



Lannapsyche and *Marilia* species of China (Trichoptera: Odontoceridae)

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Abstract

The Chinese species of the genera *Lannapsyche* and *Marilia* (Trichoptera, Odontoceridae) are reviewed, including 1 new species of *Lannapsyche* (*Lannapsyche atilis* sp. n.), 1 new Chinese record of *Lannapsyche* (*Lannapsyche chantaramongkolae* Malicky 1989, originally described from Thailand), and 3 new species of *Marilia* (*Marilia discaulis*, sp. n., *Marilia megalopos*, sp. n., and *Marilia qinlingensis*, sp. n.), bringing the Chinese fauna of *Lannapsyche* to 3 species and of *Marilia* to 6 species. Previously known species *Lannapsyche setschuana* Malicky 1995b and *Marilia parallela* Hwang 1957 are redescribed and reillustrated for both males and females. Updated information about the holotype specimen of *Marilia simulans* Forsslund 1935 is provided. Distinctive differences of the female genitalia are described, which may add important diagnostic characters for genus and species recognition.

Key words: new species, new record, male, female, species recognition, distribution

Introduction

The odontocerid genus *Lannapsyche* Malicky 1989 was established with type species *Lannapsyche chantaramongkolae* Malicky 1989 from Thailand. Seven species of this genus are currently known, all occurring in the Oriental Region: 1 from Thailand (*L. chantaramongkolae*), 2 from Vietnam (*L. bachoi* Malicky 1995a and *L. xylostelloides* Mey 1997), 3 from Myanmar (*L. birathena* Oláh & Johanson 2010, *L. sukma* Oláh & Johanson 2010, and *L. kamba* Oláh & Johanson 2010) and 1 from China (*L. setschuana* Malicky 1995b).

The genus *Marilia* Müller 1880 is widespread, with 65 extant species, of which 39 species are Neotropical, 19 Oriental, 3 Australasian, 2 Nearctic, and 2 Nearctic-Neotropical (Morse 2015). Schmid (1958) considered *Marilia ceylanica* Martynov 1936 to be a synonym of *Marilia mixta* (Hagen 1858) from Sri Lanka, but without giving any diagnostic characters or drawings; because of this lack of evidence, we will follow Malicky (1989, 2010), considering *Marilia ceylanica* a valid species. Up to now, 3 Chinese *Marilia* species have been described, all occurring in the Oriental Region of China: *Marilia lata* Ulmer 1926 from Guang-dong, *Marilia parallela* Hwang 1957 from Fu-jian, and *Marilia simulans* Forsslund 1935 from Si-chuan. *Marilia albofusca* Schmid 1959 from Yun-nan is first recognized here as a synonym of *Marilia parallela*.

Examination of *Lannapsyche* and *Marilia* specimens from major expeditions in Yun-nan in 1990, 1994, and 1996; in the Qin-ling Mountains (Shaan-xi) and Long-wang-shan (Zhe-jiang) in 1998; and in Guang-dong in 2004 revealed 1 new species and 1 new Chinese record of *Lannapsyche* and 3 new species of *Marilia* from China, bringing the Chinese fauna of *Lannapsyche* to 3 species and of *Marilia* to 6 species. All specimens have been deposited in the Nan-jing Agricultural University Insect Collection, Nan-jing, Jiang-su Province, People's Republic of China (NAU) except the Clemson University Arthropod Collection, Clemson, South Carolina, United States of America (CUAC), where indicated.

Material and methods

Unless otherwise indicated, adults were collected with a 15-watt ultraviolet light powered by a sealed rechargeable

12-volt battery. Traps were placed near the edges of streams for 2–3 hours beginning at dusk. The caddisfly material so collected was killed in 80% ethyl alcohol. The abdomens of males were cleared with a heated KOH solution to reveal internal and other hidden structures. Each dissected abdomen was moved into lactic acid for preparing illustrations. Pencil templates were drawn on white paper through use of an ocular grid in a Nikon SMZ645 dissecting microscope. These pencil templates were re-drawn on transparent paper in black archival ink with various sizes of pens.

In the descriptions, colors are those observed for the specimens in alcohol. The morphological terms for head warts and male genitalia are modified from those of Oláh & Johanson (2010); terms for female genitalia are those of Nielsen (1980); terms for the wing venation are modified from those of Mosely & Kimmins (1953). Label abbreviations in the figures refer to the following structures:

A = first anal vein

a. = anus

api.ga. = apico-interlobular gap of tergum X

api.lob. = apical lobe (paired) of tergum X

b.bum. = basomesal setose bump of a coxopodite of an inferior appendage (paired)

cox. = coxopodite of an inferior appendage (paired)

Cu1, Cu2 = cubital vein, first and second branches, respectively

Cu1a, Cu1b = cubital vein 1 (Cu1), anterior and posterior branches, respectively

har. = harpago of an inferior appendage (paired)

I, II, III, V = first, second, third, and fifth apical forks, respectively

l.api.corn. = lateral apicodorsal corner (paired) of segment IX

l.m.lob. = lateromedian apical lobe of segment IX (paired)

long.gr. = longitudinal oblique groove of segment IX (paired)

M1, M2 = MA, first and second branches, respectively

MA, MP = medial vein, anterior and posterior branches, respectively

ph.b. = phallobase

ph.c. = phallicata

ph.scl. = phallotremal sclerite

pre.app. = preanal appendage (paired)

R1, R2, R3, R4, R5 = radial veins, first, second, third, fourth, and fifth branches, respectively

Sc = subcostal vein

scl.rid. = anterolateral sclerotized ridge of ventral lobe (paired)

sper.scl. = spermathecal sclerite

sub.d.lob. = subapicodorsal lobe of an inferior appendage (paired)

sub.v.lob. = subapicoventral lobe of an inferior appendage (paired)

subg.pl. = subgenital plate (fused external gonopods VIII and IX, or e.gon.VIIIa+VIIIb+IX of Nielsen 1980)

t.IX = tergum IX

t.X = tergum X

t.IXa+IXb = anterior portions of tergite IX (IXa and IXb of Nielsen 1980)

t.IXc+X = divided posterior portion of tergite IX and tergum X (IXc and X of Nielsen 1980)

v.lob. = ventral lobe (paired, external gonopod IX of Nielsen 1980)

ver.m.war. = vertexal medi-antennal compact setose wart (paired).

***Lannapsyche* Malicky 1989**

Oláh & Johanson (2010) summarized the characters of genus *Lannapsyche*. Based on specimens from Oriental China, additional diagnostic characters for males are as follows: 1) Segment X tall and hood-like, divided apicomeresally or completely divided into 2 tall, vertical lobes, each with dorsal margin flattened, setose, and longitudinally strap-like in dorsal view, extended laterad as longitudinal carina, especially subbasally (Figs. 1B, 2B); 2) harpago of each inferior appendage fleshy, with expanded apex covered with short, stout spines (Figs. 1A,

2A). The mesal setal wart (= mesal nodule, Oláh & Johanson 2010) on the first segment of each maxillary palp (Fig. 1E) is also present in both male and female in all 3 Chinese species. The Chinese *Lannapsyche* species can be collected during daytime along small brooks or spring-fed streams (Oláh & Johanson 2010), but at least some species also come to light traps.

***Lannapsyche setschuana* Malicky 1995**

(Figs. 1, 3)

Lannapsyche setschuana Malicky 1995b: 25–26. Type locality: Si-chuan (China).

Our specimens were collected from North China (Oriental-East Palearctic boundary). The male genitalia of the specimens are closely congruent with those of *Lannapsyche setschuana* specimens from Central (Oriental) China, Si-chuan Province (Jin-lang Tai, W. Cheng-du). For clear comparisons, the male genitalia are re-illustrated and redescribed.

Redescription: Adult. Length of each male forewing 11.0–11.2 mm (n = 4). Specimens in alcohol generally dark brown, warts on head and thorax yellow. Mesal setal wart present on first segment of each maxillary palp (Fig. 1E). Wing venation very similar to that of *Lannapsyche chantaramongkolae* and, in each forewing forks I, II, III, and V present; forks I, II, and V sessile, fork III petiolate; and single anal vein with row of bristles ventrally (similar to Fig. 5Fa), however R1 not unusually close to R2 distally, R4 not as strongly curved anterad, and apical distances between R2–R3 and R3–R4 less than between R4–R5; in each hind wing, R1 confluent with R2 shortly after end of Sc (as in Fig. 5Fp) and short crossvein *r-m* present between R5 and MA (Malicky 1995b, fig. on p. 25).

Male genitalia Pleura IX each divided by longitudinal oblique groove into dorsal and ventral parts (Fig. 1A, long. gr.); in lateral view on each side, anterior margin of segment IX dorsally and ventrally concave leaving rounded production at anterior end of longitudinal groove about 1/3 distance from ventral margin; lateromedian apical lobe of IX at posterior end of longitudinal groove produced in 90° angle about 1/3 distance from dorsal margin (Fig. 1A, l.m.lob.) Tergum IX produced posteromesally into narrow triangular lobe, about 2 times as long as its basal width in dorsal view (Fig. 1B, t.IX). Sternum IX deeply concave anteriorly and broadly concave posteriorly in ventral view (Fig. 1C, s.IX). Preanal appendages present as convex, setose areas, merged with sides of mesal projection of segment IX and base of segment X (Figs. 1A, 1B, pre.app.). Segment X forming pair of broad, rhomboid lobes, tapering from mid length to apices in lateral view (Fig. 1A, t.X), dorsal edges of these lobes each expanding laterad to form pair of elongate plates, each about 4 times as long as its average width and with triangular subbasolateral projection in dorsal view (Fig. 1B, t.X), median cleft between lobes 6/7 as long as tergum X and pleural portions of segment X not visible when viewed dorsally. Inferior appendages with coxopodite parallel-sided, stout, and straight in lateral view, each with length between base of coxopodite and its subapical lobes about 2 times its width, subapicodorsal lobe about 2 times as long as subapicoventral lobe (Fig. 1A, inf.app., sub.d.lob., sub.v.lob.); harpago broadly triangular, embedded between subapical lobes of coxopodite in lateral view (Fig. 1A, har.), wider apex thickly covered caudally with short, black, triangular setae, setae-bearing area elongated in kidney shape, with mesal margin slightly concave in ventral view (Fig. 1C, har.). Phallus almost as long as inferior appendages; phallobase highly sclerotized, constricted at 1/3 distance from base, with distal 2/3 curving backward and bulged in cup shape, fused ventrally with lightly sclerotized phallicata (Fig. 1D, ph.b., ph.c.), in ventral view bulged portion much broader than base (Fig. 1E); ejaculatory duct and phallostremal sclerite conspicuous (Fig. 1D, ph.scl.), phallostremal sclerite elongate with U-shaped opening in ventral view.

Female genitalia. Segments IX and X and gonopods VIII and IX all firmly united and much sclerotized, dark brown. In dorsal view, anterior parts of tergite IX (Fig. 3B, tIXa+IXb) short mesally with median length about 1/5 length of lateral margins. Posterior part of tergite IX and tergum X (Fig. 3B, t.IXc+X) deeply divided into pair of lobes, each apical lobe gradually narrowing to subtruncate apex, about 1/2 as broad as basal width; apical setae black, long and straight, about as long as apical lobes; width between apical portions of two apical lobes almost 2 times width of each lobe itself. In lateral view, dorsal margins of IXc+X forming continuing concave line, with apex of IXc+X tilting upward; on each side, longitudinal lower lateral margin of anterior parts of tergite IX (Fig. 3A, t.IXa+IXb) almost truncate. In ventral view, spermathecal sclerite of processus spermathecae (Fig. 3C, sper.scl.) slightly narrowed at anterior distal 1/6 with flat apex; posteriorly this sclerite ending in 2 darkly

sclerotized acute structures. On subgenital plate (Fig. 3C, subg.pl. = fused external gonopods VIII and IX, or e.gon.VIIIa+VIIIb+IX), grey band forming posteriorly open square around region below spermathecal sclerite.

