



УДК 595.728 (59)

## NEW AND LITTLE KNOWN KATYDIDS OF THE TRIBE MECONEMATINI (ORTHOPTERA: TETTIGONIIDAE: MECONEMATINAE) FROM SOUTH-EAST ASIA

A. V. Gorochov

Zoological Institute, Russian Academy of Sciences, Universitetskaya Emb. 1, 199034, St. Petersburg, Russia;  
e-mail: orthopt@zin.ru

### ABSTRACT

Three new genera, one new subgenus, and 21 new species from Sumatra, Borneo, and Vietnam are described: *Breviraturo* gen. n., *Odonturisca* gen. n., *Borneraturo* gen. n., *Subtiloturo* subgen. n., *Xiphidiopsis jambi* sp. n., *X. padangi* sp. n., *X. sabahi* sp. n., *X. trusmadi* sp. n., *Pseudoteraturo bella* sp. n., *P. subtilissima* sp. n., *Leptoteraturo pulchra* sp. n., *L. uniformis* sp. n., *L. raoani* sp. n., *L. gialai* sp. n., *L. cemande* sp. n., *Alloteraturo longa* sp. n., *A. media* sp. n., *A. curta* sp. n., *A. carinata* sp. n., *Breviraturo brevis* sp. n., *Odonturisca grigoriji* sp. n., ?*O. epiroctalis* sp. n., *Borneraturo modesta* sp. n., *B. sinuata* sp. n., and *B. lobata* sp. n. Status of the former subgenera *Bhuxiphidiopsis* Ingrisch, *Exoteraturo* Gorochov, *Indoteraturo* Ingrisch et Shishodia, and *Nefateraturo* Ingrisch et Shishodia are changed for generic one. *Leptoteraturo lamellatus* Mao et Shi is transferred to the genus *Alloteraturo* Hebard. Systematic position of some other taxa are clarified also.

**Key words:** Descriptions, katydids, Meconematinae, new taxa, Orthoptera, South-East Asia, Tettigoniidae

### РЕЗЮМЕ

Описаны три новых рода, один новый подрод и 21 новый вид из Суматры, Борнео и Вьетнама: *Breviraturo* gen. n., *Odonturisca* gen. n., *Borneraturo* gen. n., *Subtiloturo* subgen. n., *Xiphidiopsis jambi* sp. n., *X. padangi* sp. n., *X. sabahi* sp. n., *X. trusmadi* sp. n., *Pseudoteraturo bella* sp. n., *P. subtilissima* sp. n., *Leptoteraturo pulchra* sp. n., *L. uniformis* sp. n., *L. raoani* sp. n., *L. gialai* sp. n., *L. cemande* sp. n., *Alloteraturo longa* sp. n., *A. media* sp. n., *A. curta* sp. n., *A. carinata* sp. n., *Breviraturo brevis* sp. n., *Odonturisca grigoriji* sp. n., ?*O. epiroctalis* sp. n., *Borneraturo modesta* sp. n., *B. sinuata* sp. n., *B. lobata* sp. n. Статус бывших подродов *Bhuxiphidiopsis* Ingrisch, *Exoteraturo* Gorochov, *Indoteraturo* Ingrisch et Shishodia и *Nefateraturo* Ingrisch et Shishodia повышен до родового. *Leptoteraturo lamellatus* Mao et Shi перенесен в род *Alloteraturo* Hebard. Уточнено также систематическое положение некоторых других таксонов.

### INTRODUCTION

The generic classification of the tribe Meconematini is in beginning of its development. This group includes the smallest katydids distributed mainly in tropical forests. Recent investigations show that this group is very numerous, diverse, and presented by species and genera with very narrow ranges. Majority of its representatives are probably unknown for science up to now. First steps in the study of its generic classification are establishing of preliminary monophyletic groups of species which may be considered as

genera. In relation to Indo-Malayan Meconematini, the recent stage of such work, characterized by the usage of genital characters in generic classification, was initiated by Gorochov (1993, 1998). The present paper is also one of these first steps. It is a reason of some instability of the generic classification proposed early.

The study is based on material from the collection of the Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (ZIN). All type specimens of the new species, described here, are deposited in this collection.

