have differently shaped two-branched coxopodite and simple harpago; the lateral branch of the coxopodites are more angled in ventral view; the mesal branch of the coxopodites is sigmoid in lateral and ventral view, with simple, rounded monolobed apex; the one-branched and elongate harpagones have subapical area with short and mesad directed spines and middle area with long and obliquely directed spines. In *C. filamenta* both forewings and hind wings have short fork 2, the point of bifurcation of R4+5

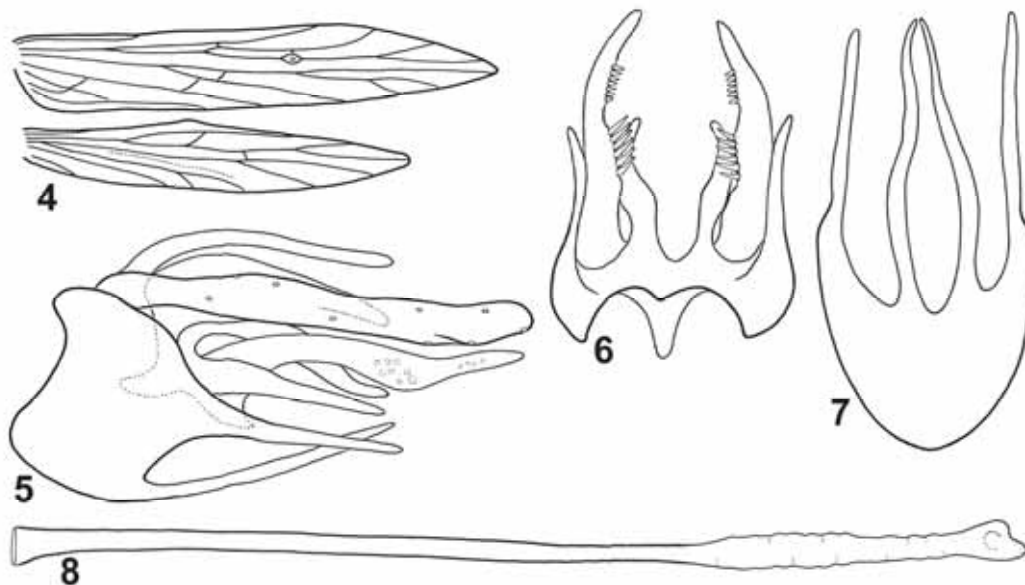
is located well apically of crossvein r-m. The other known species having short hind wing fork 2 is *Cnodocentron tchaturbhujia* SCHMID from India.

♂. Body small, pale brown. Pronotal and mesonotal sclerites brown, especially at mesoprescutum. Maxillary palp formula: I-(II-III)-IV-V; segment IV shorter than sum of segments I-III. Mesoprescutum longer than broad, rounded rectangular, narrowing posterad, divided by median suture. Proepisternal setal warts present. Spur formula 243; hind leg apical spur not modified. Wings (Fig. 4): forewings 3.6 mm; fork 2 and fork 4 present; fork 2 short, with point of bifurcation of R4+5 well apically of crossvein s; three anal veins present; thyridial cell shorter than length of discoidal cell. Hind wings with fork 2 and fork 5; fork 2 short due to bifurcation of R4+5 apically of crossvein r-m.

♂ genitalia (Figs 5-8). Body of sternite IX higher than long in lateral view (Fig. 5); anterior margins deeply concave, posterior margins produced into pair of lateral and mesoventral, long filiform process; mesoventral pair of processes undulating posterad in ventral view (Fig. 7), with converging apices; tergite IX modified into long, simple, filiform, weakly sclerotized process. Segment X elongate, located low in lateral view (Fig. 5); basal part turning ventrad to fulcrum and basal plate of gonopods. Paraproctal structures indiscernible. Cerci elongate, slightly cleft on subapical ventrum. Each gonopod composed of long, filiform, two-branched coxopodite and long, filiform, single-branched harpago; mesal branch of coxopodites slightly sigmoid in lateral and ventral view (Figs 5, 6); harpagones originate between lateral and mesal branch of coxopodites; armed with two rows of different types of spines on mesal surface: subapical spines short, directed mesad; spines in apical row long, obliquely directed. Phallic organ long, thin, straight (Fig. 8); phallosome with membranous endotheca and slightly dilated aedeagus.

H o l o t y p e ♂. Vietnam, Vinh Phuc Province, Tamdao, 1300 m, forested stream, 12.v.1987, leg. J. Oláh.

E t y m o l o g y . *Filamenta*, name derived from filiform, refers to the unusually strong-elongating structures in the genitalia.



Figs 4-8: *Cnodocentron filamenta* nov.sp., holotype. (4) Right wings. (5) Genitalia, lateral view. (6) Genitalia, dorsal view. (7) Genitalia, ventral view. (8) Phallic organ, lateral view.

Drepanocentron jiska MALICKY 2009

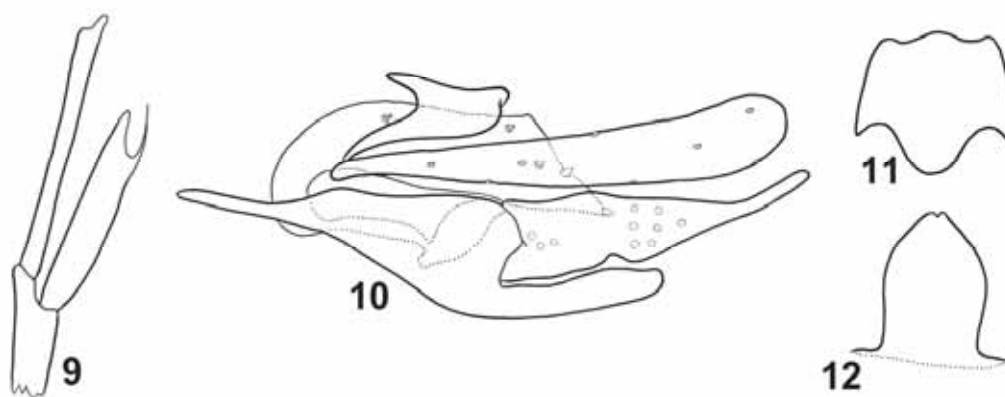
Type locality: Vietnam.

New records: Vietnam, Vinh Phuc Province, Tamdao, 1300 m, 13-16.x.1986, leg. J. Oláh, 25 ♂♂;
Vietnam, Vinh Phuc Province, Tamdao, 1300 m, 10-12.v.1987, leg. J. Oláh, 6 ♂♂.

Drepanocentron dabac nov.sp. Figs (9-12)

This species is similar to *Drepanocentron mochau* nov.sp. described below. It is separated from *D. mochau* in the dorsal view of the genitalia, in the shape of the posterior margin of tergite IX, involving a short, mesal, rounded lobe and pair of short, rounded, lateral lobes; the ventroapical mesal plate of sternite IX with more triangular apex in ventral view; segment X with five pairs of short, stout, black spines; and the phallic organ being indiscernible and hidden inside segment X and paraproctal plates. In addition, the modified apical spur on the hind legs has a wider incision between the spur apex and the outer process.

♂. Body small, pale brown. Dorsal thoracic sclerites pale brown, setal warts on head and thorax paler, grooves dark. Maxillary palp formula: I-III-II-IV-V, segment IV slightly longer than sum of segments I-III. Mesoprescutum longer than broad. Proepisternal setal warts present, with long, stout setae. Spur formula 243; apical spur on hind legs modified (Fig. 9), with needle-like, small, subapical outer process slightly longer than apex of spur; apex of spur blunt; outer, spine-like process evenly slender along its length, except broad at basis; area enclosed by spur apex and subapical process wide and parallel-sided. Wings: Forewings 3.4 mm; two anal veins present; thyridial cell slightly shorter and much narrower than discoidal cell.



Figs 9-12: *Drepanocentron dabac* nov.sp., holotype. (9) Modified spur on left hind leg. (10) Genitalia, lateral view. (11) Tergite IX, dorsal view. (12) Ventroapical mesal plate of sternite IX, ventral view.

♂ genitalia (Figs 10-12). Abdominal segment IX forming large, robust, almost tripartite sternite and smaller, sclerotized tergite. Sternite IX wide at mid-length (Fig. 10), anterior apodeme filiform, straight. Ventroapical mesal plate tongue-shaped in ventral view (Fig. 12), slightly constricted at base; apex triangular. Tergite IX with mesal rounded short lobe on apical margin in dorsal view (Fig. 11). Tergite X with five pairs of short, pointed, stout, black spines; three spine pairs located on ventral apex. Almost membranous paraproctal plates present inside hood of segment X and along phallic organ, forming indistinct continuation of segment X. Elongate anterior arms of tergite IX, tergite X, paraprocts and cerci meeting at fulcrum around

dorsal hump of sternite IX. Cerci elongate, clavate, broadening gradually along their length. Coxopodites and harpagones fused, without sutures, constricted at ventral margin indicating origin of harpagones; digitate apical process of harpagones short, slightly turning dorsad. Mesal spiny area present on basis of harpagones; few short, stout, black spines present on mesal face of coxopodites. Basal plate broad, sigmoid in lateral view; associated with pair of sclerotized straps connecting basal plate to fulcrum. Phallic organ indiscernible.

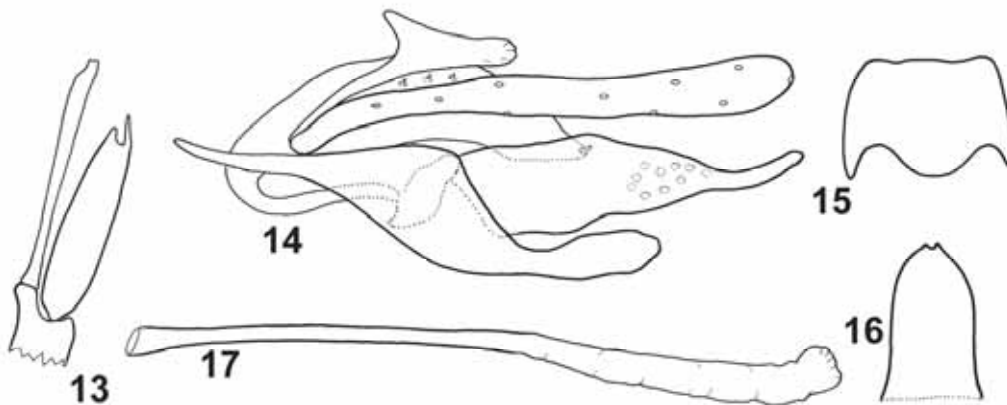
H o l o t y p e ♂. Vietnam, Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, leg. J. Oláh.

E t y m o l o g y . *Dabac*, named after the type locality.

***Drepanocentron dem nov.sp.* (Figs 13-17)**

This species is similar to *Drepanocentron tamdaona* nov.sp. described below. It differs from *D. tamdaona* by having slightly concave apical margin of tergite IX; the ventroapical mesal plate of sternite IX with a tiny bifid apicomesal lobe in ventral view, not with deep apicomesal incision; segment X with five pairs of spines with different location; harpagones with mesal spiny area of different shape; and gonopods with a more convex dorsal margin in lateral view.

♂. Small pale brown animal. Head pronotal and mesonotal sclerites dark brown, especially mesoprescutum. Maxillary palps with segment IV slightly shorter than sum of segments I-II-III. Mesoprescutum longer than broad, rounded subquadrangular, divided by median suture. Proepisternal setal warts present. Spur formula 243; modified apical spur on hind legs (Fig. 13) with small, needle-shaped subapical outer process, slightly longer than apical end of spur; area between spur apex and subapical process nearly rectangular. Wings: forewing length 3.9 mm; two anal veins present; thyridial cell slightly shorter than discoidal cell.



Figs 13-17: *Drepanocentron dem* nov.sp., holotype. (13) Modified spur on left hind leg. (14) Genitalia, lateral view. (15) Tergite IX, dorsal view. (16) Ventroapical mesal plate of sternite IX, ventral view. (17) Phallic organ, lateral view.

♂ genitalia (Fig. 14-17). Segment IX with large, robust, tripartite sternite and smaller tergite; lateral sides of sternite IX with high, rhomboid middle body, filiform anterior apodeme and well-developed ventroapical mesal plate (Fig. 14); ventroapical mesal plate simple, linguiform, with slightly constricted base and tiny bifid apicomesal projection in ventral view (Fig. 16); tergite IX fused with tergite VIII, but more pigmented with well-defined margins (Fig. 15); apical margin slightly concave, anterior margin with short, rounded mesal lobe.

Segment X with five pairs short, stout, pointed, black spines, four spines located near dorsal margin. Paraproctal plates inside hood of segment X and along phallic organ membranous, nearly indiscernible. Anterior arms of tergite IX, segment X, paraprocts and cerci meeting at fulcrums around dorsal hump of sternite IX. Cerci elongate, slightly broadening apicad, weakly clavate. Coxopodites and harpagones fused, without visible sutures; ventral constriction indicating border between coxopodite and harpago in lateral view; digitate apical process of harpagones slightly curving dorsad, with slightly clavate apex. Mesal spines present on basal part of harpagones; few short, stout, black spines present near base of coxopodites; basal plate broadly sigmoid in lateral view, producing pair of short sclerotized straps connecting basal plate to fulcrum. Phallic organ (Fig. 17) long, thin; phallosome particularly slender; broadened membranous endotheca without discernible spines, followed by short aedeagus.

H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, cave entrance, 23.v.1987, leg. J. Oláh.
P a r a t y p e s : same data as holotype, 3♂♂.

E t y m o l o g y . *Dem*, night in Vietnamese, referring to the dark cave entrance where the species was collected by sweeping net.