Specimens examined. **PR CHINA: Shaan-xi Province:** Feng-xian County, north slope of Qin-ling Mountains, Mount Tian-tai of Baoji National Forest Park, light trap, N34.3°, E107.1°, alt. 1500 m, 10-vi-1998, Coll. Yang L-f., 2 males, 7 females; same date except at 1900 m, coll. Sun Ch-h. and Du Y-z., 1 male, 1 female; same data except collected by sweep net on 09-vi-1998 by Sun Ch-h., 1 male 7 females. Zhou-zhi County, north slope of Qin-ling Mountains, headwater of Hei-he River, Hou-zhen-zi Town, light trap, N33°51'09", E107°50'15", alt. 1250 m, 25-v-1995, Coll. Du Y-z., 1 male, 1 female. Ning-shaan County, Huo-di-tang Forest Experiment Station, Ban-qiao Creek, sweep net, N33°25', E108°25', alt. 1600 m, 05-vi-1998, Coll. J.C. Morse, 3 males.

Distribution: Oriental Region of China (Si-chuan) and Oriental-Palearctic Boundary Region of China (Shaan-xi, north slope of Qin-ling Mountains).

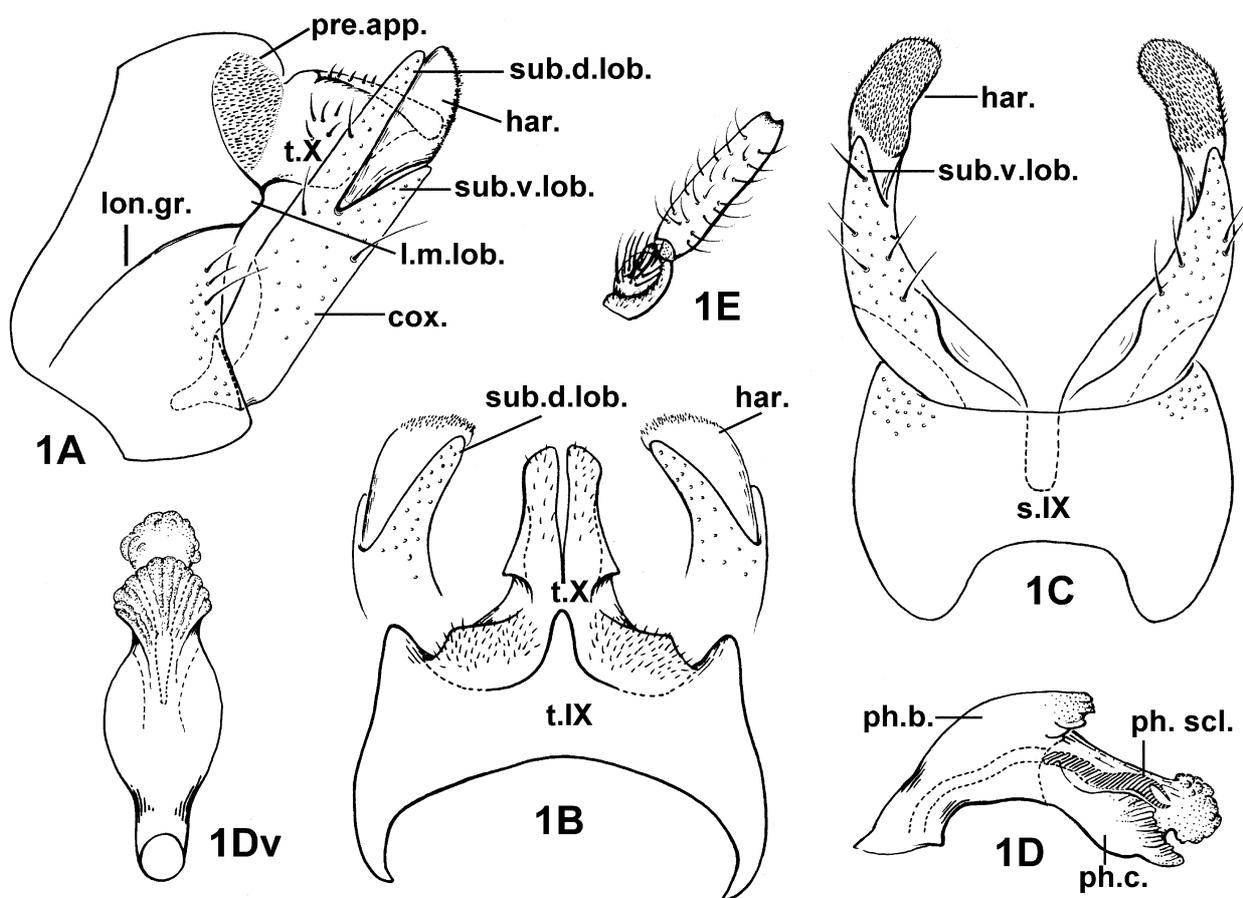


FIGURE 1. *Lannapsyche setschuana* Malicky 1995b, male genitalia. 1A, left lateral; 1B, dorsal; 1C, ventral; 1D, phallus, left lateral; 1Dv, phallus, ventral; 1E, right maxillary palp of male, segments 1 and 2, mesal.

***Lannapsyche altilis* n. sp.**

(Figs. 2, 4)

Diagnosis. This species is most similar to *Lannapsyche setschuana*, for males especially in that the apex of the harpago is covered with thick, triangular setae; the preanal appendages are present as convex, setose areas, each merged with the sides of the mesal projection of segment IX and the base of segment X; and the dorsal edges of segment X are each expanded laterad to form a pair of elongate plates in dorsal view. The new species is distinguished from *Lannapsyche setschuana* in having 1) the expanded dorsal edges of segment X longer and narrower, each about 5 times as long as its average width and with the subbasolateral projection smaller and

rounded, the mesal cleft is only about 1/3 as long as tergum X, and the pleura of segment X are visible in dorsal view (in *L. setschuana* the expanded dorsal edges are 4 times as long as its average width, each with a large triangular subbasolateral projection, the mesal cleft is very deep and 6/7 as long as tergum X, and the pleura of segment X are not visible in dorsal view). 2) The subapicodorsal lobe of each inferior appendage is short with a rounded apex and is about as long as the subapicoventral lobe in lateral view (in *L. setschuana* the subapicodorsal lobe of each inferior appendage is elongate and is 2 times as long as the subapicoventral lobe in lateral view). 3) Each harpago is short and oval in lateral and ventral views and the seta-bearing apex is oval with its mesal margin convex in ventral view (in *L. setschuana* each harpago is broadly triangular in lateral view and the seta-bearing apex is elongate and kidney-shaped with its mesal margin concave in ventral view).

Adult. Length of each male forewing 10.8 mm (n = 1). Specimen in alcohol generally dark brown, forewings brown. Forewings (Fig. 2Fa) each with R1 not confluent with R2 at apex, but gradually approaching each other distally, R4 sinuate with apex closer to R3, such that apical distance between R4 and R5 at least 2.5 times distance between R2 and R3 or R3 and R4; forks I, II, III, and V present; forks I, II, and V sessile, fork III petiolate; crossvein *m-cu* set just beyond base of fork V; single anal vein with dense row of bristles ventrally. Hind wings (Fig. 2Fp) each with R1 nearly running into R2 after tip of Sc and then disappearing (arrow); crossvein *r-m* between R5 and MA present (arrow).

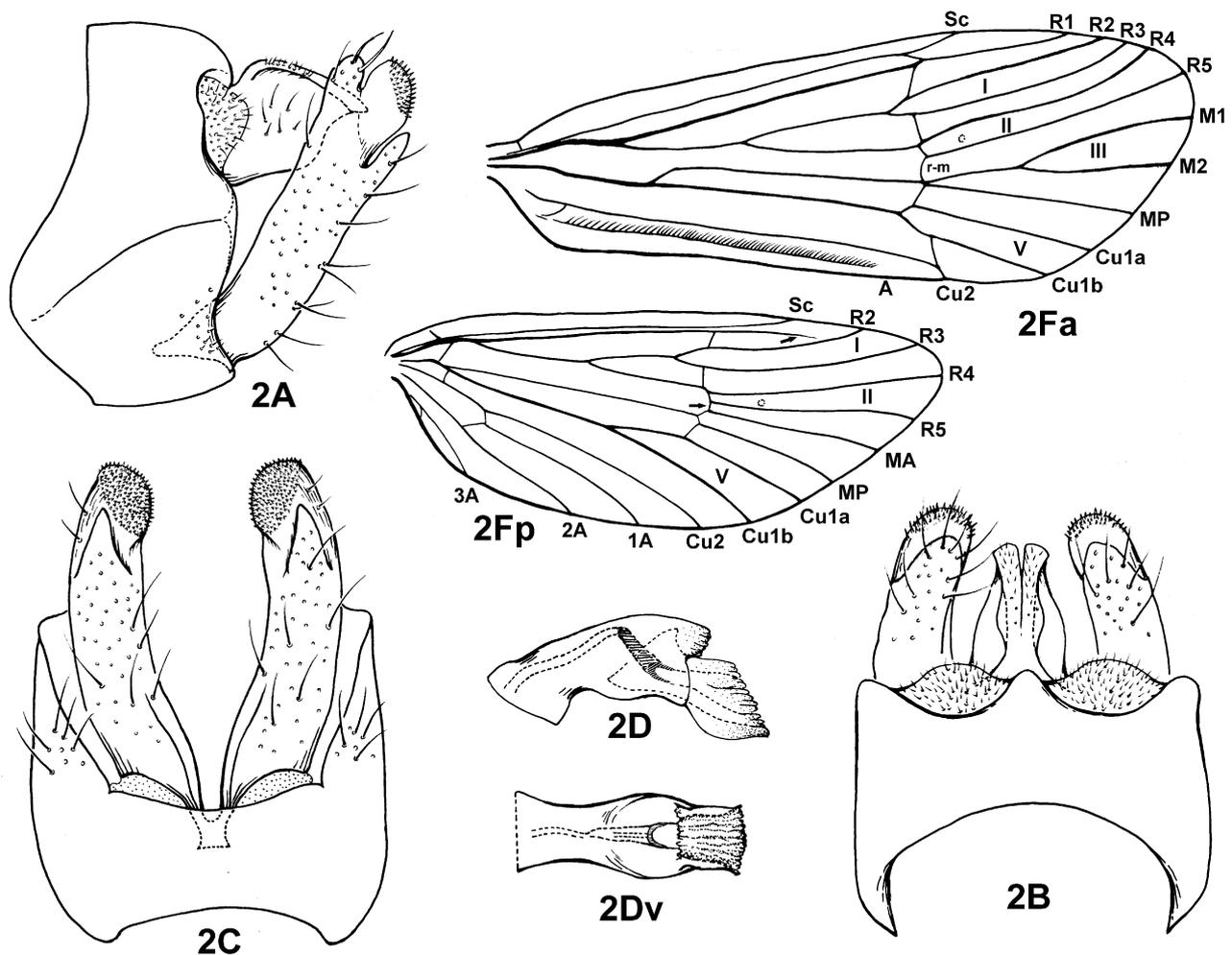
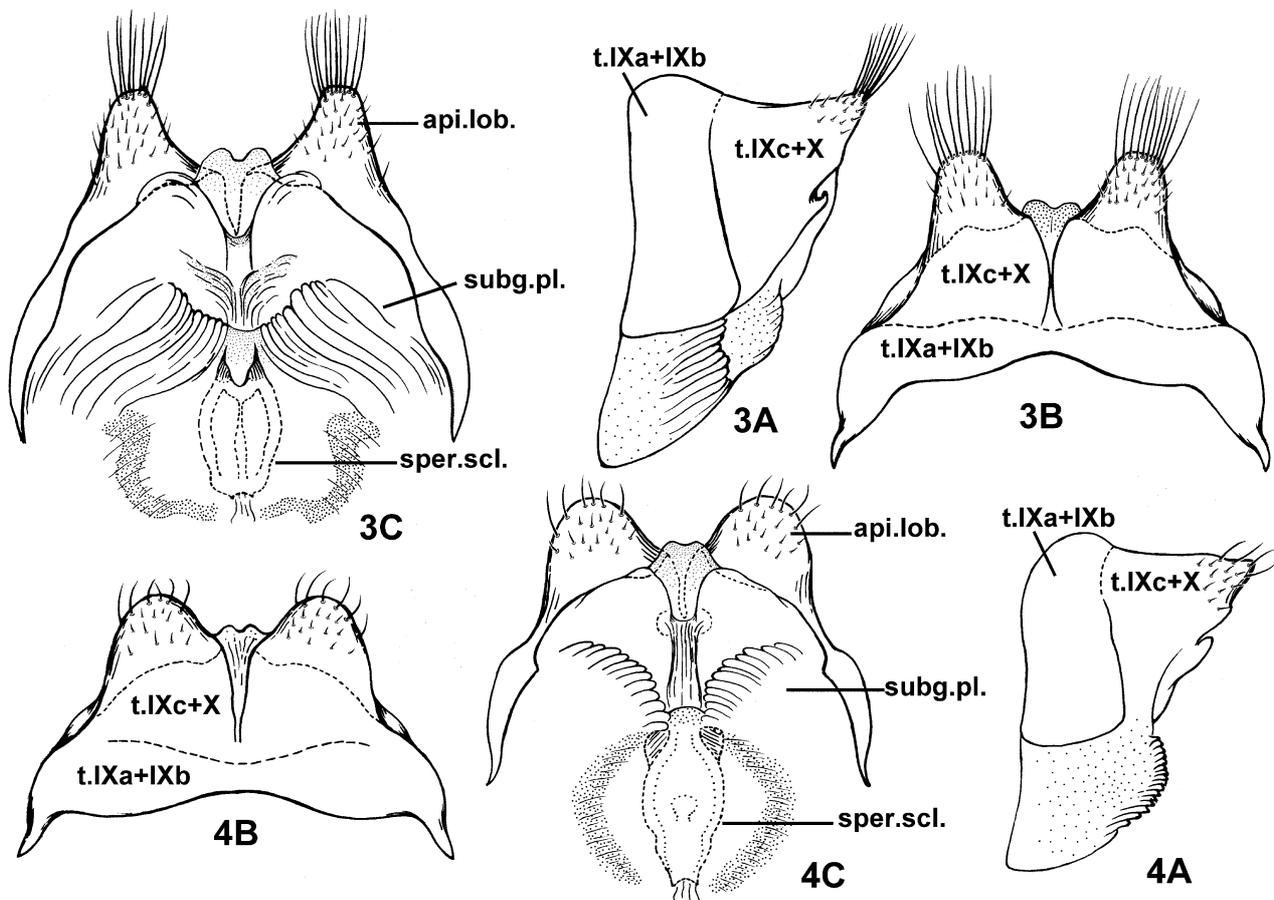