**SYSTEMATICS****Family Tettigoniidae Stoll, 1788****Subfamily Meconematinae Burmeister, 1838****Tribe Meconematini Burmeister, 1838****Genus *Xiphidiopsis* Redtenbacher, 1891**

(Figs. 1–21)

In the old revision of *Xiphidiopsis*, a great number of very diverse species of the tribe Meconematini have been included in this genus (Bey-Bienko 1971). Later, it was divided into several separate genera (Gorochov 1993), and the genus *Xiphidiopsis* sensu Gorochov, into five subgenera: *Xiphidiopsis* s. str., *Dinoxiphidiopsis* Gorochov, 1993, *Euxiphidiopsis* Gorochov, 1993, *Paraxiphidiopsis* Gorochov, 1993, and *Zaxiphidiopsis* Gorochov, 1993. Recently *Zaxiphidiopsis* (Gorochov 1995) and *Euxiphidiopsis* (Liu et Zhang 2000) were raised in status up to generic level, and the subgenus *Paraxiphidiopsis* was transferred by Liu and Zhang (2000) in *Euxiphidiopsis*. I am more or less agree with the latter authors, but the inclusion of the monotypical subgenus *Bhuxiphidiopsis* Ingrisch, 2002 in the genus *Xiphidiopsis* (Ingrisch 2002) is probably erroneous, as the male of this subgenus has not the median process of 10th abdominal tergite (which is characteristic of the genus *Xiphidiopsis*), and its cerci are much more simple in shape. *Bhuxiphidiopsis* stat. n. is probably a distinct genus. So, the genus *Xiphidiopsis* consists of only two subgenera: nominotypical one and monotypical *Dinoxiphidiopsis*. Gorochov (1998, 2005) included eight species in the first of them. Here *X. redtenbacheri* Karny, 1924, *X. sumatrensis* Karny, 1924, *X. monstrosa* Karny, 1924, *X. gracilis* Sanger et Helfert, 2004, and four new species (see below) are added to this subgenus. All other species included in this genus tentatively (under question) or in accordance to the old views and not revised up to now are in needs of additional study for clarification of their generic position.

***Xiphidiopsis (Xiphidiopsis) jambi*, sp. nov.**

(Figs. 5–7)

**Type material.** Holotype – male, Indonesia, province Jambi (Sumatra), 35 km N of town Sungaipenuh, environs of National park Kerinci-Seblat, Mt. Kerinci, 1500–2000 m, primary forest, 18–22.11.1999, A. Gorochov (ZIN).

**Description.** Male (Holotype). Body size small for this genus. Coloration yellowish green with rather

numerous and narrow brown rings on antennal flagellum, small and dense brown spots along anal edge of lateral tegminal part, similar (but more sparse) spots along median line of this part, comparatively large dark brown spot on dorsal tegminal part (near apex of region of stridulatory apparatus), brownish grey upper surface of spines of fore and middle tibiae, and a pair of small blackish spots on apical lobules of each hind femur. General structure of body typical of this subgenus; hind median process of 10th abdominal tergite with narrow lower apical lobe, almost transversally truncate upper apical lobe, and only left lateral lobe (Fig. 5); cerci similar to those of *X. fallax* Redtenbacher, 1891, but distinguished from them by shorter and wider apical part of right cercus, larger 2 subapical lobes of this cercus (Figs. 2, 6), distinctly larger distal subapical lobe of left cercus situated near base of apical lamellar widening, and clearly smaller nearest (to previous lobe) proximal subapical lobe of this cercus (Figs. 3, 7).

Female unknown.

Length in mm. Body 8.5; body with wings 16.5; pronotum 3.7; tegmina 13.3; hind femora 8.2.

**Comparison.** The new species differs from all other congeners in the following combination of characters of male: median process of 10th abdominal tergite with the narrow lower apical lobe and almost transversally truncate upper apical lobe as well as without distinct right lateral lobe; right cercus similar to that of *X. fallax*, but its both subapical lobes larger; left cercus with the distal subapical lobe larger than proximal subapical one.

***Xiphidiopsis (Xiphidiopsis) padangi*, sp. nov.**

(Figs. 8–11)

**Type material.** Holotype – male, Indonesia, province West Sumatra, environs of city Padang, botanical garden, 16–17.04.2004, M. Berezin (ZIN). Paratype – female, the same province, 20 km E of town Sasak, environs of National park Harau Valley, equator, 600 m, forest, 24–26.11.1999, A. Gorochov (ZIN).