***Drepanocentron mochau* nov.sp. (Figs 18-22)**

This species is similar to *Drepanocentron phuong* nov.sp. described below. It differs from *D. phuong* by having apical margin of tergite IX more straight-cut to slightly concave in dorsal view; the ventroapical mesal plate of sternite IX being apically sloping, not parallel-sided in ventral view; segment X with only five pairs of short, stout, black spines; the phallic organ with only a pair of stout spines present within the endotheca; the modified apical spur on the hind legs have longer and thinner subapical, pointed, outer process; the spur apex being more pointed; and the gap between the spur apex and the outer process is very narrow.

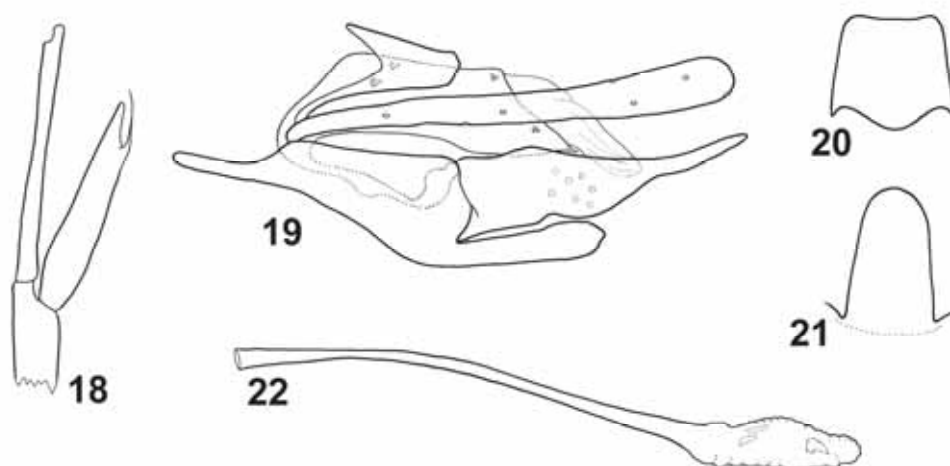
♂. Body small, pale brown. Dorsal thoracic sclerites pale brown, setal warts on head and thorax nearly yellowish-brown, grooves dark brown. Maxillary palp formula: I-III-II-IV-V, segment IV slightly longer than sum of segments I-III. Mesoprescutum longer than broad. Propisternal setal warts present, with long, stout setae. Spur formula 243; modified apical spur on hind legs (Fig. 18) with needle-like, small, subapical outer process slightly longer than spur apex; spur apex blunt; outer process evenly slender along its length, except broad at base; gap between spur apex and subapical process wide, parallel-sided. Forewing length 4.5 mm; with two anal veins; thyridial cell slightly shorter and narrower than discoidal cell.

♂ genitalia (Figs 19-22). Segment IX represented by robust, tripartite sternite and small tergite (Fig. 19). Body of sternite IX subtriangular at middle in lateral view; anterior apodeme filiform, ventroapical mesal plate well-developed. Ventroapical mesal plate tongue-shaped and slightly narrowing posteriorly, without mesoapical incision (Fig. 21); tergite IX with truncate to weakly concave posterior margin (Fig. 21). Segment X with five pairs of black, short, pointed, stout spines. Almost membranous paraproctal plates present inside hood of segment X and along phallic organ, forming indistinct continuation of segment X. Elongate anterior arms of tergite IX, segment X, less sclerotized paraprocts and cerci meeting at fulcrums around dorsal hump of sternite IX. Cerci elongate, clavate, broadening gradually from basal one-third to apex. Coxopodites and harpagones fused, without visible suture; ventral constriction indicating border in lateral view; digitate apical process of harpagones slightly curving dorsad; few short, stout black spines present on mesal base of coxopodites; basal plate sigmoid in lateral view, producing pair of sclerotized straps connecting basal plate to fulcrum. Phallic

organ (Fig. 22) with long, thin phallosome; one pair of spines present in endotheca; ending in short, broad membranous aedeagus.

H o l o t y p e ♂. Vietnam, Son La Province, Moch Chau, 26.x.1986, light, leg. J. Oláh.

E t y m o l o g y . *Mochau*, name derived from the type locality.



Figs 18-22: *Drepanocentron mochau* nov.sp., holotype. (18) Modified spur on left hind leg. (19) Genitalia, lateral view. (20) Tergite IX, dorsal view. (21) Ventroapical mesal plate of sternite IX, ventral view. (22) Phallic organ, lateral view.

***Drepanocentron phuong* nov.sp. (Figs 23-27)**

This new species resembles *Drepanocentron mochau* nov.sp. described above. It differs in having a concave posterior margin of tergite IX with V-shaped incision as seen in dorsal view; the ventroapical mesal plate of sternite IX being parallel-sided in ventral view; segment X with eight pairs of black, short, stout spines; the phallic organ with three pairs of tiny spines in the endotheca; the modified apical spur on the hind legs has shorter and thicker outer process; each modified spur has a more blunt apex; and each modified spur has a broader gap between the apex and the outer process.

♂. Body small, pale brown. Setal warts on head and thorax with dark brown grooves. Maxillary palp formula: I-III-II-IV-V; segment IV slightly longer than sum of segments I-III. Mesoprescutum longer than broad. Proepisternal setal warts present, with long, stout setae. Spur formula: 243; modified apical spur on hind legs (Fig. 23) with small, needle-shaped, subapical outer process, slightly longer than apical end of spur; spur apex blunt; outer spine-like process evenly slender along its length, except broad at base; gap between spur apex and subapical process wide, parallel-sided. Forewing length 4.0 mm; with two anal veins; thyridial cell narrower and slightly shorter than discoidal cell.

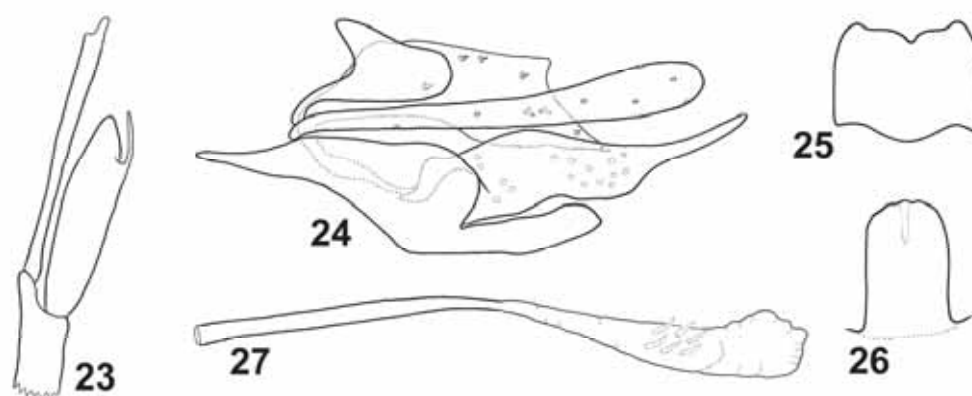
♂ genitalia (Figs 24-27). Segment IX forming robust, tripartite sternite and smaller tergite (Fig. 24). Sternite IX nearly triangular in lateral view; anterior apodeme filiform; ventroapical mesal plate well-developed. Ventroapical mesal plate, in ventral view (Fig. 26), tongue-shaped, parallel-sided, without mesoapical excision. Tergite IX with irregular concave posterior margin in dorsal view (Fig. 25). Segment X with eight pairs black, short, stout, pointed

spines (Fig. 24). Membranous paraproctal plates inside hood of segment X and along phallic organ almost indiscernible. Elongate anterior arms of tergite IX, segment X, less sclerotized paraprocts, and cerci meeting at fulcrum around dorsal hump of sternite IX. Cerci elongate and clavate, broadening abruptly from basal one-third to apex. Coxopodites and harpagones fused, without visible suture, ventromarginal constriction indicating border in lateral view; digitate apical process of harpagones slightly curving dorsad; few short, stout black spines present on mesal base of coxopodites. Basal plate sigmoid in lateral view, produced into pair of sclerotized straps connecting basal plate to fulcrum. Phallic organ (Fig. 27) long, thin; phallotheca slender; posterior part wider; three pairs slender spines present within endotheca; ending in short, broad membranous aedeagus.

H o l o t y p e ♂. Vietnam, Ninh Binh Province, Cucphuong National Park, 400 m, 18.x.1986, leg. J. Oláh.

P a r a t y p e : same data as holotype, 1♂ (OPC, in alcohol).

E t y m o l o g y . *Phuong*, named after the type locality.



Figs 23-27: *Drepanocentron phuong* nov.sp., holotype. (23) Modified spur on left hind leg. (24) Genitalia, lateral view. (25) Tergite IX, dorsal view. (26) Ventroapical mesal plate of sternite IX, ventral view. (27) Phallic organ, lateral view.

***Drepanocentron tamdaona* nov.sp. (Figs 28-32)**

This species is similar to *Drepanocentron jubal* MALICKY & CHANTARAMONGKOL from Thailand, from which it differs by having a convex apical margin of tergite IX in dorsal view; the ventroapical mesal plate of sternite IX being constricted at mid-length in ventral view; the segment X with five pairs of short, stout and black spines; and the phallic organ lacking discernible spines, both in the endotheca and in the aedeagus .

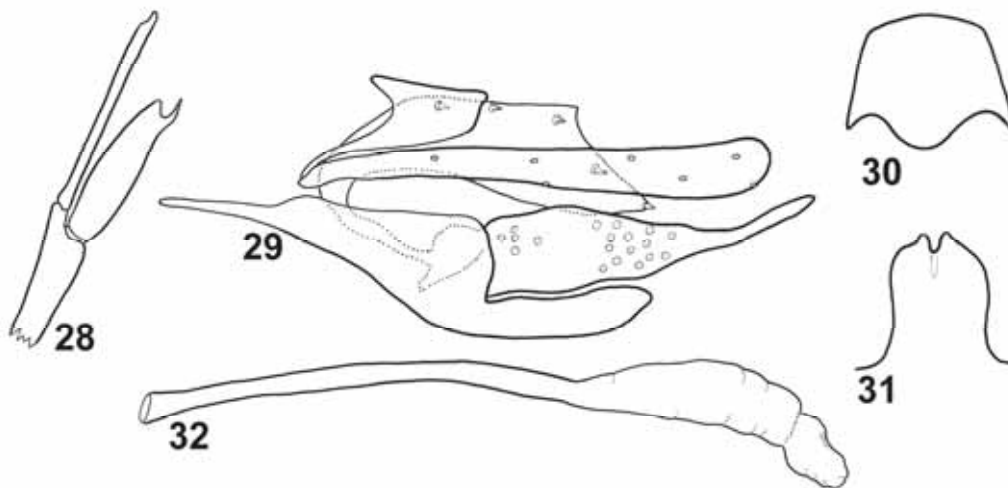
♂. Body small, pale brown. setal warts on head and thorax with dark brown grooves. Maxillary palp formula: I-III-II-IV-V, segment IV slightly longer than sum of segments I-II-III. Mesoprescutum longer than broad. Proepisternal setal warts present, with long, stout setae. Spur formula: 243; modified apical spur on hind legs (Fig. 28) with small, needle-shaped, subapical outer process, slightly longer than spur apex; gap between spur apex and subapical process V-shaped. Wings: forewing length 4.2 mm; with two anal veins; thyridial cell slightly shorter and much narrower than discoidal cell.

♂ genitalia (Figs 29-32). Segment IX forming robust, tripartite sternite and smaller tergite (Fig. 29). Sternite IX, in lateral view, composed of nearly triangular middle body, filiform

anterior apodeme and well-developed ventroapical mesal plate; ventroapical mesal plate with deep, narrow mesoapical excision on produced median lobe, and with slightly constricted base in ventral view (Fig. 31); tergite IX with convex apical margin in dorsal view (Fig. 30). Segment X armed with five pairs of black, short, stout, pointed spines (Fig. 29). Less sclerotized paraproctal plates inside hood of segment X and along phallic organ almost indiscernible. Elongate anterior arms of tergite IX, segment X, paraprocts, and cerci meeting at fulcrum around dorsal hump of sternite IX. Cerci elongate, clavate, broadening gradually apically along their length. Coxopodites and harpagones without visible separating suture; digitate apical process of harpagones turning dorsad from slightly geniculate ventrum; besides spines on mesal area basally on harpagones, few short, black, stout spines present on mesal basement of coxopodites (Fig. 29); basal plate rounded in lateral view, producing pair of sclerotized straps connecting basal plate to fulcrum. Phallic organ (Fig. 32) without spines; long, thin, especially at phallosheath, followed by broader endotheca ending in short aedeagus.

H o l o t y p e ♂. Vietnam, Vinh Phuc Province, Tamdao, 1400 m, 13.x.1986, leg [J. Oláh]. **P a r a t y p e s**: same data as holotype, 7♂♂; Vietnam, Vinh Phuc Province, Tamdao, 1300 m, 10.v.1987, leg. J. Oláh, 2♂♂.

E t y m o l o g y. *Tamdaona*, derived from the type locality.



Figs 28-32: *Drepanocentron tamdaona* nov.sp., holotype. (28) Modified spur on left hind leg. (29) Genitalia, lateral view. (30) Tergite IX, dorsal view. (31) Ventroapical mesal plate of sternite IX, ventral view. (32) Phallic organ, lateral view.

***Drepanocentron vang* nov.sp. (Figs 33-37)**

This species is most similar to *Drepanocentron vangiong* nov.sp. described below, from which it differs by having convex apical margin tergite IX in dorsal view, not concave; the ventroapical mesal plate of sternite IX with tiny apicomeral lobe as seen in ventral view, not bifid; harpagones without serrate ventral margin; and modified apical spur on hind legs with longer falciform, spiny, terminal process.