FIGURE 2. *Lannapsyche altilis* n. sp., male genitalia and wings. 2A–2D, male genitalia: 2A, left lateral; 2B, dorsal; 2C, ventral; 2D, phallus, left lateral; 2Dv, phallus, ventral. 2Fa–2Fp, right wings, dorsal: 2Fa, forewing; 2Fp, hind wing.

Male genitalia. Pleura IX each divided by longitudinal oblique groove into dorsal and ventral parts in lateral view; in lateral view on each side anterior and posterior margins of segment IX dorsally and ventrally concave, leaving rounded productions at ends of longitudinal groove, anterior production about 60° and about 1/3 distance from ventral margin, posterior production broader, about 80°, occupying median 1/3 of posterior margin (Fig. 2A).

Tergum IX produced posteromesally into short triangular lobe with its length shorter than its basal width in dorsal view (Fig. 2B). Preanal appendages present as convex, setose areas, broadly attached to tergum IX on either side of mesal projection (Fig. 2B). Segment X forming broad lobe, nearly rhomboid, tapering from mid length to apices in lateral view (Fig 2A); in dorsal view tergum X cleft apically about 1/4 its length, with dorsal edges flattened, each expanding laterad and forming pair of slender belts, each about 5 times as long as its average width and slightly convex at mid length, pleural portions of segment X visible (Fig. 2B). Inferior appendages with coxopodite parallel-sided, stout, straight, length between base of appendage and subapical lobes about 3 times its width in lateral view, subapicodorsal lobe short with rounded apex and slightly longer than short, triangular subapicoventral lobe (Fig. 2A). Harpago short, oval, embedded between subapical lobes of each coxopodite in lateral view, setose apex oval with its mesal margin convex in ventral view (Fig. 2C). Phallus slightly shorter than inferior appendages; phallobase with narrow constriction 1/3 distance from base, evenly bulged and curving backward in distal 2/3, lightly sclerotized phallicata projecting apicoventrally (Fig. 2D), in ventral view bulged portion slightly broader than base (Fig. 2Dv); ejaculatory duct conspicuous, phallotremal sclerite elongate with U-shaped opening in ventral view (Figs. 2D, 2Dv).

Female genitalia. Segments IX and X and gonopods VIII and IX firmly united and sclerotized, dark brown. In dorsal view, anterior parts of tergite IX (Fig. 4B, t.IXa+IXb) narrowed and concave anteromesally and posteromesally with median length about 1/3 as long as lateral margins (Fig. 4B). Posterior part of tergite IX and tergum X (Fig. 4B, t.IXc+X) deeply divided apically nearly to base, each resulting apical lobe broadly rounded, about 4/5 as broad as basal width, apical setae dark brown, up to 1/2 as long as apical lobes; width (d) between apical portions of two apical lobes almost as broad as base of 1 lobe (Fig. 4B). In lateral view, dorsal margins of terga IXc+X nearly straight, sloping downward with apex of terga IXc+X not tilting upward; on each side longitudinal lower lateral margin of tergite IXa+IXb almost truncate (Fig. 4A). In ventral view, spermathecal sclerite tapered anteriorly, with distal 1/3 subtriangular, posterior end with oval sclerite on each side. Subgenital plate (Fig. 4C, subg.pl. = fused external gonopods VIII and IX, or e.gon.VIIIa+VIIIb+IX) with diamond-shaped grey bands around region of spermathecal sclerite (Fig. 4C).



FIGURES 3–4. *Lannapsyche* spp., female genitalia. 3, *L. setschuana* Malicky & Chantaramongkol 1995: 3A, left lateral; 3B, dorsal; 3C, ventral. 4, *L. atilis* sp. nov.: 4A, left lateral; 4B, dorsal; 4C, ventral.

Holotype male. PR CHINA: An-hui Province, Jiu-hua Mountain, N30.4°, E117.8°, alt. 800–1000 m, 5-vi-1989, Coll. Sun C-h.

Paratypes. Same data as holotype, 2 females (NJAU); same data as holotype, 1 male and 1 female (CUAC, Odontoceridae #009).

Etymology. Latin, *altilis* = fattened, with reference to the stout harpago of each inferior appendage.

Distribution. Oriental Biogeographic Region, southern China (An-hui).

***Lannapsyche chantaramongkolae* Malicky 1989, New Record**

(Fig. 5)

Lannapsyche chantaramongkolae Malicky 1989: 36, 15–16, figs. 14a–14h. Type locality: Thailand

New record. PR CHINA: Yun-nan Province, Ma-li-po County, Nan-wen-he Village, Lao-jun-shan National Forest Preserve, N23°12', E104°33', alt. 1350 m, light trap, 13-vii-1990, Coll. Li Y-w. and Ke X., 1 male (NJAU); 1 male (CUAC, Odontoceridae #010).

Our specimens are closely congruent with the description and illustrations of *Lannapsyche chantaramongkolae* provided by Malicky (1989). For clear comparisons, the wing venation and male genitalia are re-illustrated and redescribed.

Redescription. Adult. Length of each male forewing 8.8 mm (n = 1). Specimen in alcohol generally yellowish brown, forewings light brown. Forewings (Fig. 5Fa) each with R1 confluent with R2 shortly before apex, tips of R1+2, R3, and R4 equidistant, arranged regularly; forks I, II, III, and V present; forks I, II, and V sessile, fork III petiolate; single anal vein with dense row of bristles ventrally. Hind wings (Fig. 5Fp) each with R1 confluent with R2 beyond tip of Sc; bases of R5 and MA confluent so that crossvein *r-m* between R5 and MA absent.

Male genitalia. Pleura IX each divided by longitudinal horizontal groove into two parts, dorsal part slightly taller than ventral part in lateral view; anterior margins of segment IX roundly produced forward and lateromedian apical lobe of IX at posterior end of longitudinal groove angled about 70°, blunt (Fig. 5A). Tergum IX produced posteromesad into short and blunt triangular lobe, with median length slightly shorter than lateral margins of tergum IX in dorsal view (Fig. 5B). Preanal appendages represented by pair of transverse setose concavities along almost entire border of segment IX in dorsal view (Fig. 5B). Segment X broadly elliptical in lateral view, about 1.5 times as long as tall, parallel-sided in basal 3/4, ending apically in blunt 82° angle (Fig. 5A); in dorsal view, deeply divided into two very thin, vertical lobes, appressed against each other with dorsal margins normal, not flattened or expanded, each lobe about 5 times as long as its basal width (Fig. 5B). Inferior appendages each with coxopodite curved slightly caudoventrad, gradually narrowing from base to tip in lateral view, length between base of coxopodite and its subapical lobes at least 3.5 times its width (Fig. 5A); two subapical lobes nearly identical in shape and size (Figs. 5A, 5B, 5C). Harpago slender, embedded between subapical lobes, apex curved dorsomesad and sparsely covered with short, fine setae on tip (Fig. 5E). Phallus short, stout, length about 1.8 times height, with dorsal and ventral margins slightly sinuate; phallobase narrow for short distance at base, bulged at distal 2/3, phallicata completely retracted within phallobase in our specimens; ejaculatory duct conspicuous, phallosomal sclerite small, oval in lateral view (Fig. 5D).

Distribution: Oriental Biogeographic Region, southern China (Yun-nan); Thailand.

***Marilia* Müller 1880**

Oláh & Johanson (2010) summarized the diagnostic characters for separating Oriental species of this genus. We agree with most of their opinions, especially for the pattern of vertexal setal warts and some of the genital characters, such as the groove pattern on segment IX; the shape of the apicolateral corners and the lateromedian apical lobes of tergum IX, and the central ridge pattern on segment X. Additionally, for identifying Chinese species, the following diagnostic characters are considered to be very useful. In each male forewing (1) fork 2 is sessile or petiolate and (2) MA is confluent with R5 for a characteristic distance or not. (3) In each hind wing the Cu1 stem is aligned with Cu1+MP or not. In male genitalia, (4) the ratio of length to height of segment IX in lateral view and (5) the ratio of length to width of tergum IX in dorsal view are diagnostic; (6) the shape and size of the

coxopodite and (7) the apical segment (= harpago) of an inferior appendage and (8) the degree of development of the basomesal setose bump on a coxopodite vary distinctively among species; (9) The shapes of the phallus and the phallotremal sclerite are diagnostic. Shapes of various features of the female genitalia are distinctive, including shapes of (10–11) segments IX and X, (12) ventral lobes and (13) sclerotized ridges of segments IX and X, (14) the subgenital plate, and (15) the spermathecal sclerite.

Mosely & Kimmins (1953) found the proportions of maxillary palp segments of Australian species to be variable. This occurs also within the Chinese species, and sometimes variation happens even on the right and left palps for a single specimen. For example, in the holotype of *Marilia qinlingensis* n. sp., the right maxillary palp proportions from the first segment to the fifth segment are 1(0.65mm)/0.96/1/1/1.1 with the fifth segment being the longest, while it is 0.92/1/1.1/1/0.88 on the left palp, with the third segment being the longest. Therefore, we did not use the maxillary palp formula as a diagnostic character in this study.

Based on our observation of female genitalia of two Chinese species, distinctive differences exist between species. Therefore, the description and illustration for female specimens of this genus may add important diagnostic characters for species recognition and, possibly, eventual phylogenetic interpretation.