**Description.** Male (holotype). Coloration and structure of body similar to those of *X. jambi*, but body size somewhat larger, dark rings of antennae less distinct, dark spots on lateral part of tegmina absent, hind median process of 10th abdominal tergite with wider middle part and longer left lateral lobe, upper apical lobe of this process with oblique hind edge

(Fig. 8), right cercus without apical hook and with very small proximal subapical lobe (Fig. 9), both subapical lobes of left cercus intermediate between those of *X. jambi* and *X. fallax* in size (Figs. 3, 7, 10), and apical widening of left cercus with elongate medial projection (Fig. 10).

Female. General appearance as in male, but tegmina with sparse small dark spots along median line of lateral part only, and pronotum somewhat shorter. Genital plate and 7th abdominal sternite similar to those of *X. fallax* (Figs. 4, 11), but apex of this plate hardly narrower and lateral lobes of 7th sternite slightly longer.

Length in mm. Body: male 14.2, female 12.5; body with wings: male 23, female 26; pronotum: male 4, female 3.7, tegmina: male 19, female 21; hind femora: male 10.8, female 11.5; ovipositor 9.5.

**Comparison.** The new species differs from all other congeners by the presence of narrow lower apical lobe at the median process of 10th abdominal tergite of male in combination with the absence of apical hook at the right male cercus and presence of elongate medial projection at the apical widening of left male cercus.

***Xiphidiopsis (Xiphidiopsis) sabahi*, sp. nov.**  
(Figs. 12–15)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 14 males, 18 females, same data (ZIN).

**Description.** Male (holotype). Coloration and structure of body similar to those of *X. jambi*, but body size as in *X. padangi*, and darkenings on lateral part of tegmina practically absent (membranes along tegminal anal edge with slight brownish tinge only). Hind median process of 10th abdominal tergite similar to that of *X. fallax*, *X. jambi*, and *X. padangi*, but without distinct lateral lobes and with a pair of latero-apical lobes; right of these lobes (upper) much smaller and partly covering left lobe (lower) (Fig. 12); apical widening of right cercus almost triangular, strongly concave below and convex above, provided with small lower hook at medial edge (Fig. 13); apical widening of left cercus groove-shaped and provided with small additional fold near medial edge (Fig. 14).

Female. General appearance as in male, but pronotum slightly shorter. Genital plate and 7th

abdominal sternite similar to those of *X. fallax* and *X. padangi*, but hind median projection of this plate slightly narrower, notches near it somewhat deeper, and lateral lobes of 7th sternite shorter (Figs. 4, 11, 15).

Length in mm. Body: male 13–15, female 11–12.5; body with wings: male 22–24, female 23–25; pronotum: male 3.8–4.2, female 3.3–3.7; tegmina: male 18.5–20.5, female 19–21; hind femora: male 9.5–11, female 11–12.5; ovipositor 8.5–9.5.