♂. Body small, pale brown. Head dorsum pale, almost white. Pronotal and mesonotal sclerites dark brown; mesoprescutum enlarged. Maxillary palps with segment IV slightly shorter than segments I-II-III together. Mesoprescutum as broad as long, rounded subquadrangular, divided

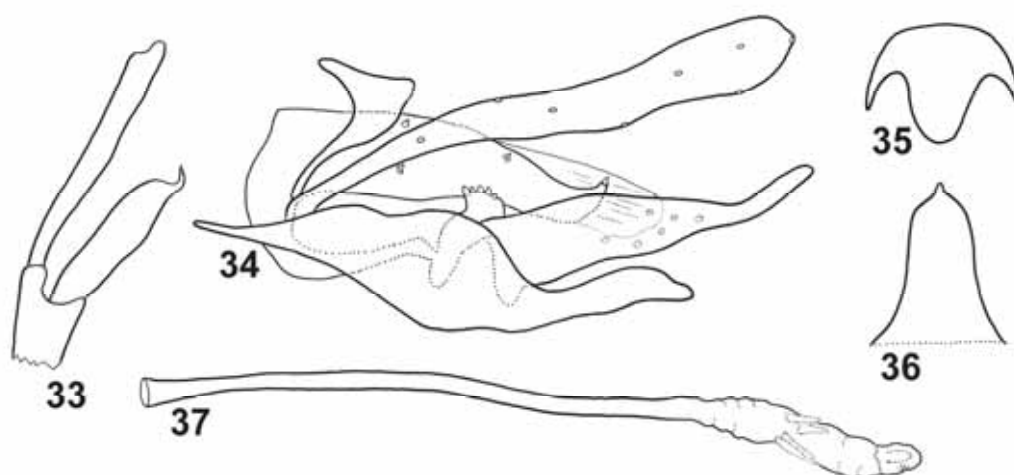
by median suture. Proepisternal setal warts present. Spur formula 243; modified apical spur on hind legs (Fig. 33) with falciform terminal spine-shaped process. Wings: forewing length 3.8 mm; two anal veins present; thyridial cell as large as discoidal cell; hind wing base with dark spot composed of short, densely packed, stout setae.

♂ genitalia (Figs 34-37). Segment IX with robust, tripartite sternite and smaller tergite; in lateral view, sternite IX with subtriangular central body, filiform anterior apodeme, and well-developed ventroapical mesal plate (Fig. 34); ventroapical mesal plate tongue-shaped; linguiform, with broad base and small apicomesal projection in ventral view (Fig. 36); tergite IX fused with tergite VIII, but more strongly pigmented, well defined; in dorsal view (Fig. 35) with rounded, convex apical margin. Segment X armed with three pairs black, short, stout, pointed spines, ventroapical apices each ending in short, dorsad, black spine. Almost membranous paraproctal plates inside hood of segment X and along phallic organ forming indistinct continuation of segment X. Elongate anterior arms of tergite IX, segment X, paraprocts, and cerci meeting at fulcrum around dorsal hump of sternite IX. Cerci elongate, clavate, broadening gradually from base, slightly sigmoid. Coxopodites and harpagones fused, without visible separating suture, small ventral incision visible indicating their borders in lateral view; digitate apical process of harpagones slightly turning dorsad; in addition to spines on basal half of harpagones, single, short, stout, black spine present near border of coxopodites; short, broad dorsad directed basal lobe present on coxopodites, with 3-4 short and black teeth densely packed dorsally; in lateral view basal plate broad, sigmoid, producing pair of short, sclerotized straps connecting basal plate and fulcrum. Phallic organ (Fig. 37) long; thin, especially along phallosheath; endotheca broad, membranous, bearing two pairs small spines, followed by short aedeagus.

H o l o t y p e ♂. Vietnam, Lamdong Province, Dalat, Vang River, side stream, 17.x.1988, leg. J. Oláh.

P a r a t y p e s : same data as holotype, 14♂♂ (OPC, in alcohol).

E t y m o l o g y . *Vang*, derived from the type locality.

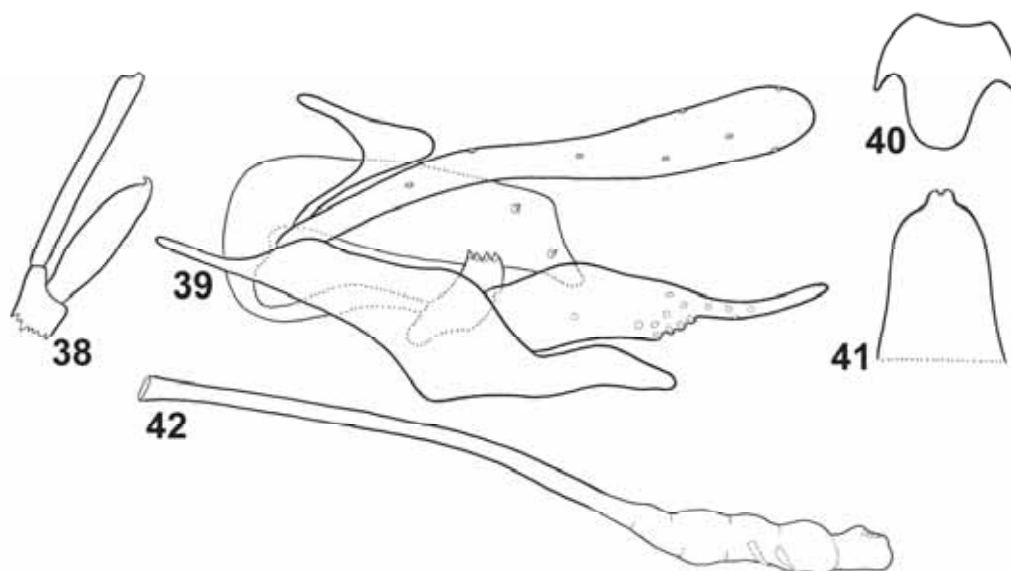


Figs 33-37: *Drepanocentron vang* nov.sp., holotype. (33) Modified spur on left hind leg. (34) Genitalia, lateral view. (35) Tergite IX, dorsal view. (36) Ventroapical mesal plate of sternite IX, ventral view. (37) Phallic organ, lateral view.

***Drepanocentron vangiong* nov.sp. Fig. (38-42)**

This species is most similar to *Drepanocentron vang* nov.sp. described above. It differs from that species in dorsal view by having a concave apical margin of tergite IX; in ventral view by the ventroapical mesal plate of sternite IX having a bifid, tiny apicomeres lobe; in lateral view by the serrate ventral margin of the harpagones; and the modified hind leg apical spur having a spine-like, short, hook-shaped, terminal process.

♂. Body small, pale brown. Head dorsum pale, almost white. Pronotal and mesonotal sclerites dark brown; mesoprescutum enlarged. Maxillary palps with segment IV slightly shorter than sum of segments I-III. Mesoprescutum as broad as long; rounded quadrangular; divided by median suture. Proepisternal setal warts present. Spur formula 243; modified apical spur on hindlegs (Fig. 38) with hook-shaped, spine-like, terminal process. Wings: forewing length 4.8 mm; with two anal veins; thyridial cell as large as discoidal cell; hind wing base with dark spot composed of short, densely packed, stout setae.



Figs 38-42: *Drepanocentron vangiong* nov.sp., holotype. (38) Modified spur on left hind leg. (39) Genitalia, lateral view. (40) Tergite IX, dorsal view. (41) Ventroapical mesal plate of sternite IX, ventral view. (42) Phallic organ, lateral view.

♂ genitalia (Fig. 39-42). Segment IX with robust, tripartite sternite and smaller tergite; sternite IX with oblong central body, filiform anterior apodeme and well-developed ventroapical mesal plate in lateral view (Fig. 39); ventroapical mesal plate tongue-shaped, with broad base and small, bifid apicomeres projection in ventral view (Fig. 41); tergite IX fused with tergite VIII, but more strongly pigmented; apical margin concave in dorsal view (Fig. 40). Segment X with two pairs weakly discernible black, short, stout, pointed spines. Membranous paraproctal plates present inside hood of segment X, and along phallic organ, forming indistinct continuation of segment X. Elongate anterior arms of tergite IX, segment X, paraprocts, and cerci meeting at fulcrum around dorsal hump of sternite IX. Cerci elongate, clavate, broadening gradually from base; slightly sigmoid. Coxopodites and harpagones fused, without visible sutures; small ventral incision visible, indicating borders in lateral view (Fig. 39); digitate, apical process of harpagones slightly curving dorsad; mesal spinose area producing serrate

ventral margin of harpagones; single black spine present between harpagones and coxopodites. Short, broad dorsad-directed basal lobe located on coxopodites, dorsally with densely packed short, black teeth. Basal plate broad, sigmoid in lateral view, forming pair of short, sclerotized straps connecting basal plate to fulcrum. Phallic organ (Fig. 42) long; thin, especially at phallosome; membranous endosoma broad, bearing two pairs small, weakly discernible spines; aedeagus short.

H o l o t y p e ♂. Vietnam, Lamdong Province, Dalat, Datangla waterfall, 15.x.1988, leg. J. Oláh.

E t y m o l o g y . *Vangiong*, derived from giong, similar in Vietnamese, and *vang*, referring to its similarity to *Drepanocentron vang*.

Remark: ♀ ♀ assumed conspecific with this species are stored together with the holotype.

***Drepanocentron vongana* nov.sp. (Figs 43-47)**

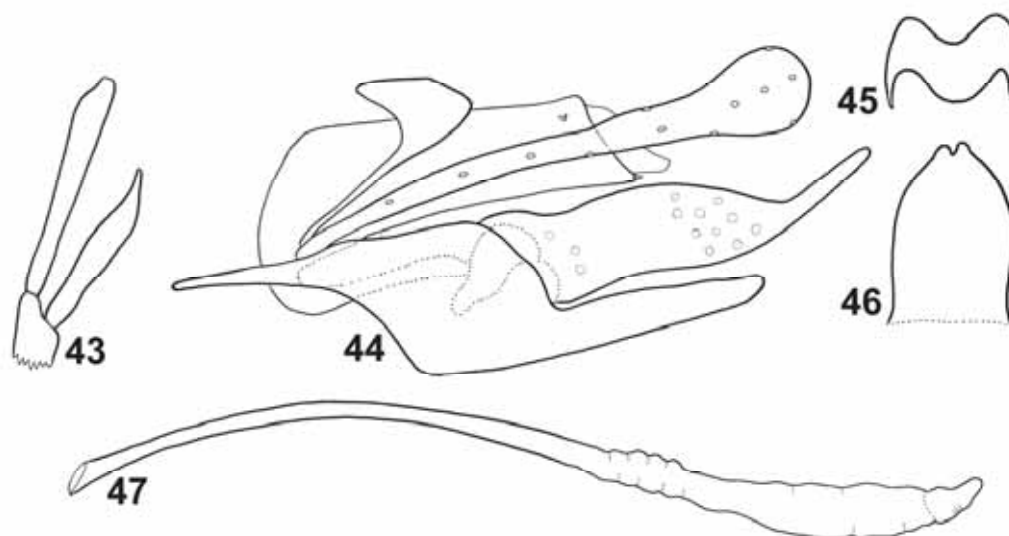
This new species is most similar to *Drepanocentron limorum* OLÁH from Peninsular Malaysia. It differs by having a more deeply concave apical margin of tergite IX; a tergite IX with shorter anterior mesal lobe in dorsal view; the ventroapical mesal plate of sternite IX with very tiny, bifid apicomeres in ventral view; dorsum of segment X without digitate processes; harpagones without serrated ventral margin; gonopods with more convex dorsal margin in lateral view; and a more slender modified hind leg apical spur.

♂. Body small, pale brown. Pronotal and mesonotal sclerites brown, mesoprescutum dark brown. Maxillary palps with segment IV slightly shorter than sum of segments I-III. Mesoprescutum longer than broad; rounded subquadrangular; divided by median suture. Proepisternal setal warts present. Spur formula 243; modified apical spur on hind legs (Fig. 43) narrowing apically, ending in terminally pointed, spine-like process. Wings: forewing length 3.8 mm; two anal veins present; thyridial cell less than half as long as discoidal cell.

♂ genitalia (Figs 44-47). Segment IX with robust, tripartite sternite and smaller tergite; central part of sternite IX rhomboid in lateral view; anterior apodeme filiform; ventroapical mesal plate well-developed in lateral view (Fig. 44). Ventroapical mesal plate linguiform, slightly constricted at base, with tiny, bifid, apicomeres projection in ventral view (Fig. 46). Tergite IX fused with tergite VIII, strongly pigmented (Fig. 45); apical margin deeply concave; anteriorly rounded mesal lobe short. Segment X with two pairs weakly discernible, black, short, stout, pointed spines. Almost membranous paraproctal plates inside hood of segment X and along the phallic organ, forming indistinct continuation of segment X. Elongate anterior arms of tergite IX, segment X, paraprocts, and cerci meeting at fulcrum around dorsal hump of sternite IX. Cerci elongate capitate, forming enlarged circular apex. Coxopodites and harpagones fused, without visible separating suture, incision or constriction; digitate apical process of harpagones slightly curved dorsad, straight; mesal spiny area covering basal part of harpagones; few short, stout, black spines present near base of coxopodites. Basal plate broadly sigmoid in lateral view; producing pair of short, sclerotized straps connecting basal plate to fulcrum. Phallic organ (Fig. 47) long; with especially thin phallosome; broad, membranous endosoma without spines; aedeagus short.

H o l o t y p e ♂. Vietnam, Vinh Phuc Province, Tamdao, 1400 m, small forested stream, 12.v.1987, leg. J. Oláh.

E t y m o l o g y . *Vongana*, from vong, circular in Vietnamese, refers to the circular shape of the cerci apex.