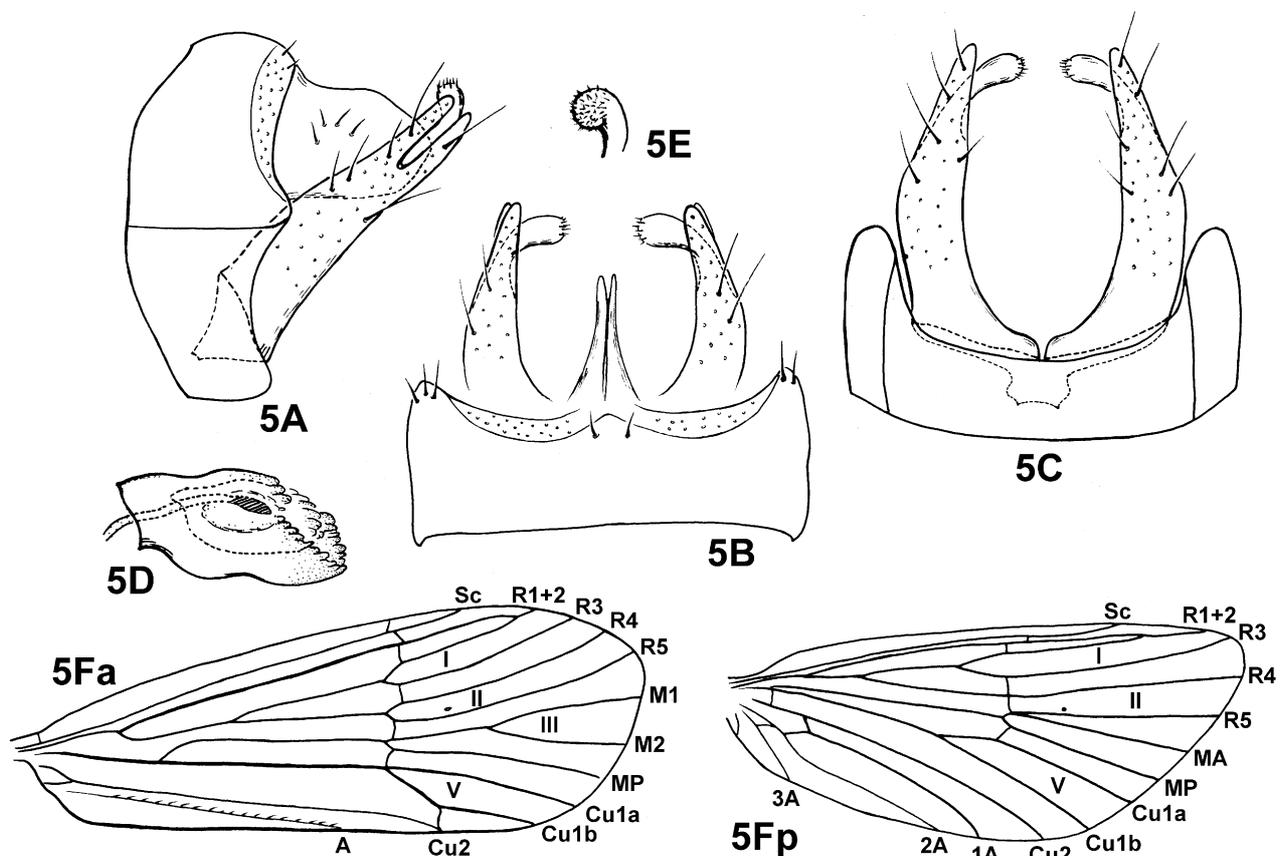


FIGURE 5. *Lannapsyche chantaramongkolae* Malicky 1989, male genitalia and wings. 5A–5E, male genitalia: 5A, left lateral; 5B, dorsal; 5C, ventral; 5D, phallus, left lateral; 5E, apex of right harpago, caudal. 5Fa–5Fp, right wings, dorsal: 5Fa, forewing; 5Fp, hind wing.

Marilia parallela Hwang 1957

(Figs. 6, 7)

Marilia parallela Hwang 1957: 395–396. Type locality: Fu-jian, Shao-wu (China)

Marilia albofusca Schmid 1959: 326–327. Type locality: Yun-nan, Li-Kiang (= Li-Jiang, China). **New synonym.**

We were able to collect several specimens from the type locality of *Marilia albofusca* (Li-Jiang, Yun-nan) during the same season as the holotype (12 June 1934 for the holotype, in comparison with 24 May 1996 and 19 July 1990

for specimens in this paper). The male genitalia of our specimens are congruent with those depicted for *Marilia albofusca*, although Schmid's original drawings and description were very simple. Nevertheless, the diagnostic characters of wing venation, head wart pattern, eye size, and male genitalia are almost identical with those of *M. parallela*. Therefore, *Marilia parallela* is first synonymized here with *M. albofusca*. For clear comparisons, wing venation, head warts, and male genitalia are re-illustrated and redescribed. Female genitalia are described and illustrated here for the first time.

Male (in alcohol). Body medium-sized, generally brown; palps pale yellowish; vertex brown to dark brown, sometimes as dark as compound eyes; thorax brown, with concolorous thoracic setal warts; foreleg tibiae and tarsi dark brown, slightly darker than those of mid- and hind legs. Forewings brown, with posterior margin broadly concave distally and posterior subapical margin slightly concave. Vertex constricted; interocular length about 2.5–2.8 times its least median width; vertexal medi-antennal compact setose warts (ver.m.war.) separate from each other (Fig. 6E).

Forewings (Fig. 6Fa) each with length 8.5–10.1 mm (n = 13). R1 fused with R2 just before margin; forks I, II, and V present (forks I, II, III, and V present in female); forks I and V sessil, fork II petiolate (arrow). Single, unlooped anal vein with row of bristles ventrally. Hind wings (Fig. 6Fp) each with R2 long, fused with R1 near margin, similar to most species of this genus, such as *M. sumatrana* Ulmer 1951, *M. mogtiana* Malicky 1989, *M. javana* Ulmer 1951, and *M. lata* Ulmer 1926; M stem together with MP forming continuing sinuous vein fused with Cu1 subapically; Cu1 stem not aligned with MP+Cu1, but joining MP+Cu1 at approximately 20° angle.

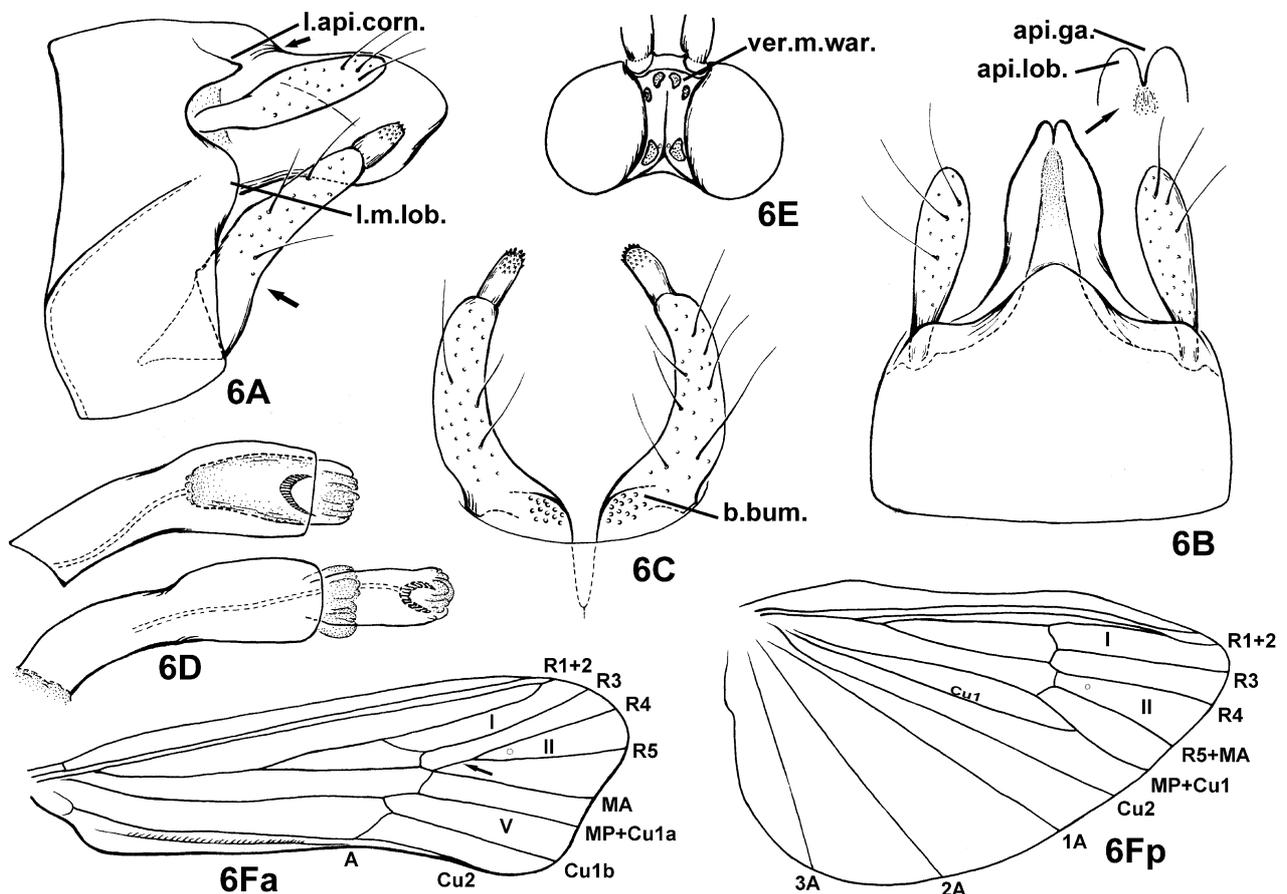


FIGURE 6. *Marilia parallela* Hwang 1957, male genitalia, head, and wings. 6A–6D, male genitalia: 6A, left lateral; 6B, dorsal; 6C, ventral; 6D, phallus, with phallicata retracted (upper) and everted (lower). 6E, head, dorsal. 6Fa–6Fp, right wings, dorsal: 6Fa, forewing; 6Fp, hind wing.

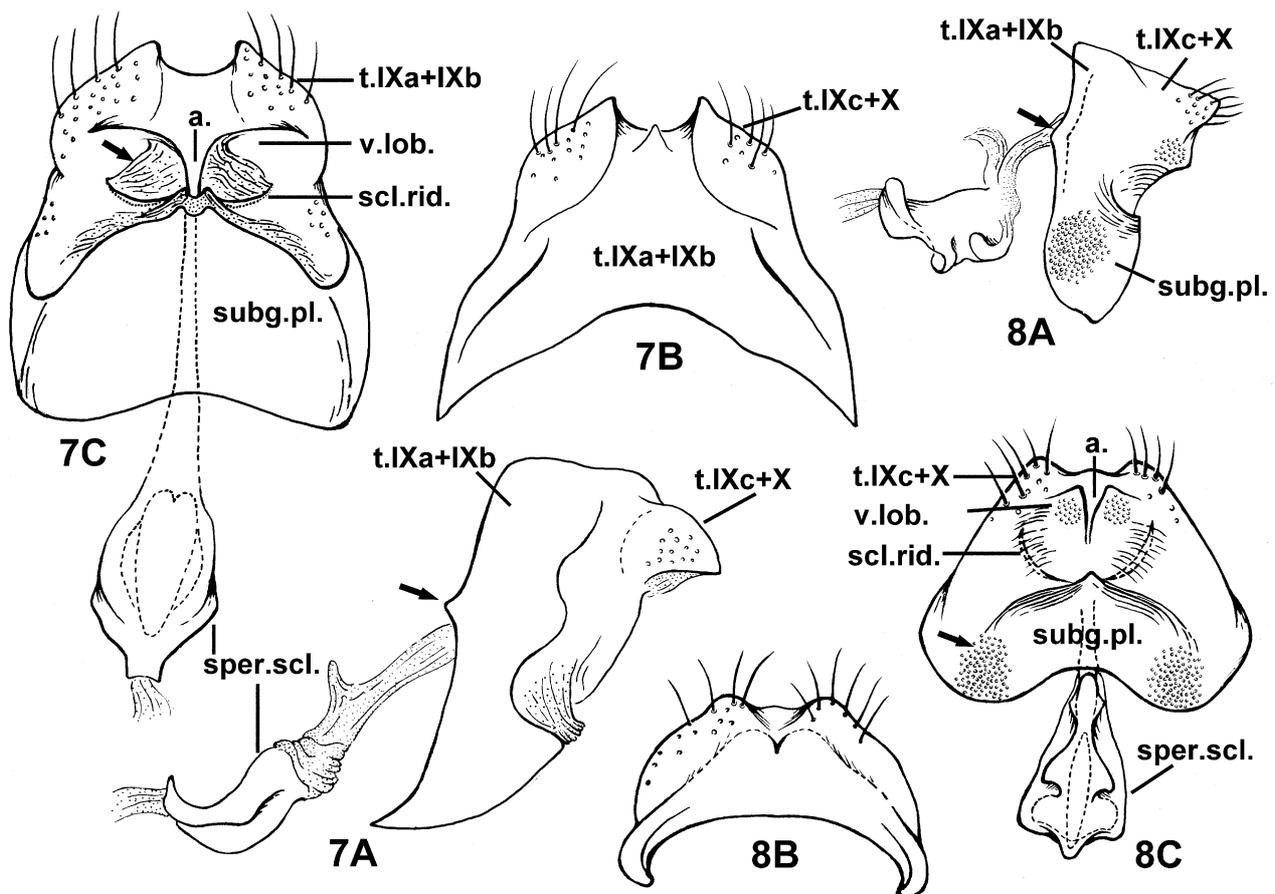
Male genitalia. Abdominal segment IX longest dorsally, in dorsal view its posterior margin entirely visible, projecting caudad, with mid-length of projection 2/3 of its basal width (Fig. 6B); in lateral view, median length 1/2 of its height; on each side anterior margin sinuous, slightly convex in ventral half and slightly concave in dorsal