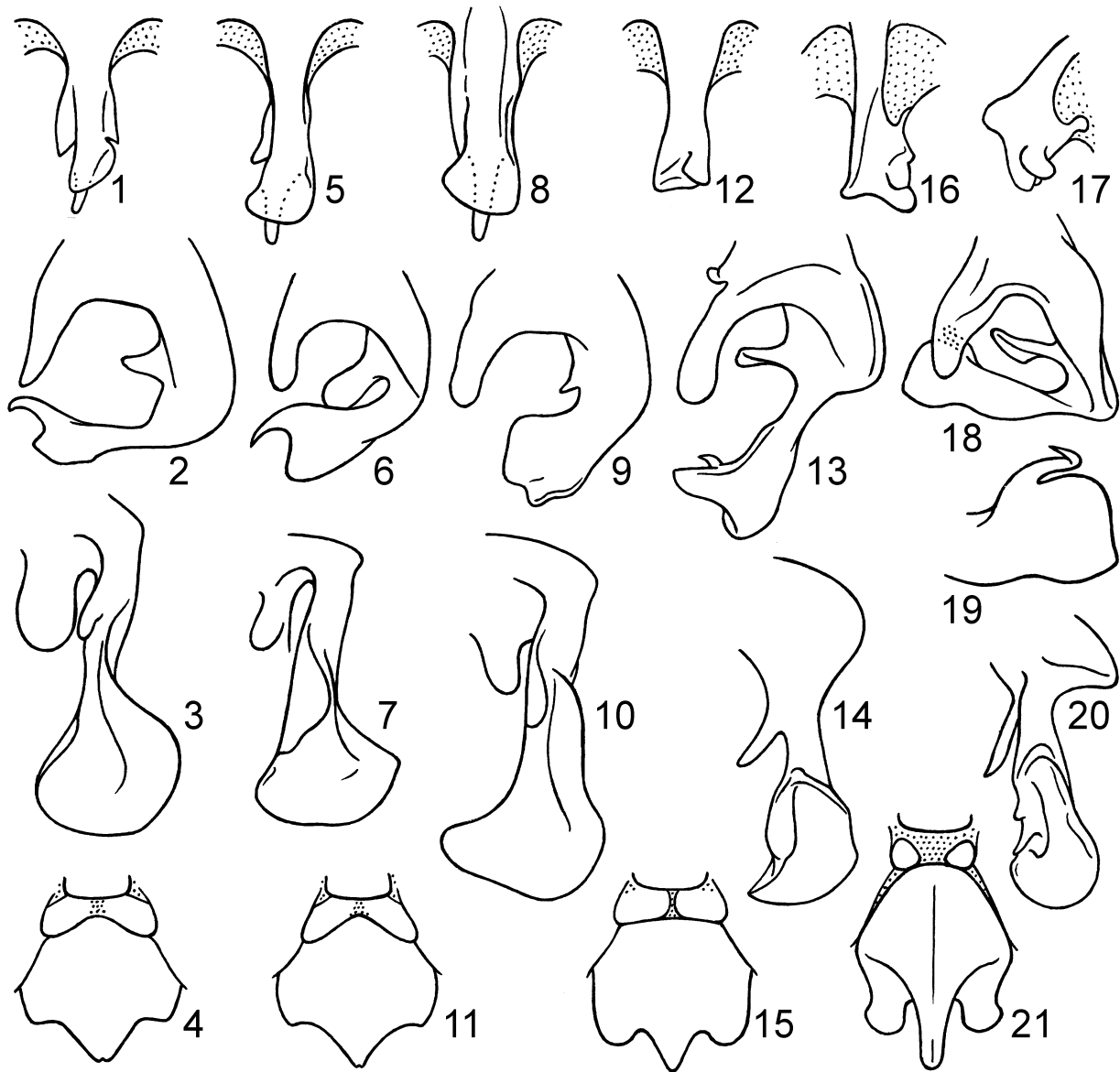
**Comparison.** The new species differs from all congeners by the median process of 10th abdominal tergite of male provided with a pair of asymmetrical latero-apical lobes only, and by the apical widening of male cerci strongly concave below in right cercus and groove-shaped in left cercus.

***Xiphidiopsis (Xiphidiopsis) trusmadi*, sp. nov.**  
(Figs. 16–21)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratype – female, same data (ZIN).

**Description.** Male (holotype). Coloration and structure of body similar to those of *X. jambi*, but body size similar to that of *X. padangi* and *X. sabahi*, darkenings along anal edge of lateral part of tegmina absent (however brownish small spots along median line of this part present), and pronotum somewhat shorter (hind legs missing). Hind median process of 10th abdominal tergite similar to that of *X. sabahi*, but more asymmetrical and partly twisted (right part of this process curved obliquely downwards) (Figs. 16, 17); right cercus with strongly curved distal part directed medially and forwards, and more or less flat (lamellar) apical widening provided with small characteristic hook directed almost forwards, but with apex directed downwards (Figs. 18, 19); left cercus also similar to that of *X. sabahi*, but additional longitudinal fold near medial edge of its groove-shaped widening with 2 distinct lower medial denticles (Fig. 20).

Female. General appearance as in male, but spotted coloration of antennae less distinct, and small brownish spots along median line of lateral part of tegmina absent. 7th abdominal sternite consists of a pair of small and rounded semisclerotized areas; genital plate similar to that of *X. sabahi*, but with longer



**Figs. 1–21.** *Xiphidiopsis* Redt. (membranous parts dotted): 1–4, *X. fallax* Redt. (1–3, lectotype); 5–7, *X. jambi* sp. n.; 8–11, *X. padangi* sp. n.; 12–15, *X. sabahi* sp. n. (12–14, holotype); 16–21, *X. trusmadi* sp. n. Hind median process of 10th abdominal tergite of male partly from above/partly from behind (1, 5, 8, 12, 16) and its distal part from side (17); right cercus of male (without proximal part) from above (2, 6, 9, 13, 18) and its apex from below (19); distal part of left cercus of male partly from below/partly from behind (3, 7, 10, 14, 20); genital plate of female from below (4, 11, 15, 21).

hind median projection and deeper notches near it (Fig. 21).