Figs 43-47: *Drepanocentron vongana* nov.sp., holotype. (43) Modified spur on left hind leg. (44) Genitalia, lateral view. (45) Tergite IX, dorsal view. (46) Ventroapical mesal plate of sternite IX, ventral view. (47) Phallic organ, lateral view.

***Abaria catba* nov.sp. (Figs 48-52)**

This species belongs to the *Abaria tripunctata* species group, and is most similar to *Abaria hintragionga* nov.sp. described below. In genitalia it differs from *A. hintragionga* in having sternite IX longer than high; the cerci are more broad-bellied basally after their stalk; their subapical cercal constriction is characteristically formed, including a deep dorsal incision; the gonopods are shorter and broader; the mesad-curving, terminal spine of the gonopods is shorter; and the dorsoapical margin of the gonopods is flat in lateral view.

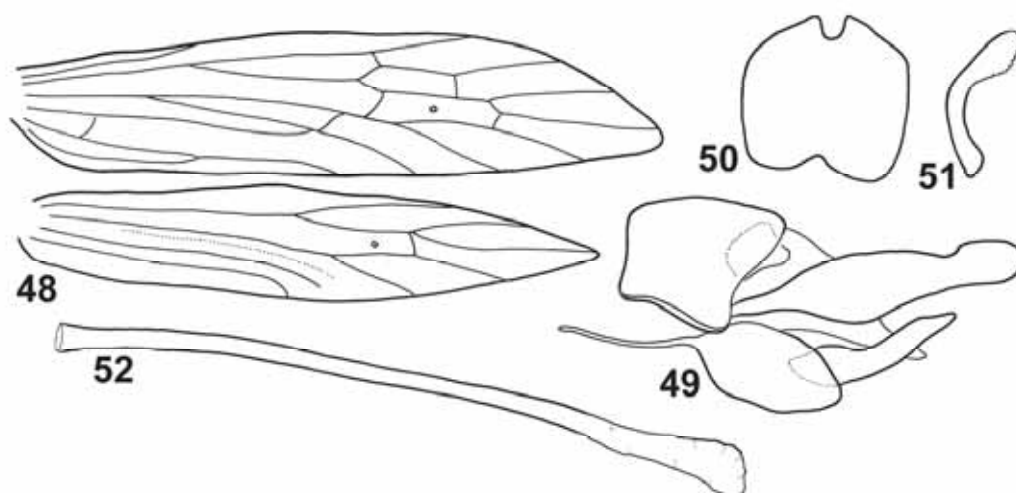
♂. Body small, pale brown. Head dorsum strongly bulging, domed. Pronotal and mesonotal sclerites brown with dark brown sutures. Antennae lack long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with un-modified apical spur. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 48): forewing length 3.0 mm, without scales; base of R without transparent sleeve of setae; fork II sessile on vestigial M1; Cu2 joining Cu1 before crossvein m-cu; A reaching wing margin well before Cu1+2; hind wings with bifurcation of RS immediately after crossvein r-m.

♂ genitalia (Figs 49-52). Tergite VIII well-pigmented; rhomboid in lateral view (Fig. 49); dorsoapical margin widely incised in dorsal view (Fig. 50); pleurotergal groove well developed. Segment IX with well-developed sternite (Fig. 49) and remnant cavity structure of tergite; in lateral view, sternite IX oval, longer than high, dorsally and ventrally convex; anterior apodeme horizontal, slightly curving dorsad; tergite IX almost indiscernible, forming cavity wall retracted under tergite VIII; somewhat roof-shaped, tapering ventroapically in lateral view. Tergite X roof-shaped, evenly tapering posteriorly (Fig. 49). Cerci elongate, digitiform, with large, dorsal constriction before apex; basally narrow, forming long stalk to fulcrum. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; apically pointed, with straight dorsal margin; mesal spiny surface of gonopods

with evenly sized teeth (Fig. 51); apex broad, short, mesally convex, with mesad terminal tooth and apically flat in ventral view. Phallic organ (Fig. 52) long, thin; apex simple, dilating; internal structures absent.

H o l o t y p e ♂. Vietnam, Halong Bay, Cat Ba Island, 18.v.1987, leg. J. Oláh.

E t y m o l o g y . *Catba*, named after the type locality.



Figs 48-52: *Abaria catba* nov.sp., holotype. (48) Right wings. (49) Genitalia, lateral view. (50) Tergite VIII, dorsal view. (51) Left gonopod, ventral view. (52) Phallic organ, lateral view.

***Abaria cuna* nov.sp. (Figs 53-57)**

This species belongs to the *Abaria tripunctata* species group and resembles *Abaria nua* nov.sp., described below. It differs from *A. nua* by lacking scaly patches on all wings; in the forewings fork II is longer and petiolate on vestigial M1; in the hind wings R1 is shorter; the tergite VIII is produced dorsoapically into a bluntly triangular mesal lobe; the cerci are broad, with well-developed constriction immediately before apex; and the gonopods are more sigmoid in ventral view.

♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts present, with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with un-modified apical spur. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 53) without scales; forewing length 3.0 mm; base of R without transparent sleeve of setae; fork II long, petiolate, present on vestigial M1; Cu2 meeting Cu1 immediately before crossvein cu-m; A reaching wing margin well before Cu1+2; hind wings with bifurcation of RS sessile on crossvein r-m.

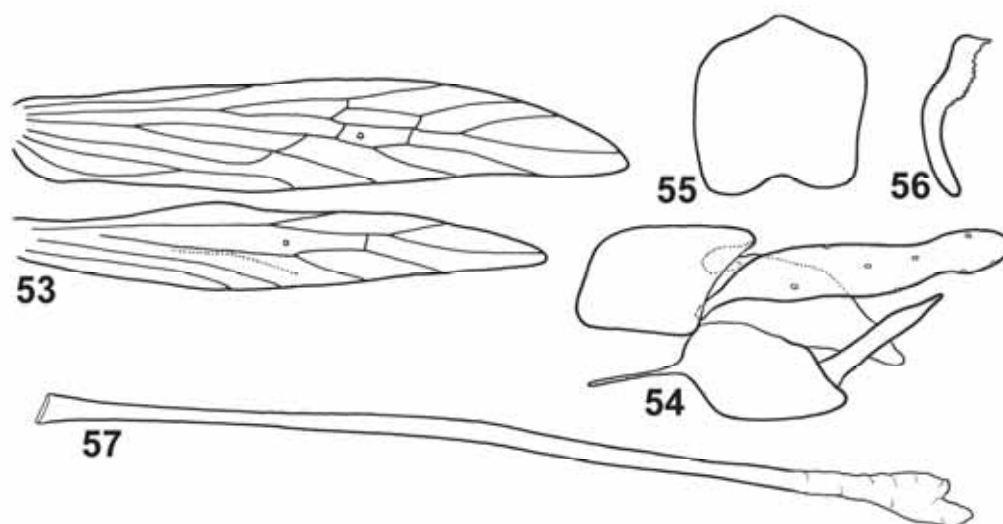
♂ genitalia (Figs 54-57). Tergite VIII well-pigmented; produced posterodorsad into mesal, blunt triangular lobe in lateral and dorsal view (Figs 54, 55), without medial excision (Fig. 55); pleurotergal groove well developed. Segment IX with almost pentangular sternite and remnant cavity structure of tergite; sternite IX, in lateral view, slightly longer than high;

ventral margin weakly convex; apodeme long, thin, horizontal; tergite IX rudimentary, almost indiscernible, forming small cavity wall at base of segment X, retracted under tergite VIII. Segment X roof-shaped, narrowing distally in lateral view (Fig. 54). Cerci elongate digitiform; about equally broad along their length, except with weak dorsal and ventral subapical constriction; base narrow, forming short stalk to fulcrum. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; in lateral view (Fig. 54) straight, with tapering apex; mesal spiny surface with evenly sized teeth; in ventral view spiny distal half sigmoid (Fig. 56). Phallic organ (Fig. 57) two times longer than rest of genitalia, with trilobed, dilating apex.

H o l o t y p e ♂. Vietnam, Vinh Phuc Province, Tamdao, 1300 m, small stream, 10.v.1987, leg. J. Oláh.

P a r a t y p e s : same data as holotype, 2♂♂ (OPC, in alcohol).

E t y m o l o g y . *Cuna*, blunt in Vietnamese, refers to the blunt dorsoapical margin of tergite VIII.



Figs 53-57: *Abaria cuna* nov.sp., holotype. (53) Right wings. (54) Genitalia, lateral view. (55) Tergite VIII, dorsal view. (56) Left gonopod, ventral view. (57) Phallic organ, lateral view.

***Abaria damra* nov.sp. (Figs 58-62)**

This species belongs to *Abaria tripunctata* species group, and is most similar to *Abaria yakcha* SCHMID from India. It differs from *A. yakcha* by lacking wing scales; in the hind wings, R1 is vestigial both basally and apically, not fusing with R2+3; tergite VIII is produced dorsoapically, without medial excision; the cerci are not constricted at mid-length; and the gonopods are more sigmoid in lateral view.

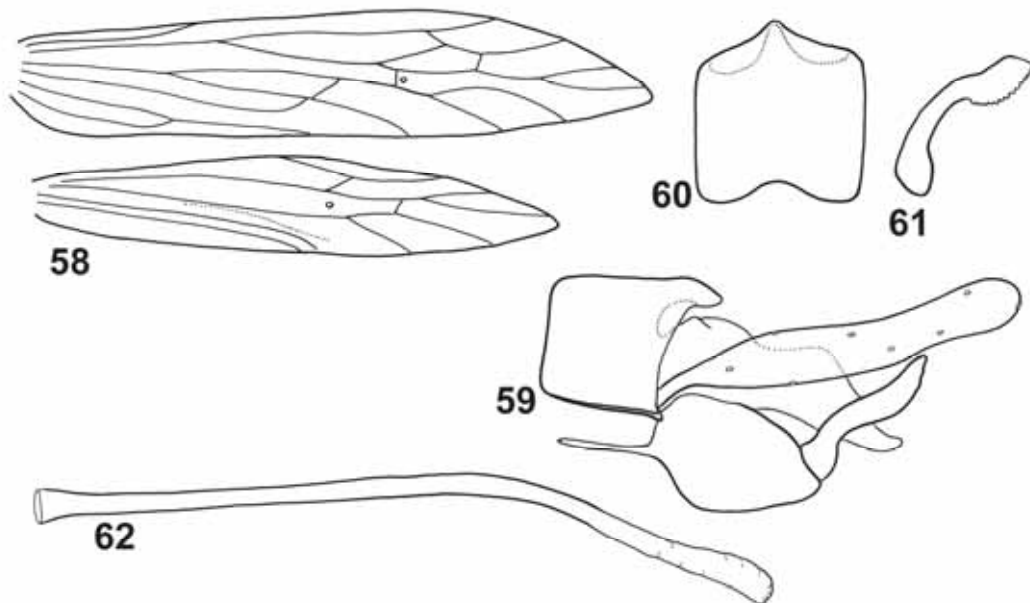
♂. Body small, pale brown. Head dorsum highly bulging and dome-shaped. Pronotal and mesonotal sclerites brown, with dark sutures. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts present, packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spur. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 58): forewing length

3.1 mm, without scaloid setae; base of R without transparent setae; forewing fork II sessile; Cu2 joining Cu1 apically of crossvein m-cu; A reaching wing margin well before Cu1+2; hind wings with single petiolate bifurcation of RS on crossvein r-m.

♂ genitalia (Figs 59-62). Tergite VIII well-pigmented; posterodorsal margin produced into triangular in lateral and dorsal view (Figs 59, 60); pleurotergal groove well developed; roof-shaped, tapering apically in lateral view. Segment IX represented by rhomboid sternite and remnant cavity structure of tergite; in lateral view, sternite IX about as long as high, with convex dorsal and ventral margins; apodeme long, thin, straight; tergite IX almost indiscernible, forming cavity wall retracted under tergite VIII. Segment X long, with strongly undulating dorsal margin in lateral view (Fig. 59); tapering from distal two-thirds, with nearly straight dorsal margin. Cerci elongate, digitiform with weakly developed constriction immediately after mid-length; basal two thirds straight, horizontal, with small ventral lobe visible in ventral view; apical one third weakly curving dorsad; base narrow, forming short stalk to fulcrum. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; slightly sigmoid in lateral and ventral view (Figs 59, 61); mesal spinose margin long, convex, with evenly sized teeth (Fig. 61). Phallic organ (Fig. 62) long, thin, with simple, dilating apex; without internal structures.

H o l o t y p e ♂. Vietnam, Ninh Binh Province, Cucphuong National Park, 400 m, 18.x.1986, leg. J. Oláh.
P a r a t y p e s : Same data as holotype, 10♂♂; Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh, 12♂♂.

E t y m o l o g y . *Damra*, protruding in Vietnamese, refers to the small, ventrally protruding lobe mesally on the cerci.