half; posterior margin with lateral apicodorsal corner (l.api.corn.) triangular (Fig. 6A), forming well developed rounded shoulder when viewed dorsally (Fig. 6B), below this corner deeply excised lacuna providing space for origin of preanal appendage, lateromedian apical lobe semicircular; longitudinal groove near mid height, short, running obliquely upward posteriorly (Fig. 6A) or into lateromedian apical lobe, but tip of groove never reaching posterior margin (Fig. 6A); dorsolateral longitudinal grooves absent. Intersegmental depression between segments IX and X distinctive in lateral view (Fig. 6A, upper arrow). Segment X forming tall and broad hood, its exposed portion shorter than mid length of segment IX in dorsal view (Fig. 6B), its apex shallowly divided into two rounded lobes, with apico-interlobular gap (api.ga.) narrowly triangular when apical lobes (api.lob.) fully opened (Fig. 6B); in lateral view, segment X about as long as dorsal margin of IX with its length 1.5 times its height, apical lobes broadly triangular, each ventral margin gently concave from base to near middle (Fig. 6A). Preanal appendages as long as segment IX, slender (as in Fig. 9BI), foliaceous, each narrow at base, dilated in middle then slightly tapered, to blunt tip in lateral view. Inferior appendages slightly longer than segment X, directed caudodorsad to end before apex of segment X; coxopodite nearly straight, curving slightly ventrad in lateral view (Fig. 6A, lower arrow); in ventral view, each curved mesad in banana shape, broad at base, its basomesal setose bump (b.bum.) not distinctively protruding (Fig. 6C); apical segment (harpago) short, cylindrical, its base very slightly narrower, about as broad as tip of coxopodite in lateral view; at least 2 times as long as its mid width in ventral view. Phallic apparatus composed of ventrally curving phallobase and retracted or everted phallicata, phallobase slightly constricted at mid distance, tube-like in basal half with distal part enlarged and directed backward (Fig. 5D); phalloretral sclerite crescentic, moderately sclerotized (Fig. 6D).

Female genitalia. Segments IX and X and gonopods VIII and IX firmly united with each other. Posterior margin of anterior parts of tergite IX (Fig. 7B, t.IXa+IXb) not clearly differentiated from posterior part of tergite IX and tergum X (Fig. 7B t.IXc+X); resulting tergum IXc+X forming broad sclerotized hood; in dorsal view, trapezoidal and tapered posteriorly, with posteromedian margin of hood excised, this excision about 2.5 times as broad as long; terga IXc+X represented by pair of setose, apical lobes (Fig. 7B, t.IXc+X) on either side of indentation and excision, each with apicolateral margin obliquely truncate (Figs. 7B, 7C, t.IXc+X); area between these apical lobes slightly depressed, with small, semimembranous triangular protrusion at center (Fig. 7B); in lateral view, this apex subtriangular, dorsal margin of fused IX+X approximately horizontal except setose apical lobes IXc+X set lower than dorsal margin and dorsal margin of IXc+X convex (Fig. 7A); margins of pleura IXa+IXb visible laterally and ventrally, each side with small, but distinctive triangular projection located at middle of anterior margin (Fig. 7A, arrow), posterior margin strongly sinuate (Fig. 7A). In ventral view, subgenital plate (Fig. 7C, subg.pl. = fused external gonopods VIII, or e.gon.VIIIa+VIIIb) broad, sclerotized, with posterior margin quite convex and with two small triangular processes apicomesally. Pair of ventral lobes (v.lob. = external gonopods IX, or e.gon. IX) below anus (a.) large, with their transverse posterior margins at least 2 times as long as their longitudinal mesal margins; well-defined triangular, striate area (arrow) set on each ventral lobe, with its anterior ridges (scl.rid.) sclerotized, gently curved laterocaudad, and arranged more or less transversely (Fig. 7C). Spermathecal sclerite (Fig. 7C, sper.scl.) with diamond-shaped outline, broadest at 1/3 distance from anterior end in ventral view; in lateral view, dorsal margin of spermathecal sclerite deeply concave and ventral edge smoothly convex (Fig. 7A).

Specimens examined. PR CHINA: Zhe-jiang Province: An-ji County, Long-wang Mountain, N30.38°, E119.40°, alt. 490–550 m, 20–27 July 1995, Coll. Wu H., 8 males, 2 females; same data as above except 28–29 July 1995, 8 males, 2 females; 12 May 1996, 7 males, 1 female; and 10 July 1996, 4 males, 1 female. Lin-an County, Tian-mu Mountain, San-mu-ping (hamlet), N30.3589°, E119.4221°, alt. 780 m, 14–15 July 1998, Coll. Wu H., 1 male, 1 female; same data except 26 July 1999, 1 male. **Yun-nan Province:** Li-Jiang County, Shi-gu Town, Bridge of Chong-jiang River, N26.8°, E100.2°, alt. 1750 m, 25 May 1996, Coll. Yang L-f., Du Y-zh., 1 male; same county, except along Chong-jiang River, 8 km W. of Shi-gu Town, alt. 1850 m, 25 May 1996, Coll. Zhou Ch-f., Wang B-x., Gui F-r., 7 males, 2 females. Jin-ping County (now in Pu-er, Jin-dong Minority Municipality), N24.26°, E100.50°, alt. 1350 m, A-de-bo Town, Kun River, 19 July 1990, Coll. Li Y-w., Ke X., 1 male. **Guang-xi Province:** Jin-xiu County, N24.1°, E110.1°, alt. 750 m, 2–3 June 1994, Coll. Zeng T., 1 male. **Guang-dong Province:** Da-cheng Town, an unnamed stream inside entrance of Da-wu-ling Nature Reserve, N22°16'25", E111°11'38", alt. 1021 m, 26 May 2004, Coll. Zhou X., 3 males, 4 females. All at light traps.

Distribution: Oriental Biogeographic Region, southern China (Zhe-jiang, Fu-jian, Guang-dong, Guang-xi, Yun-nan).



FIGURES 7–8. *Marilia* spp., female genitalia. 7, *M. parallela* Hwang 1957: 7A, left lateral; 7B, dorsal; 7C, ventral. 8, *M. discaulis* n. sp.: 8A, left lateral; 8B, dorsal; 8C, ventral.

***Marilia qinlingensis*, n. sp.**

(Fig. 9)

Diagnosis. The new species is very similar to the widely distributed species *M. sumatrana* from Indonesia and *M. parallela* from southern China in having 1) the length of segment IX 1/2 its height; 2) the lateromedian apical lobes blunt and each side of IX with only 1 longitudinal groove; and 3) each forewing with a concave subapical margin. However, the new species is easily separated from both species by (1) the forewings each having fork II sessile, originating at the short *r-m* crossvein; (2) the apex of male segment X being deeply divided into 2 broad lobes, their dorsal interlobular gap being in an elongate “V” shape; and 3) male tergum X has only one pair of median longitudinal ridges which meet each other at the tips, forming a clear, narrow, acute triangle. Additionally, it differs from *M. sumatrana* in that (1) the anterior margin of male segment IX is vertical, nearly straight and (2) the ventral margin of segment X on each side has a semicircular excision near the base. In contrast, *M. sumatrana* (as illustrated by Malicky 2010) has the anterior margins of segment IX with excisions on the ventral half; tergum X has the central ridges not meeting each other at the tips; and the ventral margins of segment X are straight, without excisions. It differs from *M. parallela* by (1) the longitudinal groove of each side of segment IX running horizontally into the anterior and posterior marginal rims; (2) the intersegmental depression between segments IX and X sloping gently; (3) the basal tube-like portion of the phallobase is only 2/5 of the total length of the phallus and (4) the phallotremal sclerites are large and highly sclerotized, with a deep “U” shape. In contrast, in *M. parallela*, the longitudinal grooves of segment IX run rather steeply ascendant backward, but do not reach the marginal rims; the intersegmental depression between segments IX and X is distinctive and the central ridges on the dorsum of segment X do not meet each other at the tips; and the basal tube-like portion of the phallobase is at

least 1/2 of the total length of the phallus, and the phallotremal sclerites are crescentic with a wide opening and only moderate sclerotization.

Male (in alcohol). Body medium-sized, brown; palps pale yellowish; cephalic and thoracic setal warts pale yellowish; foreleg tibiae and tarsi dark brown, darker than those on mid- and hind legs. Forewing membranes brown with concave subapical margin. Vertex slightly constricted; interocular length about 2 times as long as least width. Vertexal medi-antennal compact setose warts not quite separate (meeting each other at distal half). Occipital compact setose warts large, triangular, positioned at posterior ends of coronal grooves. Pair of dark (nearly black), rounded bulges (= sensilla of Oláh & Johanson 2010?) located at inner anterior margins of occipital warts, close to their anterior tips.

Forewings (Fig. 9Fa) each with length 11.1 mm (n = 1); R1 fused with R2 near margin, at about same level as end of SC; origin of fork II basad of *r-m* crossvein. Single, unlooped anal vein with row of bristles ventrally. Hind wings (Fig. 9Fp) each with R1+R2 fused distally, strongly convex anteriorly and close to SC; base of R2 very short (Fig. 9Fp, arrow), R2 fused with R1 at level of anastomosis, similar to *Marilia enikiana* Oláh & Johanson 2010; M stem together with basal part of MP strongly sinuous and MP fused with Cu1 toward apex; Cu1 stem slightly concave anteriorly, not aligned with MP+Cu1, but joining MP+Cu1 at approximately 45° angle.