Length in mm. Body: male 11.4, female 12; body with wings: male 22, female 23; pronotum: male 3.4, female 3.7, tegmina: male 17.5, female 19.5; hind femora, female 11.4; ovipositor 8.7.

**Comparison.** The new species differs from all congeners by the twisted median process of 10th abdominal tergite in male as well as by the strongly curved distal part of right male cercus, and presence of two distinct denticles on medial part of apical widening of left male cercus.

### Genus *Pseudoteratura* Gorochov, 1998

(Figs. 22–34)

This genus was established for a single species from Sumatra (*Xiphidiopsis sundaica* Kästner, 1932). Later *P. parallela* Ingrisch, 2006 was described from Sumatra as a second species of *Pseudoteratura* (Ingrisch 2006). Here some other species are added in this genus, and it is divided into two subgenera: *Pseudoteratura* s. str. (*P. sundaica*, *P. parallela*, *P. raggei* (Bey-Bienko, 1971) comb. n. (*Xiphidiopsis*), and *P. bella* sp. n.) and a new subgenus (see below). So, this genus includes very small katydids with the thin and elongate body, almost conical head, narrow upper rostral tubercle, large and almost globular eyes (which are slightly longer than their height), and more or less narrow pronotum provided with the dark or darkish median stripe divided near hind edge of pronotal disc into a pair of rather large dark spots (these spots are situated very near each other and connected with each other by dark line running along hind edge of this disc). These characters indicate some similarity of this genus to the genus *Cononicephora* Gorochov, 1993. But the latter genus has the shortened wings, its pronotal disc is with the similar spots near hind edge only, and male cerci are simple (without distal bifurcation or large lobes).

#### *Pseudoteratura (Pseudoteratura) bella*, sp. nov.

(Figs. 22–26)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratype – female, same data (ZIN).

**Description.** Male (holotype). Coloration yellowish green with following ornament: head with reddish median band on dorsum, dark brown upper rostral tubercle, brown spot on inner part of scapes and numerous rings on antennal flagellum; pronotal disc with reddish median band divided into a pair of brown spots near hind edge and whitish rather wide triangle between these spots; tegmina with light brownish stripe along anal edge (excepting almost transparent region of stridulatory apparatus) and several small brown spots on other parts. Upper rostral tubercle directed forwards; head under rostrum weakly convex in profile; apical

and subapical segments of maxillary palpi almost equal in length. Wings very long, extending behind middle part of hind tibiae; tegmina distinctly shorter than hind wings; tegminal RS with five branches. Epiproct moderately large, with rather narrow fore part (inserted in deep notch of 10th abdominal tergite) and slightly widened, almost truncate apex (Fig. 22); cerci distinctly bifurcate (Fig. 23); genital plate with narrow distal half and long styles (Fig. 24); genitalia with a pair of not lamellar lobes, which covered by numerous very small denticles and having spine-like lateral process (Figs. 22, 23).

Female. General appearance as in male, but pronotum slightly shorter, reddish pronotal stripe with slight light median line in fore half, and tegmina with somewhat more numerous dark spots. Genital plate almost oval, with distinct transverse fold and hardly notched apex (Fig. 25); ovipositor rather long, almost straight, with narrow and acute apical part of upper and lower valves (apex of lower valves hardly hooked) (Fig. 26).

Length in mm. Body: male 12.5, female 12; body with wings: male 23, female 23.5; pronotum: male 3.8, female 3.3; tegmina: male 17.5, female 18; hind femora: male 9.5, female 9.8; ovipositor 8.

**Comparison.** The new species differs from *P. sundaica* and *P. parallela* by the smaller male epiproct (from both species), by the male cercal lobes directed backwards (mainly from *P. parallela*), and by the narrower distal half of male genital plate (mainly from *P. sundaica*). It is distinguished from *P. raggei* comb. n. from Sarawak (North Borneo) by the not acute apex of female genital plate and somewhat shorter ovipositor.