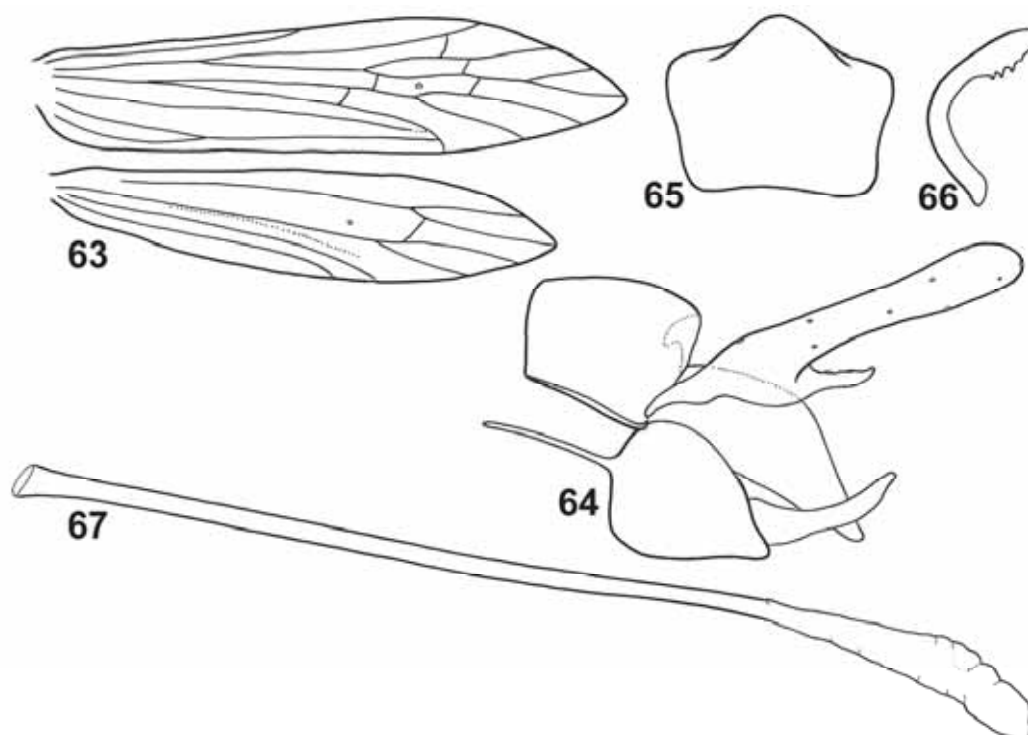


Figs 58-62: *Abaria damra* nov.sp., holotype. (58) Right wings. (59) Genitalia, lateral view. (60) Tergite VIII, dorsal view. (61) Left gonopod, ventral view. (62) Phallic organ, lateral view.

***Abaria dehena* nov.sp. (Figs 63-67)**

This species belongs to the *Abaria madhavi* species group, and resembles *Abaria trunga* nov.sp. described below. It differs from *A. trunga* in having closed forewings discoidal cell; fork II with long stalk on vestigial M1; and both Cu2 and A fuse separately with Cu1; in addition, the tergite VIII has its dorsoapical margin produced into a blunt triangular, without a mesal excision; the sternite IX is subtriangular in lateral view, and is higher than long; both cerci have a long basoventral process; and the gonopods are shorter, with smooth apical mesal margin.

♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Frontal interantennal compact setose wart absent. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spur. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 63): forewings with scales; length 3.0 mm; base of R without transparent sleeve of setae; fork II present, petiolate on vestigial M1; Cu2 and A nearly meeting at Cu1; hind wing R1 vestigial; bifurcation of RS sessile on crossvein r-m.



Figs 63-67: *Abaria dehena* nov.sp., holotype. (63) Right wings. (64) Genitalia, lateral view. (65) Tergite VIII, dorsal view. (66) Left gonopod, ventral view. (67) Phallic organ, lateral view.

♂ genitalia (Figs 64-67). Segment IX represented by short, nearly triangular sternite, and remnant cavity structure of tergite (Fig. 64). Sternite IX as long as high in lateral view; ventral margin strongly convex; apodeme long, thin, oriented horizontally; tergite IX modified into small cavity wall at base of segment X, retracted under tergite VIII. Tergite VIII well pig-

mented; dorsoapical margin produced into mesal, bluntly triangular lobe, without mesal excision (Fig. 65); pleurotergal groove well developed. Segment X roof-shaped, narrowing ventroapically in lateral view (Fig. 64). Cerci elongate, digitiform, with long basoventral process (Fig. 64); base narrow, forming short stalk to fulcrum in lateral view. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; in lateral view gently curving dorsad along their length, apex pointed; apicomesal apex without teeth, mesal spiny surface of gonopod with evenly sized teeth (Fig. 66); in ventral view, strongly curving mesad; spiny end short. Phallic organ (Fig. 67) about two times longer than rest of genitalia; with dilating apex.

H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh.

E t y m o l o g y . *Dehena*, from "de hen", base in Vietnamese, refers to the basal position of the ventral process of the genitalic cerci.

***Abaria dogoca* nov.sp. (Figs 68-72)**

This species belongs to the *Abaria madhavi* species group and resembles *Abaria ateduna* MALICKY & CHANTARAMONGKOL from Thailand. It differs from *A. ateduna* in genitalia by having a tergite VIII with a triangular dorsoapical margin; the ventral lobe of the cerci being more angled; and the gonopods are slightly sigmoid, both in lateral and ventral view.

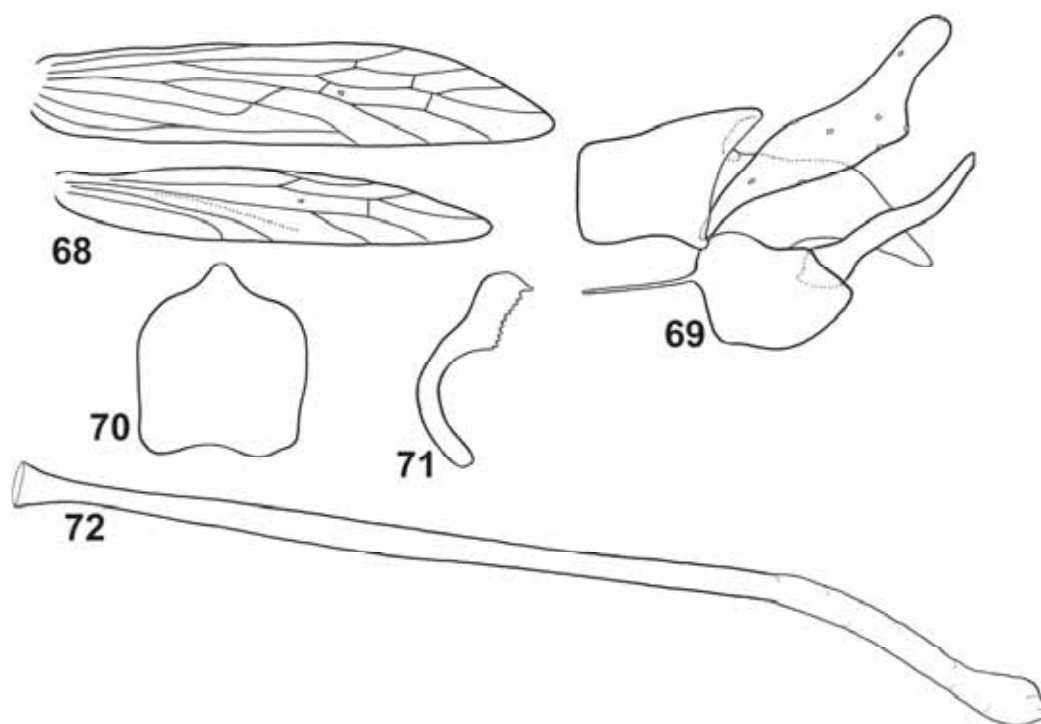
♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures darker. Antennae without long setal fringes. Frontal interantennal compact setose wart indiscernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spur. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 68): without scales; forewing length 2.7 mm; base of R without transparent sleeve of setae; fork II sessile on vestigial M1; Cu2 meeting Cu1 at crossvein cu-m; A reaching Cu1 before apex; hind wing R1 short, reaching vestigial Sc; bifurcation of RS short petiolate on crossvein r-m.

♂ genitalia (Fig. 69-72). Segment IX represented by almost pentangular sternite and remnant cavity of tergite (Fig. 69); sternite IX as long as high in lateral view; ventral margin undulating; anterior apodeme long, thin, horizontal; tergite IX rudimentary, forming small cavity wall at base of segment X, retracted under tergite VIII. Tergite VIII well-pigmented and defined; dorsoapical margin produced into mesal, triangular lobe, without medial excision (Fig. 70); pleurotergal groove well developed. Segment X roof-shaped, sharply narrowing after mid-length, dorsoapical margin straight (Fig. 69). Cerci elongate, with angling ventral lobe after mid-length; dorsal margin undulating; cercal base narrow, forming short stalk to fulcrum in lateral view (Fig. 69). Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; slightly sigmoid in lateral view; mesal spiny surface with evenly sized teeth (Fig. 71); strongly curving mesad; spiny end long, broad. Phallic organ (Fig. 72) more than two times longer than rest of genitalia, with dilating apex.

H o l o t y p e ♂. Vietnam, Ninh Binh Province, Cucphuong National Park, 400 m, 18.x.1986, leg. J. Oláh.

P a r a t y p e s : same data as holotype, 4♂♂ (OPC, in alcohol); Vietnam, Son La Province, Moch Chau, 24-26.x.1986, leg. J. Oláh, 1♂ (OPC, in alcohol).

E t y m o l o g y . *Dogoca*, from "do goc", angle in Vietnamese, refers to the angled ventral lobe on the cerci as well as to the shape of the gonopods in ventral view.



Figs 68-72: *Abaria dogoca* nov.sp., holotype. (68) Right wings. (69) Genitalia, lateral view. (70) Tergite VIII, dorsal view. (71) Left gonopod, ventral view. (72) Phallic organ, lateral view.

***Abaria trunga* nov.sp. (Figs 73-77)**

This species belongs to the *Abaria madhavi* species group, and resembles *Abaria dogoca* nov.sp. described above. It differs from *A. dogoca* by having forewings with patches of scaloid setae and an open Dc; hind wings with bifurcation of RS sessile on crossvein r-m; tergite VIII with posterior margin expanded into a two-lobe plate; sternite IX being much longer than high, and nearly rectangular; cerci that are longer and distally broad; and gonopods that are more sharply angled dorsad near apex in lateral view.

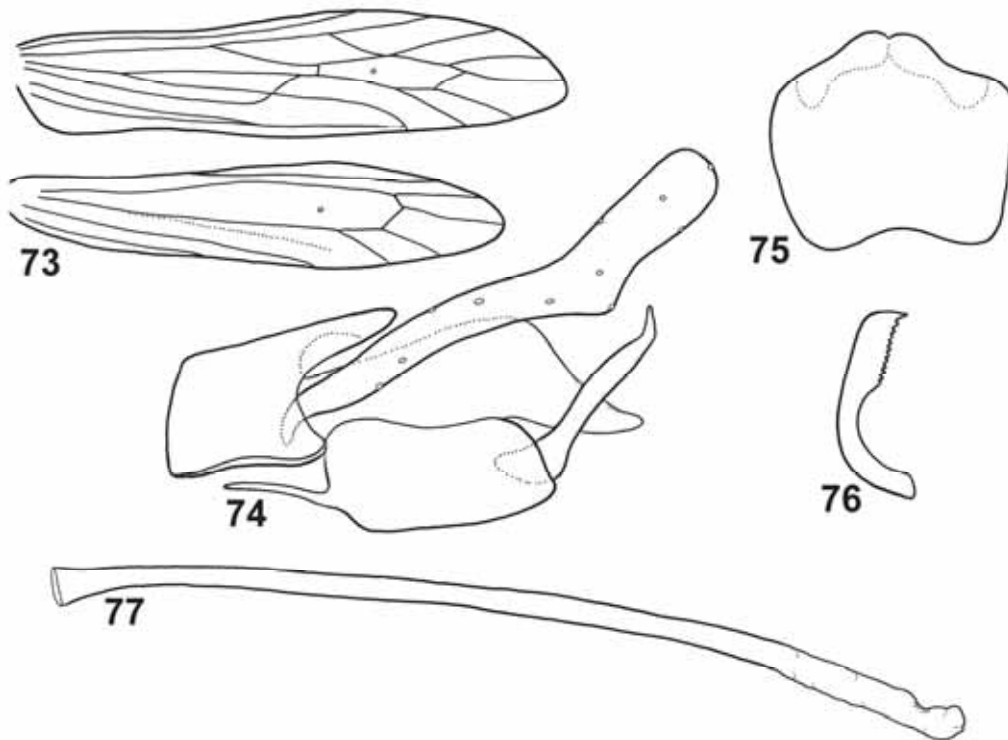
♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts present, packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spur. Fore femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 73): forewings with scaloid setae; length 3.0 mm; base of R without transparent setal sleeve; fork II sessile on vestigial M1; first bifurcation on SC located apically; discoidal cell open; Cu2 fusing with Cu1 before crossvein m-cu; A fusing with Cu2 close to wing margin; hind wing R1 vestigial; bifurcation of RS sessile on crossvein r-m.

♂ genitalia (Figs 74-77). Segment IX represented by elongate, rhomboid sternite and remnant cavity of tergite (Fig. 74); sternite IX longer than high in lateral view; ventral margin weakly convex; anterior apodeme short, nearly straight, thin; tergite IX almost indiscernible, modified

into small cavity wall at base of segment X, retracted under tergite VIII. Tergite VIII well-pigmented; posterior margin forming bilobed plate with wide V-shaped incision (Fig. 75); pleurotergal groove well developed. Segment X roof-shaped, narrowing strongly from distal two-thirds (Fig. 74); posterodorsal margin shallowly concave, apex pointing posterad in lateral view. Cerci elongate, sharply bent dorsad at distal two-thirds, with small, triangular lobe on ventral margin at point of bending; distal half nearly parallel-sided in lateral view (Fig. 74); cercal base narrowing anteriorly, forming short, wide stalk to fulcrum in lateral view. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; straight in lateral view, except with strongly dorsad bend near apex (Fig. 74); apex pointed; in ventral view (Fig. 76), mesal spiny lobe with straight mesal margin and evenly sized teeth; apex with long, narrow, mesal tooth at apex. Phallic organ (Fig. 77) 1,5 times longer than rest of genitalia; apex dilating; without internal structures.

H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh. P a r a t y p e s : same data as holotype, 5♂♂.