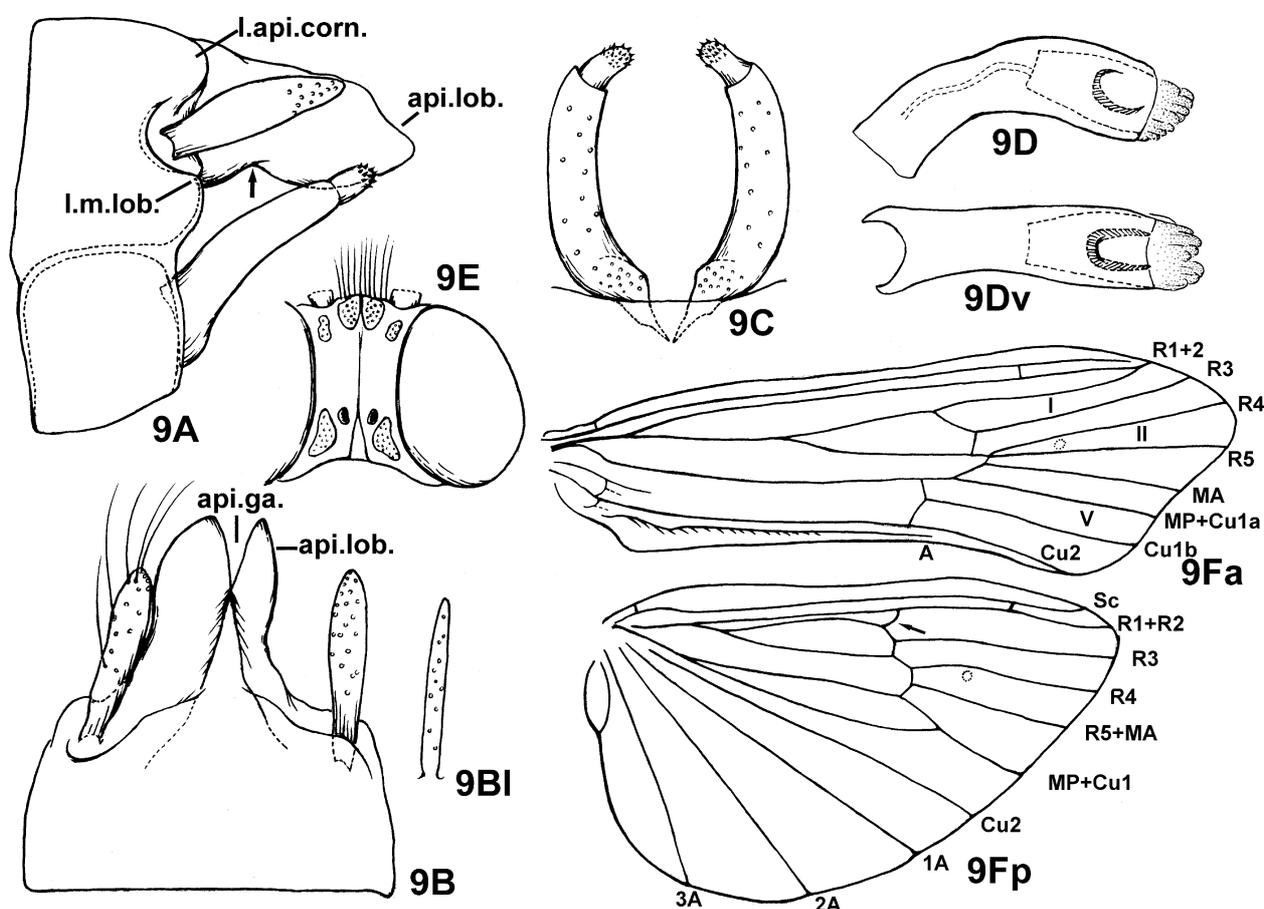


FIGURE 9. *Marilia qinlingensis*, new species, male genitalia, head, and wings. 9A–9D, male genitalia: 9A, left lateral; 9B, dorsal; 9BI, right preanal appendage, viewed on ventrolateral edge; 9C, ventral; 9D, phallus, left lateral; 9Dv, phallus, ventral. 9E, head, dorsal. 9Fa–9Fp, right wings, dorsal: 9Fa, forewing; 9Fp, hind wing.

Male genitalia. Abdominal segment IX broadly rectangular in lateral view, pleural length = 1/2 of its height, dorsal margin of IX slightly longer than ventral margin (Fig. 9A); on each side dorsal lateroapical corner of tergum IX rounded (Fig. 9A, l.api.corn.); below this corner deeply excised lacuna providing space for origin of preanal appendage, lateromedian apical lobe (l.m.lob.) almost identical with lateroapical corner; longitudinal groove horizontal, positioned at ventral 1/3 of segment IX, and extending onto anterior and posterior margins; dorsolateral longitudinal grooves absent (Fig 9A). Dorsal margin of segments IX and X sloping down gently without

intervening declivity in lateral view. Segment X forming long, tall hood with apical 1/3 deeply incised into 2 rounded lobes in dorsal view, central ridges long, meeting each other at their tips and forming clear, narrow, acute triangle (Fig. 9B); in lateral view, each lobe appearing as sub-rectangular plate slightly longer than segment IX, apex narrowing to small, blunt, triangular lobe, ventral margin with semicircular excision near base (Fig. 9A, arrow). Preanal appendages as long as segment IX, foliaceous, each usually dilated in middle then tapering to blunt tip (Figs. 9A, 9B), thin throughout length when viewed on edge (9BI). Inferior appendages about as long as segment X, much longer than preanal appendages in lateral view, directed caudodorsad and not reaching apex of segment X; each with coxopodite almost parallel-sided, not obviously broad at base, tapering slightly, and basomesal setose bump not distinctively protruding in ventral view (Fig. 9C); apical segment (harpago) short, cylindrical, not quite 2 times as long as wide in ventral view. Phallic apparatus composed of cylindrical phallobase curved gradually ventrad, phallicata retracted in our specimen, phallobase tube-like at basal 1/3, with apical 2/3 slightly enlarged and directed backward (Fig. 9D); phallosclerite large, crescentic in lateral view (Fig. 9D), U-shaped in ventral view (Fig. 9Dv).

Holotype male. PR CHINA: Shaan-xi Province, North slope of Qin-ling Mountains, 20 km south of Bao-ji City, N33.9°, E108.8°, alt. 1000 m, 18 June 1998, Coll. Sun Ch-h., 1 male.

Etymology: Qinlingensis, name derived from Qin-ling Mountains, the type locality of the species.

Distribution: Oriental–East Palearctic Boundary Region of China (Shaan-xi, north slope of Qin-ling Mountains, N33.9°, E108.8°, alt. 1000 m).

***Marilia discaulis*, n. sp.**

(Figs. 8, 10)

Diagnosis. The new species is similar to *Marilia ceylanica* from Sri Lanka, *Marilia enikiana* from Laos, and *Marilia megalopos* sp. n. from Gui-zhou (China) by having (1) forewings each convex subapically, crossvein *r-m* absent with (2) M fused basally with R4+5, and (3) R5+MA branching from MP at mid length; (4) distal segment (harpago) of each male inferior appendage paler and (5) much narrower than apical end of basal segment (coxopodite) in lateral view, somewhat water-drop-shaped in ventral view. Additionally, it is similar to *Marilia enikiana* and *Marilia megalopos* in that (6) Cu1 stem is aligned with Cu1+MP in the hind wings and (7) male segment IX has dorsal and ventral margins shorter than the median lateral length, such that the dorsal lateroapical corners of tergum IX are not developed in lateral view. It differs from *Marilia ceylanica* in having MA branching from R5+MA beyond the nygma in each forewing and Cu1 stem is aligned with Cu1+MP in each hind wing, whereas MA branches from R5+MA before the nygma in each forewing and the Cu1 stem is not aligned with Cu1+MP in each hind wing of *Marilia ceylanica*. The phallobase forms a 120° angle between the basal tube-like portion and the distal portion, differing from *Marilia enikiana* (which is without a distinct basal tube and is gradually curved about 90°) and *Marilia megalopos* (angled about 140°). Furthermore, it differs from *Marilia enikiana* by male segment IX of this species being short, 7 times as broad as its average length in dorsal view, whereas segment IX is long, about 3 times as broad as its length in *Marilia enikiana*. It differs from *Marilia megalopos* by the smaller compound eyes separated from each other and by male segment IX having only one longitudinal groove, whereas the latter has large compound eyes appressed against each other and segment IX has 2 longitudinal grooves.

The new species is also very similar to *Marilia aerope* Malicky & Chantaramongkol 1996 from Thailand in male genitalia in that (1) the dorsal and ventral margins of segment IX are much shorter than the median lateral length, such that the lateroapical corners of tergum IX are not developed in lateral view and (2) the phallobase forms a 120° angle between the basal tube-like portion and the distal enlarged, backward-directed portion. However, the new species differs from it in that segment IX has only one longitudinal groove on each pleural region, the subapical margins of the forewings are convex and MA branches from R5+MA, whereas there are 2 longitudinal grooves on segment IX, the forewing subapical margins are concave, and MA does not branch from R5+MA in *Marilia aerope*.

Marilia discaulis is possibly also very close to *Marilia simulans* from Si-chuan, especially in wing venation and the generally shape of the male genitalia. However, the original description and drawings by Forslund (1935) were very simple. See Remarks for the latter species below.

Male (in alcohol). Body small, head and thorax dark brown; palps dark brown and densely covered with dark brown hairs, sometimes first segment of maxillary palps dark, gradually paler to tip; cephalic and thoracic setal warts are concolorous with head and thorax; thoracic legs brown, forelegs slightly darker than mid- and hind legs. Forewings with convex termen, membranes dark brown, covered with dark brown hairs, hind wings pale. Vertex constricted; interocular distance about 3 times as long as broad with posterior margins widely divergent. Vertexal mediantennal compact setose wart single. Occipital compact setose warts (o.war.) large, elongate triangular, located at posterior half of compound eyes along their interior margins (Fig. 10E).

Forewings (Fig. 10Fa) each with length 6.5–7.5 mm ($n = 6$); R1 confluent with R2 shortly beyond end of Sc; forks I, II, and V present, all forks sessile, MA branching from R5+MA beyond nygma. Hind wings (Fig. 10Fp) similar to those of most species of this genus, R2 very long, running into R1 at same level as end of Sc; Cu1 stem aligned with Cu1+MP, forming very acute angle (about 35°) at the confluence of MP and Cu1. A long basal brush is present on a small anal lobe at the base of each hind wing, this brush composed of about a dozen, very fine setae, with the same color and thickness as the marginal hairs.

Male genitalia. Tergum IX short, narrowly transverse, 6 times as broad as its median length in dorsal view (Fig. 10B); in lateral view on each side, broadest at median portion at ends of diagonally longitudinal groove and nearly 2 times as long as dorsal or ventral margins, height of segment IX 5 times length of dorsal or ventral margins (Fig. 10A); anterolateral margin protruded in 140° angle, posterior lateroapical corners not well developed, the lateromedian apical lobe (l.m.lob.) forming 110° angle (Fig. 10A); dorsolateral longitudinal grooves absent. Segment X forming long hood, about 2 times as long as tall, with ventral margins slightly sinuous, almost straight in lateral view; in dorsal view, basal half of segment X broadly triangular, distal half quite compressed with only lower portion slightly extended laterad and with narrow apex not divided (Fig. 10B), dorsomesal portion of apex highly elevated in ventrolateral view (Fig. 10Bv). Preanal appendages slender, elongate, foliaceous, about 2 times as long as tergum IX, each broadest in basal 1/3, tapering to acute apex in lateral view (Fig. 10A), elongate elliptical (Fig. 10B) or slender (as in Fig. 9B1) in dorsal view. Inferior appendages much longer than segment X and preanal appendages, directed caudodorsad to apex of segment X; each with basal segment (coxopodite) dark and straight, not curved in lateral view (Fig. 10A), almost straight with distal 1/3 gradually curved slightly inwards in ventral view, apical segment pale, short and small, obviously narrower than distal end of coxopodite, somewhat water-drop shaped, narrowed at base with outer margin convex in ventral view (Fig. 10C). Phallobase constricted at 1/3 distance from base and forming about 120° angle between tube-like basal portion and enlarged distal portion directed caudad; phallicata retracted within phallobase in our specimens (Fig. 10D); phallostremal sclerite lightly sclerotized, U-shaped in ventral view.