E t y m o l o g y . *Trung*, from "trung", middle in Vietnamese, refers to the ventral lobe located at mid-length of cerci.

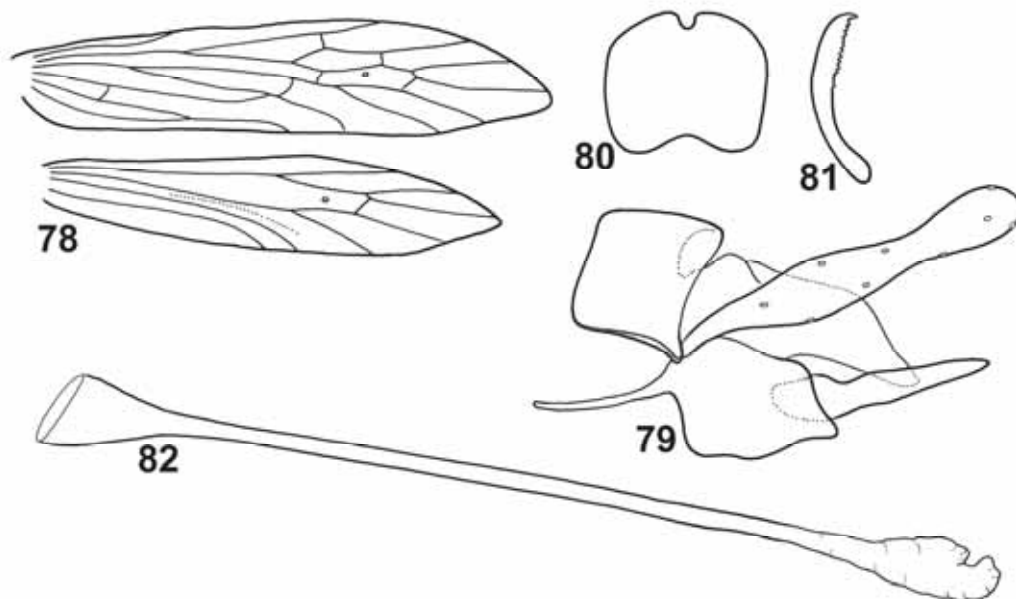


Figs 73-77: *Abaria trunga* nov.sp., holotype. (73) Right wings. (74) Genitalia, lateral view. (75) Tergite VIII, dorsal view. (76) Left gonopod, ventral view. (77) Phallic organ, lateral view.

***Abaria hintragionga* nov.sp. (Figs 78-82)**

This species belongs to the *Abaria tripunctata* species group, and is most similar to *Abaria hintraia* nov.sp. described below. It differs from *A. hintraia* in their wings by having a single bifurcation of RS, which is sessile on crossvein r-m. It differs in the genitalia by having longer and stalked cerci; the mesal spiny surface of the gonopods have more evenly sized teeth; in ventral view the spiny end of the gonopods are narrow and long, and mesally concave; the phallic organ has broad phallobase; and the membranous aedeagus ends in a pair of dorsad curving, ventral lobes.

♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, with dark sutures. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts present, packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spurs. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 78): forewing length 3.0 mm; base of R without transparent sleeve of setae and scales; fork II sessile on vestigial M1; Cu2 joining Cu1 before crossvein m-cu; A reaching wing margin well before Cu1; hind wings with bifurcation of RS sessile on crossvein r-m.



Figs 78-82: *Abaria hintragionga* nov.sp., holotype. (78) Right wings. (79) Genitalia, lateral view. (80) Tergite VIII, dorsal view. (81) Left gonopod, ventral view. (82) Phallic organ, lateral view.

♂ genitalia (Figs 79-82). Segment IX with rhomboid sternite and remnant cavity of tergite (Fig. 79); sternite IX almost as long as high in lateral view, with undulating ventral margin, ventroapical corners slightly produced; anterior apodeme, long, slender, slightly curving dorsad; tergite IX almost indiscernible, forming anterior cavity wall retracted under tergite VIII. Tergite VIII well-pigmented; posterior margin with small median cleft (Fig. 80); pleurotergal groove well developed, tapering ventroapically in lateral view. Cerci elongate, digitiform, with wide and shallow constriction at apical two-thirds; base narrow, forming short stalk to fulcrum

in lateral view. Gonopods strongly pigmented, straight in lateral view (Fig. 79), with pointed apex; coxopodites and harpagones completely fused, without separating suture; uniformly curving mesad in ventral view; mesal spiny surface with evenly sized teeth (Fig. 81); spiny area narrow and long in ventral view (Fig. 81), mesal margin nearly straight, with mesad curving terminal tooth. Phallic organ (Fig. 82) long, thin, phallobase broad; dilating apex of membranous aedeagus produced into pair of dorsad-curving ventroapical membranous lobes.

H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh. P a r a t y p e . same data as holotype, 1 ♂.

E t y m o l o g y . *Hintragionga*, derived from giong, similar in Vietnamese, and *hintraia*, after the similar species *Abaria hintraia* nov.sp.

***Abaria hintraia* nov.sp. (Figs 83-87)**

This species belongs to the *Abaria tripunctata* species group and is most similar to *Abaria quatila* MALICKY & CHANTARAMONGKOL from Thailand, from which it differs in the forewings by having Cu2 joined with Cu1 before ending in the wing margin; in the hind wings by being stalked before bifurcation of SR; in genitalia by the tergite VIII being that is than high; the more oval sternite IX; shorter tergal cavity of segment IX; and the gonopods that taper more evenly in lateral view.

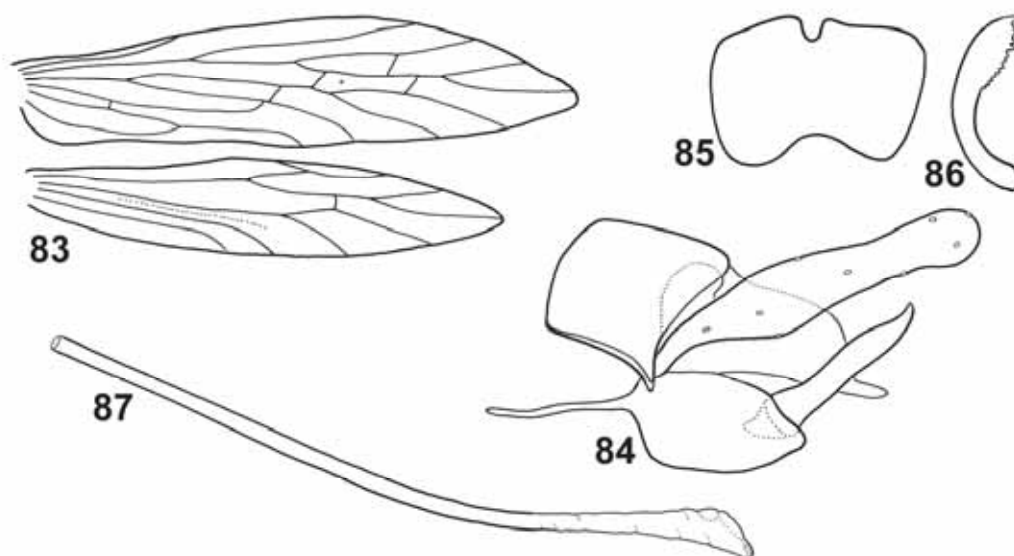
♂. Body small, pale brown. Antennae, foreleg femur and foreleg tibia without setal fringe; wing scales absent. Head dorsum pale brown, pronotal and mesonotal sclerites slightly darker, sutures dark brown. Maxillary palps with segment V slightly shorter than sum of segment I-II-III-IV. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with un-modified apical spur. Wings (Fig. 83): forewing length 3.1 mm; fork II present, Cu2 joining Cu1 at crossvein m-cu; hind wings stalked before bifurcation of RS, well apically of crossvein r-m.

♂ genitalia (Figs 84-87). Segment IX represented by nearly oval sternite and remnant cavity of tergite (Fig. 84); sternite IX longer than high in lateral view, slightly produced posterad into small lobe, anterior apodeme long, thin, undulating, horizontal; tergite IX modified into cavity wall retracted under tergite VIII. Tergite VIII well-pigmented; with rounded incision centrally on posterior margin (Fig. 85); pleurotergal groove well developed, produced into pointed posteroventral process. Segment X roof-shaped, with posteroventral, narrow process in lateral view (Fig. 84). Cerci elongate, digitiform, with well-developed constriction at distal two-thirds, base narrowing to fulcrum. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; undulating in lateral view, uniformly arrowing after mid-length; in ventral view with mesad-curving terminal tooth (Fig. 86); mesal spiny margin irregularly toothed, 3-4 large spines present basally of terminal tooth; mesal, spiny margin convex. Phallic organ (Fig. 87) long, thin, bending dorsad after mid-length, apically dilating.

H o l o t y p e ♂. Vietnam, Vinh Phuc Province, Tamdao, 200 m, small stream, 13.x.1986, leg. J. Oláh.

P a r a t y p e s : same data as holotype, 4 ♂♂; Vietnam, Vinh Phuc Province, Tamdao, 1400 m, small stream, 10.v.1987, leg. J. Oláh, 1 ♂; Vietnam, Ha Son Binh Province, Hoabinh, towards Dabac, 21.x.1986, leg. J. Oláh, 1 ♂.

E t y m o l o g y . *Hintraia*, from hình trai, oval in Vietnamese, refers to the nearly oval sternite IX in lateral view.



Figs 83-87: *Abaria hintraia* nov.sp., holotype. (83) Right wings. (84) Genitalia, lateral view. (85) Tergite VIII, dorsal view. (86) Left gonopod, ventral view. (87) Phallic organ, lateral view.

***Abaria hintratra* nov.sp. (Figs 88-92)**

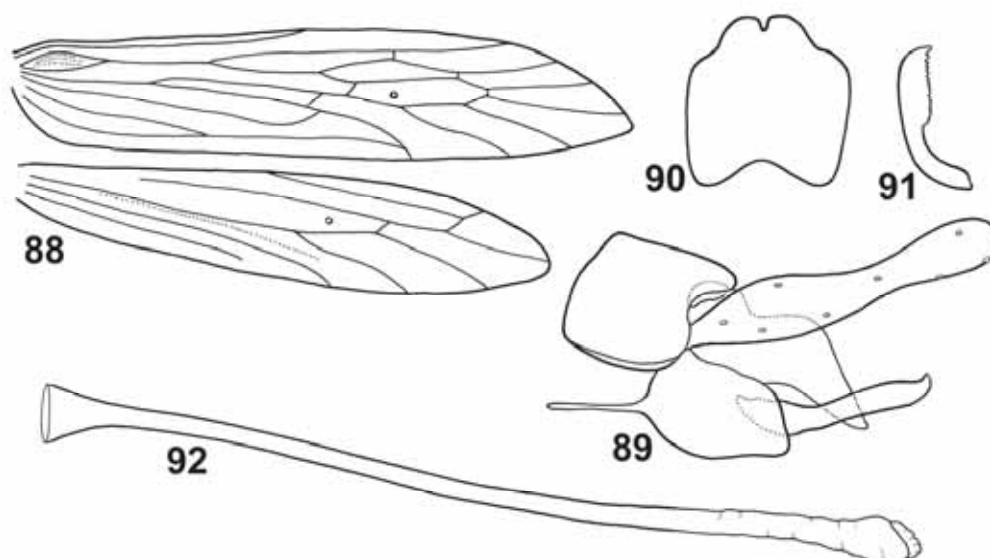
This species belongs to the *Abaria tripunctata* species group, and resembles *A. hintraia* nov.sp., from which it differs by having different wing venation. In the genitalia, the mesal spiny margin of the harpagones are longer and more parallel-sided; the spines more uniform in size. It is most similar to *Abaria dusyanta* SCHMID from India. It differs from *A. dusyantha* by lacking long mesal and lateral setal fringes on antennal segments 5-8; a setal fringe is present on the mesal surface of the foreleg femur and foreleg tibia, which is lacking in *A. dusyanta*. In the forewings, elongate scales are present in the cubital region; in the hind wings, the central cell is smaller as RS and M run more closely; the bifurcation of SR is petiolate on crossvein r-m; in the genitalia, the mesal dorsoapically produced lobe of tergite VIII has a smaller medial excision; the cerci have very pronounced constriction slightly after mid-length, resulting in a clavate apex; and the gonopods have more dorsad-curving apex.

♂. Body small, pale brown, except pronotal and mesonotal sclerites being slightly darker, sutures dark brown. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs apical spur unmodified. Forelegs with long, black setae in fringes on mesal surfaces of femura and tibiae. Wings (Fig. 88): forewing length 2.9 mm; base of R bearing elongated, transparent sleeve filled with 3-4 long setae; almost entire surface of forewing, including cubital and apical regions, covered with elongate scales; fork II present, sessile on vestigial M1; Cu2 joining Cu1 well before apex; A fused with Cu1+2 before ending in wing margin; hind wings with small central cell due to closely situated RS and M; bifurcation of SR petiolate on crossvein r-m.

♂ genitalia (Figs 89-92). Segment IX with nearly rectangular sternite and remnant cavity of tergite (Fig. 89); sternite IX slightly longer than high in lateral view, nearly truncate posteriorly, anterior apodeme long, thin, straight, horizontal; tergite IX rudimentary, almost indiscernible, modified into cavity wall under tergite VIII. Tergite VIII well-pigmented; dorsoapical lobe produced into two rounded processes, separated by small median cleft (Fig. 90); pleurotergal groove well developed; somewhat roof-shaped, forming rounded posteroventral lobes in lateral view. Cerci elongate, digitiform, with well-developed constriction shortly after mid-length; short base narrowing to fulcrum. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; nearly parallel-sided in lateral view; apex pointed, curving dorsad in lateral view; in ventral view with mesad-curving terminal tooth (Fig. 91); mesal spiny margin forming long, shallow, parallel-sided plate with equally long teeth. Phallic organ (Fig. 92) long, thin, broad at base; slightly curving dorsad shortly after mid-length, dilating apicad.

H o l o t y p e ♂. Vietnam, Lamdong Province, Baoloc, Baco stream, 26.x.1988, light, leg. J. Oláh.
P a r a t y p e s : same data as holotype, 4♂♂.

E t y m o l o g y . *Hintratra*, derived from the species name *hintraia* and "tra voi", differ in Vietnamese, refers to the similar species, *Abaria hintraia* nov.sp.

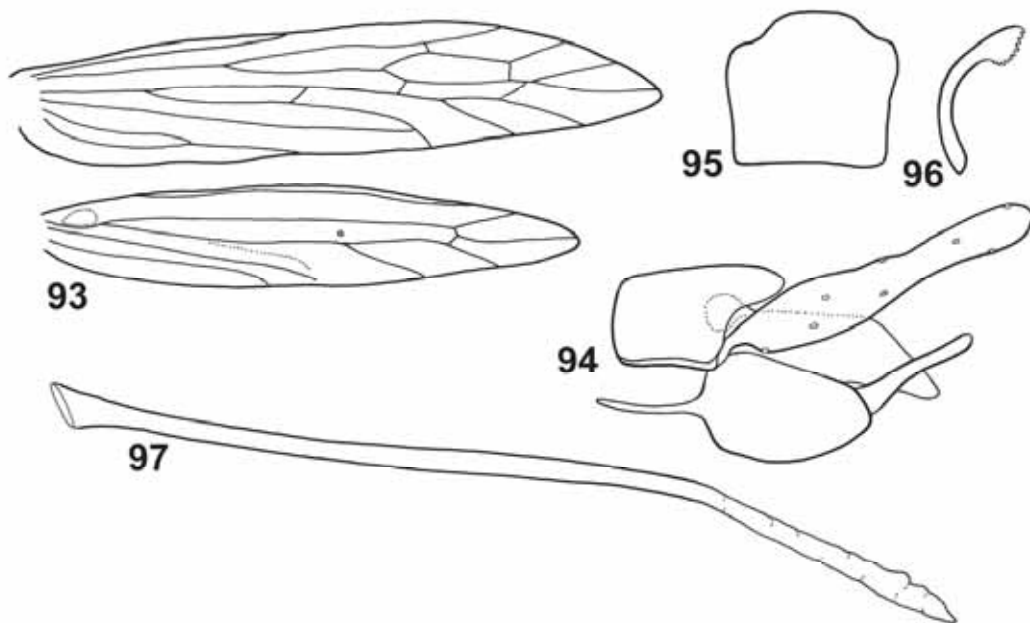


Figs 88-92: *Abaria hintraia* nov.sp., holotype. (88) Right wings. (89) Genitalia, lateral view. (90) Tergite VIII, dorsal view. (91) Left gonopod, ventral view. (92) Phallic organ, lateral view.

***Abaria nua* nov.sp. (Figs 93-97)**

This species belongs to the *Abaria tripunctata* species group, and resembles *Abaria dunga* nov.sp. It differs from *A. dunga* in having patches of scaloid setae on both the forewings and hind wings; in the forewings by having fork II with short petiolate on vestigial M1; in the hind wings by the vestigial R1; in the genitalia by having tergite VIII produced into a more rounded mesal lobe; the cerci that are broader basally and narrower apically, with constriction at mid-length; the gonopods in ventral view, which have shorter, and more convex mesal margin with teeth; and a longer phallic organ.

♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Frontal inter-antennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spurs. Foreleg femora and tibiae without setal fringes on mesal surfaces. Wings (Fig. 93): forewings and hind wings with patches of scaloid setae; forewing length 3.3 mm; base of R without transparent sleeve of setae; fork II sessile on vestigial M1; Cu2 fusing with Cu1 before wing margin; A reaching wing margin well before Cu1+2; hind wings with point of bifurcation of RS sessile on crossvein r-m; RS base moved to base of M due to presence of corneous depression on humeral area.



Figs 93-97: *Abaria nua* nov.sp., holotype. (93) Right wings. (94) Genitalia, lateral view. (95) Tergite VIII, dorsal view. (96) Left gonopod, ventral view. (97) Phallic organ, lateral view.

♂ genitalia (Figs 94-97). Segment IX represented by almost ovoid sternite and remnant cavity of tergite (Fig. 94); sternite IX longer than high in lateral view; ventral margin uniformly convex, almost rounded; anterior apodeme long, thin, slightly curving dorsad; tergite IX almost indiscernible, forming anterior cavity wall retracted under tergite VIII. Tergite VIII well-pigmented; dorsal margin produced posterad (Fig. 94) into rounded mesal lobe without median incision (Fig. 95); pleurotergal groove well developed. Segment X roof-shaped, strongly narrowing after mid-length; posterodorsal margin straight, apex pointing posteroventrad. Cerci elongate, digitiform; basal half broader than distal half, slightly constricted after mid-length; base narrow, forming short stalk to fulcrum (Fig. 94). Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; nearly straight, with rounded apex in lateral view; mesal spiny surface with apical teeth increasing in size towards apex (Fig. 96); spiny plate short, strongly convex in ventral view. Phallic organ (Fig. 97) more than twice as long as rest of genitalia, apex simple; without internal structures.

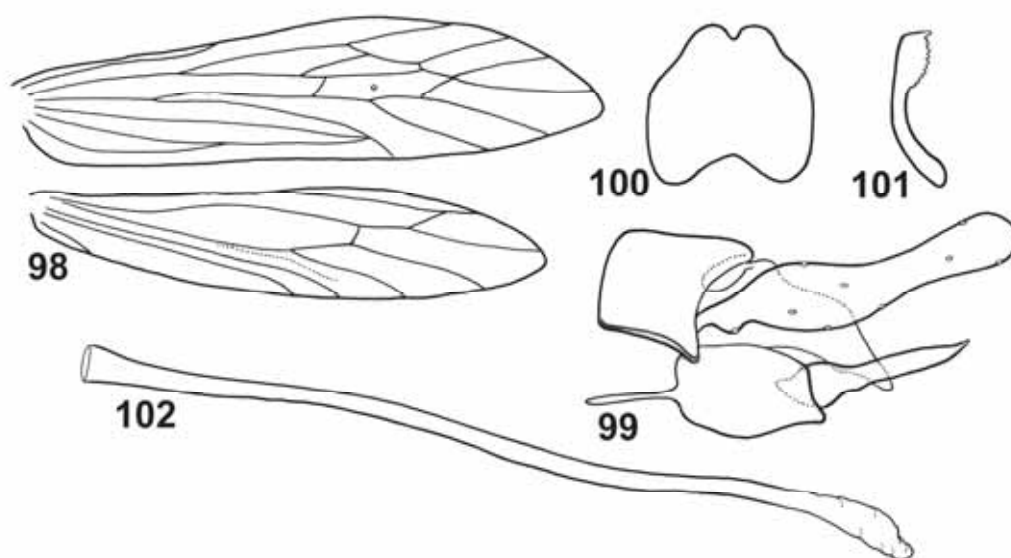
H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh.

E t y m o l o g y . *Nua*, half in Vietnamese, refers to the basal half of the cerci that are broader than the distal half.

***Abaria quangcha* nov.sp. (Figs 98-102)**

This species belongs to the *Abaria tripunctata* species group, and is most similar to *Abaria hintratra* nov.sp., described above. It differs from *A. hintratra* in the forewings by having A and Cu2 tangential on Cu1. In the genitalia the cerci have a ventral hump near basis and the gonopods have a shorter and more convex mesal spiny surface.

♂. Body small, pale brown. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spur. Forelegs with long and black setae in fringes on mesal surfaces of femura and tibiae. Wings (Fig. 98): forewing length 3.0 mm; base of R bearing elongate, transparent sleeve filled with 3 or 4 long setae; almost entire forewing surface covered with elongate scaloid setae; fork II sessile on vestigial M1; Cu2 and A tangential on Cu1; hind wings with small central cell due to closely set RS and M, bifurcation of SR petiolate.



Figs 98-102: *Abaria quangcha* nov.sp., holotype. (98) Right wings. (99) Genitalia, lateral view. (100) Tergite VIII, dorsal view. (101) Left gonopod, ventral view. (102) Phallic organ, lateral view.

♂ genitalia (Figs 99-102). Segment IX with nearly quadrangular sternite and remnant cavity of tergite (Fig. 99); sternite IX longer than high in lateral view, with slightly convex dorsal and ventral margins; posteroventral corner produced; anterior apodeme long, thin, nearly straight; tergite IX almost indiscernible, forming anterior cavity wall retracted under tergite VIII. Tergite VIII well-pigmented; posterodorsal margin produced posterad into two rounded lobes separated by V-shaped, median incision (Fig. 100); pleurotergal groove well developed;

somewhat roof-shaped, tapering ventroapically in lateral view (Fig. 99). Cerci elongate, digitiform, with well-developed constriction shortly after mid-length; base narrow, forming short stalk to fulcrum; subbasal ventral hump present on basal stalk (Fig. 99). Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; nearly straight, apically sharply pointed (Fig. 99); terminal tooth curving mesad (Fig. 101); mesal spiny lobe broad, convex, with about equally large teeth (Fig. 101). Phallic organ (Fig. 102) long, thin, slightly undulating along its length; apical half with dilating apex.

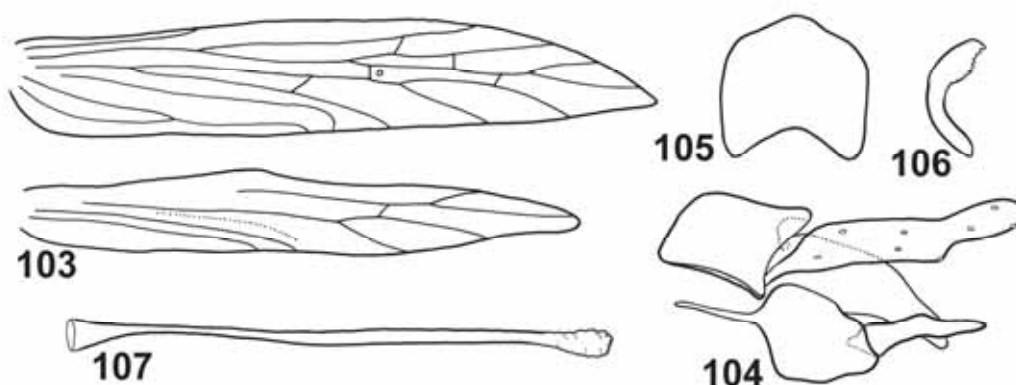
H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh. P a r a t y p e s : same data as holotype, 3 ♂♂ (OPC, in alcohol).

E t y m o l o g y . *Quangcha*, name derived from the type locality.

***Abaria ratgaya* nov.sp. (Figs 103-107)**

This species belongs to the *Abaria tripunctata* species group, and resembles *Abaria hintraia* nov.sp. described above, particularly in the shape of the gonopods in ventral view. It differs from *A. hintraia* by having narrower hind wings, with more reduced venation, i.e. without remnants of Sc and R1; in the forewings Cu2 ends in wing margin without fusing with Cu1; in the genitalia the posterodorsal margin of tergite VIII is produced posterad and lacks medial incision; the cerci have a small triangular lobe on the ventral margin shortly after mid-length, and are not widely constricted; and the gonopods have evenly sized mesal teeth on each harpago.

♂. Body minute, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spur. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 103): forewing length 2.6 mm; without scaloid setae; base of R without transparent setal sleeve; fork II petiolate; Cu2 separate at wing margin; A reaching wing margin well before Cu1; hind wings with bifurcation of RS petiolate on crossvein r-m.



Figs 103-107: *Abaria ratgaya* nov.sp., holotype. (103) Right wings. (104) Genitalia, lateral view. (105) Tergite VIII, dorsal view. (106) Left gonopod, ventral view. (107) Phallic organ, lateral view.

♂ genitalia (Figs 104-107). Segment IX represented by almost pentagonal sternite and remnant cavity of tergite (Fig. 104); sternite IX as long as high in lateral view, nearly pentagonal, with slightly convex margins, except with straight margin below anterior apodemes; anterior apodemes long, thin, straight, horizontal; tergite IX forming cavity wall retracted under tergite VIII. Tergite VIII well-pigmented; dorsoapical margin rounded, without medial incision (Fig. 105); pleurotergal groove well developed. Segment X roof-shaped, narrowing after mid-length; dorsal margin concave after mid-length; apex rounded (Fig. 104). Cerci elongate, digitiform, without constriction after mid-length; basal two-thirds nearly straight in lateral view (Fig. 104); small, triangular lobe present at distal two-thirds on ventral margin; slightly bent dorsad from distal two-thirds; apex rounded; cercal base narrow, forming short stalk to fulcrum. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; slightly geniculate in lateral view (Fig. 104); mesal spiny surface with evenly sized, small teeth (Fig. 106); spiny part of gonopods slightly broader than basal part, short, convex; uniformly curving mesad along their length (Fig. 106). Phallic organ (Fig. 107) long, thin, with simple, dilating apex; internal structures indiscernible.

H o l o t y p e ♂. *Vietnam*, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh. P a r a t y p e s : same data as holotype, 2♂♂ (OPC, in alcohol).

E t y m o l o g y . *Ratgaya*, from "rat gay", small in Vietnamese, refers to the small size of the species.