Female genitalia. Segments IX and X and gonopods VIII and IX firmly united with each other. In dorsal view, terga IX+X forming short, transverse plate, roundly tapered posteriorly; anterior parts of tergite IX (Fig. 8B, t.IXa+IXb) weakly distinguishable posteriorly from posterior part of tergite IX and tergum X (Fig. 8B, t.IXc+X), terga IXc+X divided by median indentation into pair of setose apical lobes with rounded apices, bottom of indentation slightly produced at center, but never forming triangular projection; area between apical lobes small, triangular, and slightly depressed. In lateral view, outline of segments IX+X generally triangular, dorsal margin of fused IX+X (Fig. 8A, t.IXa+IXb, t.IXc+X) sloping downward in straight line without intervening declivity (Fig. 8A); on each side, outlines of pleura IXa+IXb poorly discernible, small triangular projection (Fig. 8A, arrow) located on anterior margin nearly 1/3 distance below dorsal margin; subgenital plate (Fig. 8C, subg.pl. = fused external gonopods VIII, or e.gon.VIIIa+VIIIb) terminating in posterior wall of genitalic segments and separated from ventral lobes (v.lob. = e.gon. IX) by deep concavity (Fig. 8A). In ventral view, anal opening (a.) close to end of segments, below setose apical lobes (t.IXc+X), ventral lobes of anus (v.lob.) small, with transverse posterior margins much shorter than longitudinal median margins, each ventral lobe bearing small patch of sensory pores (Fig. 8C); weakly striate areas not well defined, pair of anterolateral sclerotized ridges (scl.rid.) each gently curved caudad, much longer than posterior margins of ventral lobes, this pair of ridges together forming semicircle (Fig. 8C). Subgenital plate (Fig. 8C, subg.pl.) projecting posterad, subtriangular, about 2.5 times as broad as long, anterior margin of subgenital plate excised at mesal 1/3, with large patch of sensory pores (Fig. 8C, arrow) on each anterolateral corner of plate, with posterior margin terminating in single triangular projection between pair of oblique ridges of subgenital plate separating it from ventral lobes. Spermathecal sclerite (sper.scl.) having long triangular outline in ventral view, broadest near anterior end, and with 2 pairs of small ear-like subapical lobes (Figs. 8A, 8C); in lateral view, dorsal margins of spermathecal sclerite nearly horizontal, its ventrolateral edges each with 2 small, lobe-like projections (Fig. 8A).

Holotype male. PR CHINA: Jiang-xi Province, Gui-xi County, Xi-qi River, 59 km south east of Gui-xi, N28.3°, E117.2°, alt. 210 m, 5 June 1990, Coll. Yang L-f.

Paratypes. Same data as holotype, 7 males and 8 females (NAU); 3 males and 3 females (CUAC); **An-hui Province**, Huang-shan City, Tang-kou Town, Fu-xi Village, Fu-xi stream, N30.085°, E118.142°, alt. 639 m, 10 July 2014, Coll. Xu J-h., 21 males and 3 females (NAU).

Etymology. Latin, *discaulis* = without stem, with reference to the sessil fork II of each forewing.

Distribution. Oriental Region, southeastern China (Jiang-xi and An-hui).

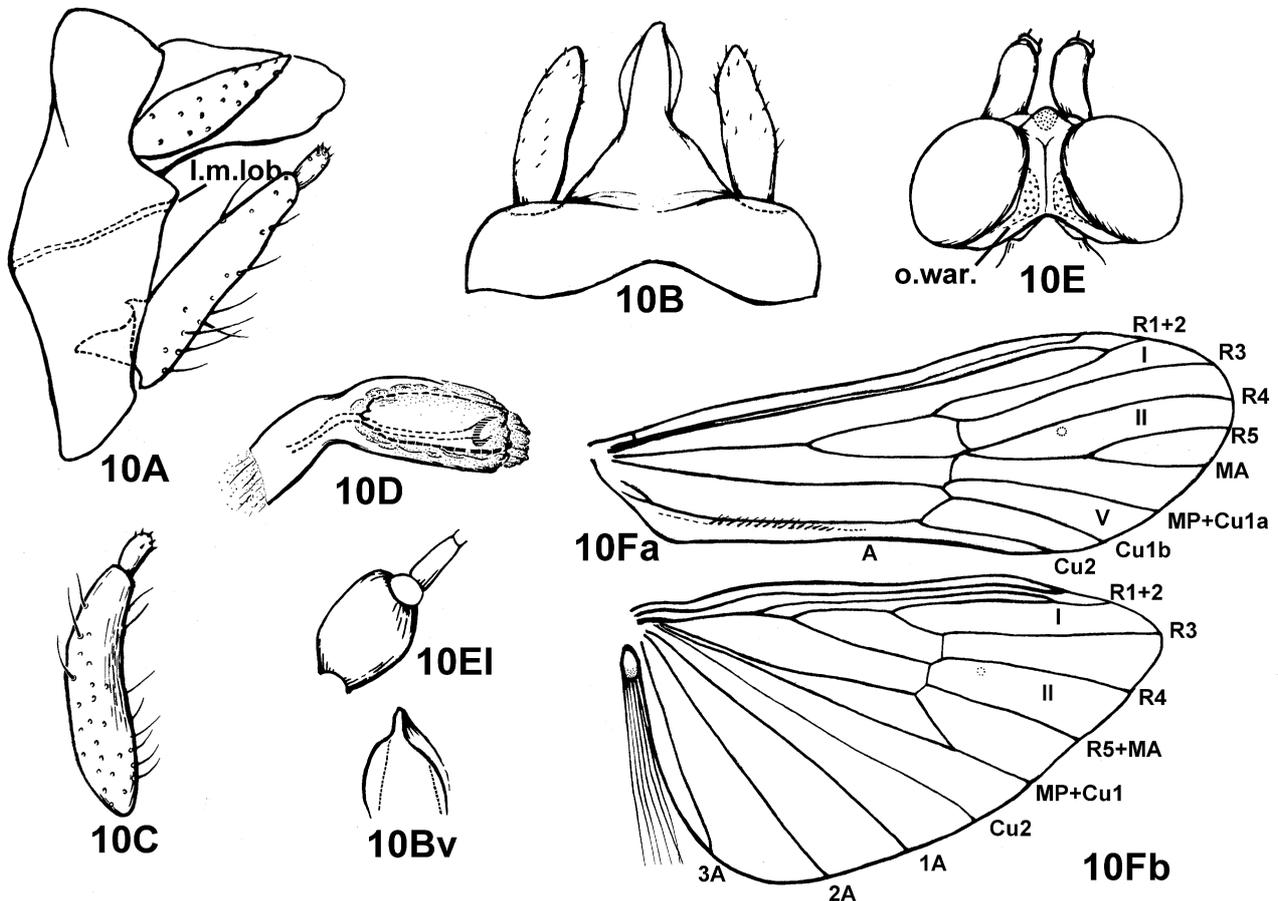


FIGURE 10. *Marilia discaulis* new species, male genitalia, head, and wings. 10A–10D, male genitalia: 10A, left lateral; 10B, dorsal; 10Bv, tergum X, ventral; 10C, left inferior appendage (paired), ventral; 10D, phallus, left lateral; 10E, head, dorsal. 10Ei, left antennal base, lateral. 10Fa–10Fp, right wings, dorsal: 10Fa, forewing; 10Fp, hind wing.

***Marilia megalopos*, n. sp.**

(Fig. 11)

Diagnosis: The new species is very similar to *Marilia discaulis* from southeastern China in the venation of forewings and the shape of male genitalia, but the new species can be separated from the latter in having (1) large compound eyes appressed against each other along the median axis of the vertex, (2) with only a single vertexal mediantennal wart visible; (3) fork 2 of each forewing is petiolate and (4) R2 of each hind wing is very short, running into R1 near the middle of the discoidal cell; (5) the basal segment of each inferior appendage has a distinctive basomesal setose bump. In contrast, in *M. discaulis* the compound eyes are separated on the midline, fork 2 of each forewing is sessile, R2 of each hind wing is very long, running into R1 at the level of the end of Sc, and the basal segment of each inferior appendage is without a distinctive basomesal setose bump. The new species is also similar to *Marilia enikiana* from Laos in the venation of fore- and hind wings, but the new species differs from it in having segment IX on each side (1) with 2 longitudinal grooves and (2) with the broadest median portion

at least 2 times as long as the ventral margin in lateral view, and (3) the apex of segment X is excised into 2 lobes in dorsal view. In contrast, in *M. enikiana* segment IX on each side has only one longitudinal groove, the median portion of segment IX is at most 1.5 times as long as the ventral margin in lateral view, and the apex of segment X is not divided.

Male (in alcohol). Body small, head almost completely occupied by large, dark brown compound eyes appressed against each other along middle 1/3 of median axis, only single vertexal medi-antennal wart visible in dorsal view; thorax brown, maxillary palps light brown; thoracic setal warts concolorous with head and thorax; thoracic legs yellowish brown, foreleg tibiae and tarsi slightly darker than those on mid- and hind legs. Forewing membranes light brown, subapical margins convex.

Forewings (Fig. 11Fa). Each with length 6.5–7.0 mm (n = 4); R1 confluent with R2 almost at same level as end of Sc; forks I, II, and V present, forks I and V sessil, fork II stalked; MA fused with stalk of fork II and with base of R5 for about half its length. Hind wings similar to those of *Marilia enikiana*: free base of R2 (arrow) very short, running into R1 far basal of anastomosis, about mid distance of discoidal cell, Cu1 stem aligned with fused Cu1+MP, with MP forming an acute angle (about 40°) at the confluence of MP and Cu1 (Fig. 11Fp, arrow). Long basal brush present on small anal lobe at base of each hind wing, this brush composed of about dozen, very fine setae, with same color and thickness as marginal hairs (Fig. 11Fp).

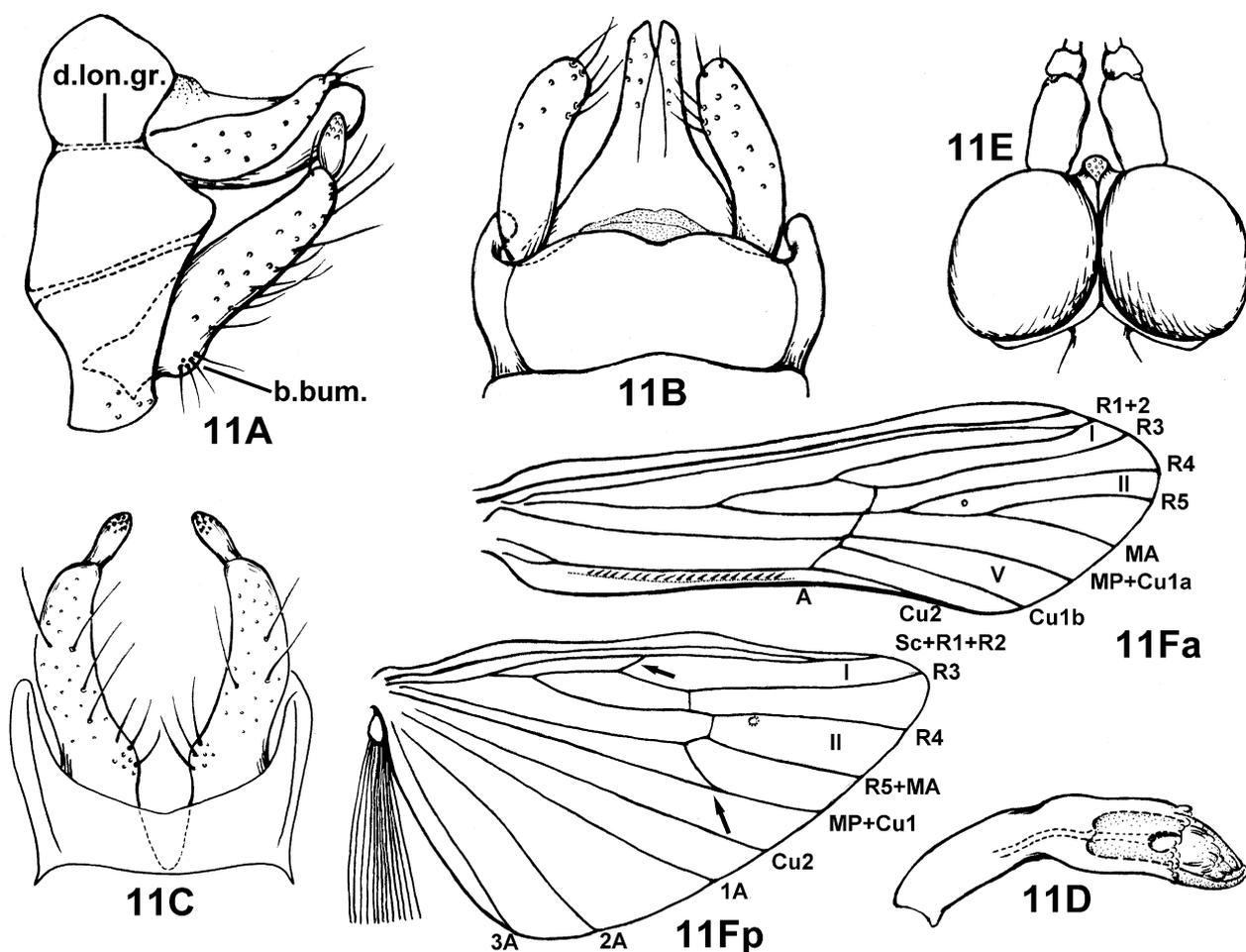


FIGURE 11. *Marilia megalopos* new species, male genitalia, head, and wings. 11A–11D, male genitalia: 11A, left lateral; 11B, dorsal; 11C, ventral; 11D, phallus, left lateral. 11E, head, dorsal. 11Fa–11Fp, right wings, dorsal: 11Fa, forewing; 11Fp, hind wing.