***Abaria tamgiaca* nov.sp. Figs (108-112)**

This species belongs to the *Abaria tripunctata* species group, and resembles *Abaria dunga* nov.sp. described below, from which it differs by having forewings with a long row of short stout bristles with recurving apices located in the anal region; in genitalia by the tergite VIII with posterior margin produced more bluntly triangular; cerci constricted after mid-length and with capitate apex; and the gonopods having a triangular lobe with row of mesal, marginal teeth, ending in a large, mesad curving apical tooth in ventral view.

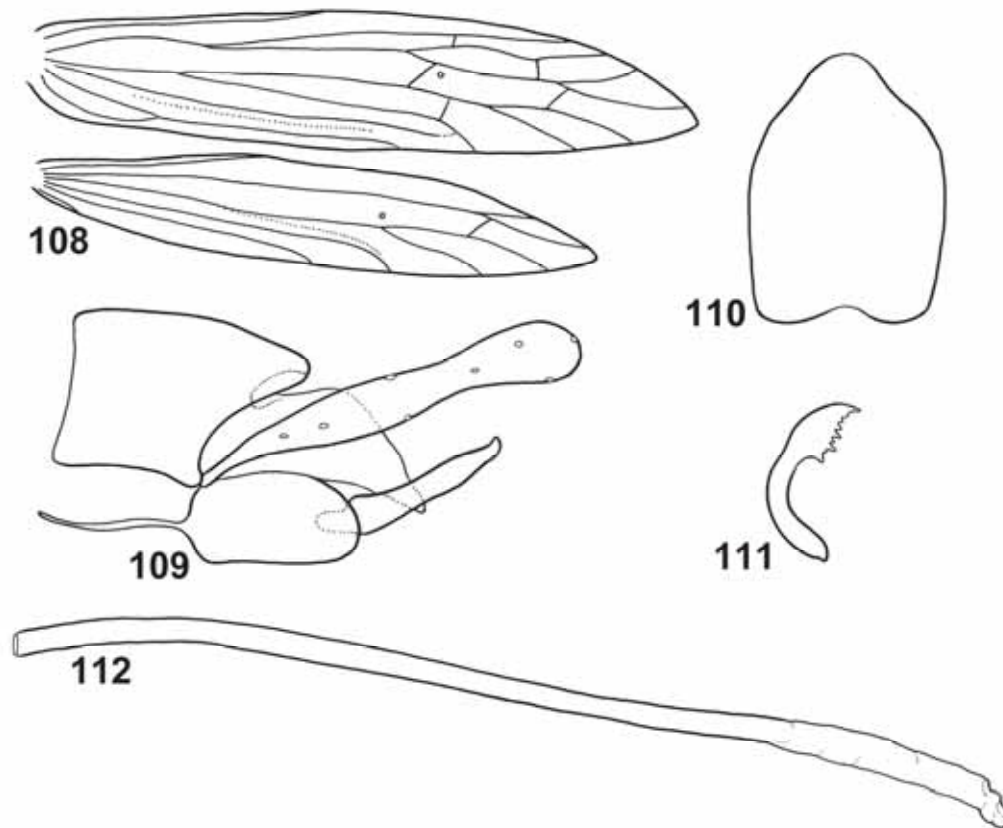
♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with un-modified apical spur. Foreleg femora and tibiae without fringe of long setae on mesal surfaces. Wings (Fig. 108): forewing length 3.0 mm; base of R without transparent setal sleeve; scaloid setae indiscernible; fork II sessile on M1; Cu2 fusing with Cu1 near anal margin; A reaching wing margin well before Cu1; long row of short, stout, bristles with recurving apices located between Cu2 and A; hind wings with bifurcation of RS sessile on crossvein r-m.

♂ genitalia (Figs 109-112). Segment IX with oval sternite and remnant cavity of tergite (Fig. 109); sternite IX longer than high in lateral view; anterior apodeme long, thin, slightly undulating, anteriorly curving dorsad; tergite IX almost indiscernible, forming anterior cavity wall retracted under tergite VIII. Tergite VIII well-pigmented; posterodorsal margin produced into rounded lobe without medial incision (Fig. 110); pleurotergal groove well developed. Segment X roof-shaped, narrowing from mid-length; posterodorsal margin irregular, with shallow, subapical incision (Fig. 109), apex pointed. Cerci elongate, digitiform; constricted at two-thirds their length; apex capitate; cercal base narrowing anteriorly, forming short stalk to fulcrum in lateral view (Fig. 109). Gonopods strongly pigmented; coxopodites and harpagones completely fused, without separating suture; nearly straight, slightly narrowing apically in

lateral view; mesal spiny margin with unevenly sized teeth (Fig. 111); in ventral view with subtriangular, mesad orienting tooth at apex. Phallic organ (Fig. 112) long, thin; with simple, dilating apex; without internal structures.

H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh. P a r a t y p e s : same data as holotype, 7♂♂.

E t y m o l o g y . *Tamgiaca*, from "hình tam giác", triangular in Vietnamese, refers to the triangular shape of the posterior margin of tergite VIII in dorsal view, and of the triangular apical tooth of the gonopods in ventral view.

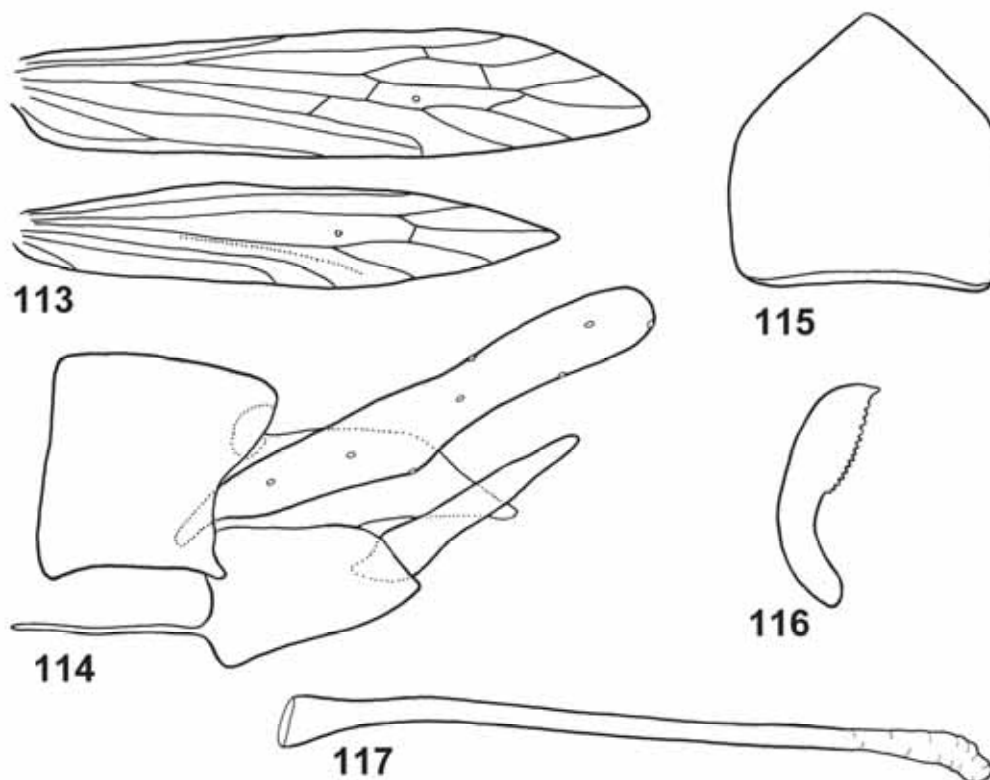


Figs 108-112: *Abaria tamgiaca* nov.sp., holotype. (108) Right wings. (109) Genitalia, lateral view. (110) Tergite VIII, dorsal view. (111) Left gonopod, ventral view. (112) Phallic organ, lateral view.

***Abaria dunga* nov.sp. (Figs 113-117)**

This species belongs to the *Abaria tripunctata* species group, and resembles *Abaria ratgaya* nov.sp. described above, particularly in the genitalia by having nearly identical shape of gonopods in ventral view. It differs from *A. ratgaya* in having the forewing fork II sessile on the vestigial M1; much broader hind wings, with intact R1; tergite VIII with apex produced dorsoapically into a sharp triangular without median incision; sternite IX being longer than high; cerci with ventral subapical small lobe located at mid-length, and being more straight dorsally; and the gonopods with longer mesal teeth in ventral view.

♂. Body small, pale brown. Head dorsum highly bulging, domed. Pronotal and mesonotal sclerites brown, sutures dark brown. Antennae without long setal fringes. Maxillary palp formula: I-II-III-IV-V, segments gradually increasing in length from segment I to segment IV; segment V much shorter than sum of segment I-II-III-IV. Frontal interantennal compact setose wart not discernible. Mesoprescutum absent. Proepisternal and precoxal setal warts packed with long, strong setae. Spur formula 043; anterior spurs much shorter than posterior spurs; hind legs with unmodified apical spurs. Foreleg femora and tibiae without long, black setal fringes on mesal surfaces. Wings (Fig. 113): forewing length 3.3 mm; base of R without transparent sleeve of setae; scales absent; fork II present, sessile on M1; Cu2 fusing with Cu1 near wing margin; A reaching wing margin well before Cu1+2; hind wings with point of bifurcation of RS sessile on crossvein r-m.



Figs 113-117: *Abaria dunga* nov.sp., holotype. (113) Right wings. (114) Genitalia, lateral view. (115) Tergite VIII, dorsal view. (116) Left gonopod, ventral view. (117) Phallic organ, lateral view.

♂ genitalia (Figs 114-117). Segment IX represented by rhomboid sternite and remnant cavity of tergite (Fig. 114); sternite IX longer than high in lateral view; anterior apodeme long, straight, thin, horizontal; tergite IX almost indiscernible, forming anterior cavity wall retracted under tergite VIII. Tergite VIII well-pigmented; posterodorsal margin triangular, without medial excision (Fig. 115); pleurotergal groove well developed. Segment X roof-shaped, narrowing from distal two-thirds (Fig. 114); posterodorsal margin weakly concave, apex pointing posterad in lateral view. Cerci elongate, digitiform; nearly straight; with small, triangular lobe at mid-length on ventral margin; cercal base narrow, forming short stalk to fulcrum in lateral view. Gonopods strongly pigmented; coxopodites and harpagones completely fused, without

separating suture; in lateral view nearly straight, tapering along their length to pointed apex; mesal spiny margin with evenly sized teeth (Fig. 116); with long, mesad spine at apex; distal half of gonopods nearly twice as broad as basal part in ventral view; basal half uniformly curving; distal half nearly straight (Fig. 116). Phallic organ (Fig. 117) long, thin, with simple, dilating apex, modified internal structures absent.

H o l o t y p e ♂. Vietnam, Bac Thai Province, Quang Chu, 24-25.v.1987, leg. J. Oláh. P a r a t y p e s : same data as holotype, 4♂♂.

E t y m o l o g y . *Dunga*, sharp in Vietnamese, refers to the sharply triangular shape of tergite VIII in dorsal view.

Zusammenfassung

Die folgenden neuen Xiphocentroniden werden aus Vietnam beschrieben und abgebildet: *Melanotrichia trona*, *Cnodocentron filamenta*, *Drepanocentron dabac*, *D. dem*, *D. mochau*, *D. phuong*, *D. tamdaona*, *D. vang*, *D. vangiong*, *D. vongana*, *Abaria catba*, *A. cuna*, *A. damra*, *A. dehen*, *A. dogoca*, *A. trung*, *A. hintragionga*, *A. hintraia*, *A. hintratra*, *A. nua*, *A. quangcha*, *A. ratgaja*, *A. tamgiaca* und *A. dunga*. Neue Nachweise werden für *Melanotrichia attiaides*, *M. samaconius* und *Drepanocentron jiska* gemeldet.

References

- EVENHUS N.L. (2007): Helping solve the "other" taxonomic impediment: completing the eight steps to total enlightenment and taxonomic Nirvana. — *Zootaxa* **1407**: 3-12.
- MAHUNKA S. & J. OLÁH (1986): Hungarian zoological studies in Vietnam. 1. The outline of the research programme and the report of the first collecting trip in 1986. — *Folia Entomologica Hungarica* **47** (1-2): 103-107.
- MAHUNKA S., OLÁH J. & T. VÁSÁRHELYI (1989): Report on a collecting trip to Vietnam in 1988. — *Folia Entomologica Hungarica*, *Rovartani Közlemények* **50**: 61-65.
- MALICKY H. (1988): A comment on figuring three-dimensional structures. — *Trichoptera Newsletter* **15**: 21-24.
- MALICKY H. (2009): Beiträge zur Kenntnis asiatischer Trichopteren. — *Braueria* **36**: 11-58.
- MATSKÁSI I., TOPÁL Gy. & J. OLÁH (Unpublished): Report on a collecting trip to Vietnam in 1987.
- MÉSZÁROS F., OLÁH J. & T. VÁSÁRHELYI (1987): Report on a collecting trip to Vietnam in 1986. — *Folia Entomologica Hungarica* **48**: 265-269.
- MEY W. (1998): Die Köcherfliegenfauna des Fan Si Pan-Massivs in Nord-Vietnam. 3. Beschreibung weiterer neuer Arten (Trichoptera). — *Opuscula Zoologica Fluminensia* **165**: 1-17.
- MORSE J.C. (ed.) (2009): Trichoptera World Checklist. <http://entweb.clemson.edu/database/trichopt/index.htm> [Accessed 9 October 2009.]

Authors' addresses:

Prof. János OLÁH
Szent István University, Gödöllő
Centre of Environmental Health
Tarján u. 28, H-4032 Debrecen, Hungary
E-mail: profolah@gmail.com

Dr. Kjell Arne JOHANSON
Swedish Museum of Natural History
Entomology Department, Box 50007
S-10405 Stockholm, Sweden
E-mail: kjell.arne.johanson@nrm.se