Male genitalia. Tergum IX with clear posterior margin, 3.5 times as broad as its median length in dorsal view (Fig. 11B); in lateral view, height of segment IX nearly 4 times length of dorsal margin and more than 4 times longer than ventral margin, broadest mid laterally, dorsolateral and mid lateral longitudinal grooves dividing each side of segment IX into 3 parts (Fig. 11A); anterior margin protruded in approximate 140° angle at 1/3 distance

from ventral margin, lateroapical corners of segment IX not developed, mid lateral apical lobe forming approximately 100° angle extending well past dorsal and ventral posterior ends of segment IX in lateral view (Fig. 11A). Segment X forming long hood, about 2.5 times as long as tall, with ventral margins convex in lateral view; in dorsal view, basal half of segment X broad, distal half compressed, with apex divided for short distance (Fig. 11B). Preanal appendages compressed, elongate, foliaceous, about 2 times as long as tergum IX (Fig. 11A). Inferior appendages much longer than segment X and preanal appendages, directed caudodorsad nearly to apex of tergum X; each with coxopodite dark and stout, almost parallel-sided, with distinctive baso-mesal setose bump (Figs. 11A, 11C, b.bum.); in ventral view, apical segment small, narrow at base and tip, typically water-drop shaped. Phallobase constricted almost at middle, tube-like in basal 1/2, with distal half slightly enlarged and directed backward; phallicata retracted within phallobase in our specimens (Fig. 11D), phallosclerite lightly sclerotized, U-shaped in ventral view.

Holotype male. PR CHINA: Gui-zhou Province, Li-po County, Da-qi-kong, N25.7°, E107.5°, alt. 1000 m, 6 July 1994, Coll. Du Y-z.

Paratypes. Same data as holotype, 4 males (NAU); 2 males (CUAC).

Etymology: Greek, *megalopos* = large-eyed, referring to the large compound eyes meeting each other at the median axis.

Distribution: Oriental Biogeographic Region, southwestern China (Gui-zhou).

***Marilia lata* Ulmer 1926**

Marilia lata Ulmer 1926: 91 A 5 (1925), 68–70; figs. 53–56. Type locality: China (Guang-dong)

Remarks. We have not seen specimens of this species. It apparently is similar to *Marilia parallela*. The original drawings by Ulmer (1926) for *Marilia lata* are very simple, but evidently the genitalia of *M. lata* differ from those of *Marilia parallela* by the following characters: (1) The lateromedian apical lobe on each side of segment IX is produced at 1/3 distance from the dorsal margin of segment IX, such that the distal end of the coxopodite of each inferior appendage reaches the level of the lateromedian apical lobe; (2) tergum X is not divided apically, and (3) its length is 2 times its height in lateral view. However, in *M. parallela*, the lateromedian apical lobe is produced at mid distance from the dorsal margin of segment IX, such that the distal end of the coxopodite of each inferior appendage far surpasses the level of the lateromedian apical lobe (Fig. 6A); tergum X is divided apically (Fig. 6B), and its length is 1.5 times its height in lateral view (Fig. 6A).

Distribution. Oriental Biogeographic Region, southern China (Guang-dong).

***Marilia simulans* Forsslund 1935**

(Fig. 12)

Marilia simulans Forsslund 1935: 27 A no 31, 7–8, f 6a–6c. Type locality: China (Si-chuan).

Material examined. Holotype male with the following labels: Pencil label handwritten with cursive writing appearing to be the following: “ror 7” Pencil label, handwritten with upper and lower case block letters: “Sven Hedins exp. [indecipherable] CenterAsien Leg. Dr. Hummel.” Printed label: “N.O. Szechuan: Ufer von Kia-ling-ho zwischen Naupo Und Pao-ning-fu 16.V.1930 [Hummel leg.]” Pencil label, handwritten with upper and lower case block letters: “*Marilia simulans* Forssl. Typus ♂ n. sp.” Printed label: “NHRS-TOBI 000000856” Printed label: “Loan 00 1/2016 NHRS-TOBI 000000856” This holotype specimen is missing the following body parts: Left flagellum beyond segment 3; Maxillary and labial palps; Left foreleg; Right wings; Abdominal segments VI–X. The remaining specimen has been cleared and is mostly transparent. The left wings remain, but are frayed, without setae other than the bristles on the forewing anal vein, and the dorsal and ventral cuticular layers have separated, so that parts of these wings could not be illustrated.

Remarks. The wing venation of this species closely resembles that of *M. discaulis*. Each hind wing has a small posterobasal lobe (not shown in Fig. 12Fp); any long basal brush of setae is missing, but the lobe has many setal alveoli, suggesting that the brush was present in the undamaged specimen. Also, the compound eyes are separated

from each other and the intervening setal warts are poorly defined, as in *M. discaulis*. The genitalia were illustrated in lateral and ventral views by Forssslund (1935). *Marilia simulans* differs from *M. discaulis* by the following characters: (1) the lateral view of tergum X was depicted as a slender and acute structure in *M. simulans*, but is nearly rounded in *M. discaulis* (Fig. 10A); 2) the harpago of each inferior appendage is about 3 times as long as its width and is almost 1/3 as long as the coxopodite in lateral or ventral views in *M. simulans*, but it is only 2 times as long as its width and is not quite 1/5 as long as the coxopodite in lateral or ventral views in *M. discaulis* (Figs. 10A, 10C). Despite these apparent differences, until modern specimens of *M. simulans* can be found, we cannot know with confidence whether *M. simulans* and *M. discaulis* are different species. Because of the need to be able to speak about readily identifiable species, we choose to consider them distinct species unless and until better evidence becomes available.

Distribution. Oriental Biogeographic Region, southern China (Si-chuan).

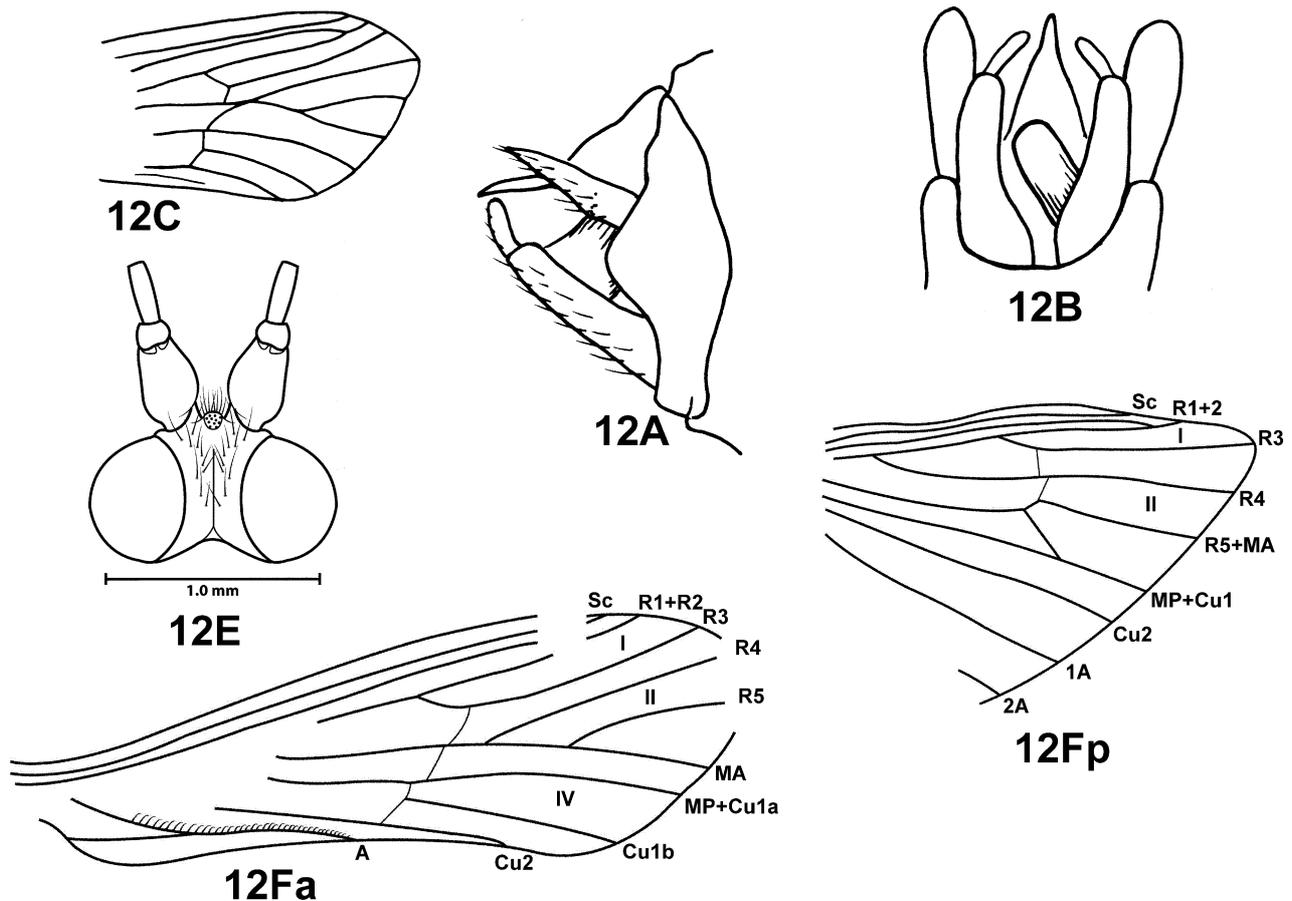


FIGURE 12. *Marilia simulans* Forssslund 1935, male genitalia, head, and wings. 12A–12B, male genitalia (after Forssslund 1935): 12A, right lateral; 12B, ventral; 12C, right forewing, dorsal (after Forssslund 1935). 12E–12F, male head and wings (original drawings from holotype): 12E, head, dorsal; 12Fa–12Fp, left wings, ventral: 12Fa, forewing; 12Fp, hind wing.

Acknowledgements

We are grateful to Dr. Tobias Malm, Swedish Museum of Natural History, for loaning the holotype of *Marilia simulans*. We gratefully acknowledge the permission of Wiley, publishers of Zoologica Scripta, successor of Arkiv för Zoologi, to reproduce in this article figures 6a, 6b, and 6c from the work by Forssslund (1935). We are especially thankful to Dr. Sun Chang-hai, Dr. Wang Beixin, and Ms. Xu Ji-hua, Nanjing Agricultural University; Dr. Zhou Chang-fa, Nanjing Normal University; Dr. Zhou Xin, China Agricultural University; Dr. Du Yu-zhou, University of Yangzhou, Dr. Gui Fu-rong, Yunnan Agricultural University, Dr. Wu Hong, Forestry of Zhejiang, Dr. Ke Xin, Institute of Plant Physiology & Ecology, SIBS, CAS; Dr. Zeng Tao, Guangxi Academy of Agricultural Science and

Dr. Li You-wen, USA, for help collecting caddisflies in the expeditions in southern China and the northern part of China (Qin-ling Mountains) during 1989 to 2014. We also thank Dr. Hans Malicky, Austria, and Dr. J. Oláh, Hungary, for their useful suggestions. This work was supported by the United States National Science Foundation (DEB0316504) and the National Science Foundation of China (No. 39770113 and No. 39899400).

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