#### Subgenus *Subtilotura*, subgen. nov.

(Figs. 27–34)

**Etymology.** This name originates from *subtilis* (Lat.) and the generic name *Teratura*.

**Type species.** *Pseudoteratura (Subtilotura) subtilissima* sp. n.

**Diagnosis.** Males: epiproct short and with rounded distal part; its apex directed downwards; 10th abdominal tergite with shallow hind notch (Fig. 27); cerci with 2 lobes near apex (Fig. 28); distal half of genital plate comparatively wide (Fig. 29); genitalia with 3 large sclerotized lobes (Figs. 27, 30). Female: genital plate with a pair of long hind lobules (Figs. 31, 33).

**Included species.** Type species; *Leptoteratura sugonjaevi* Gorochov, 1994 (North Vietnam); *L. koncharangi* Gorochov, 1998 (South Vietnam).

**Comparison.** The new subgenus differs from *Pseudoteratura* s. str. in the above-mentioned characters. *Subtilotura* has also an additional similarity to *Conoicephora* in the shape of male epiproct (short and simple), but majority of other male copulatory structures in these taxa are clearly different (in the new subgenus, cerci and genitalia are complicate).

***Pseudoteratura (Subtilotura) subtilissima*, sp. nov.**  
(Figs. 27–30)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratype – male, same data (ZIN).

**Description.** Male (holotype). Coloration yellowish green with following marks: head with brown both dorsum between eyes and inner part of scapes, dark brown upper rostral tubercle, light brown ventral part of 2nd and 3rd antennal segments, and slightly darker narrow rings on distal part of 2nd–11th antennal segments; pronotal disc with brown wide median band and light median line on hind part of this band; tegmina with brown stripe along anal edge (excepting almost transparent region of stridulatory apparatus). Upper rostral tubercle directed slightly downwards; head under rostrum strongly convex in profile; maxillary palpi and wings almost as in *P. bella*, but tegminal RS with 4 branches. Abdominal apex as in Figs. 27–29; genitalia with lamellar and more or less rounded large sclerotized lobes as well as a pair of small and long lobules at ventral part (Figs. 27, 28, 30).

Variation. Brown band of pronotal disc with almost triangular light median stripe on hind part.

Female unknown.

Length in mm. Body 10.5–11; body with wings 19–20; pronotum 3.3–3.4; tegmina 14.8–15.2; hind femora 8.4–8.7.

**Comparison.** The new species is distinguished from all other species of this subgenus by the distinctly longer apical segment of maxillary palpi. Additionally, *P. subtilissima* differs from *P. koncharangi* comb. n. by the wider dark bands on the dorsum of both head and pronotum, absence of whitish median line on the fore and middle parts of dark median band of pronotal disc

as well as slightly curved upper rostral tubercle, and from *P. sugonjaevi* comb. n., by the much larger dark marks and distinctly longer wings.

**Genus *Leptoteratura* Yamasaki, 1982**

(Figs. 35–56)

This genus was divided by Gorochov (1993) into two subgenera: *Leptoteratura* s. str. and *Rhinoteratura* Gorochov, 1993 with only *L. sharovi* Gorochov, 1993. Later Jin (1995) added *L. borneoensis* Jin, 1995 in the latter subgenus, and Gorochov (2002) described the subgenus *Exoteratura* Gorochov, 2002 with only *L. kerinci* Gorochov, 2002. All other species of this genus (10) were included by Gorochov (1998) in the nominotypical subgenus excepting two problematical species transferred here to the genus *Pseudoteratura* (see above). Now I consider that *Exoteratura* stat. n. is a separate genus, *Leptoteratura* s. str. includes five or six species from Japan and China with the strongly asymmetrical male cerci, and *Rhinoteratura* possibly contains four species with the symmetrical male cerci (*L. sharovi*; *L. borneoensis*; *L. symmetrica* Yamasaki, 1987; *L. pulchra* sp. n.). This composition of *Rhinoteratura* is tentative and partly based on the suggestions by Mao and Shi (2007), but the inclusion of *L. lamellatus* Mao et Shi, 2007 in this subgenus, made in the same paper, is erroneous, as this species has the extremely short apical segment of maxillary palpi characteristic of the genus *Alloteratura* Hebard, 1922. Nine species insufficiently described or with unknown male cannot be put now in any subgenus: *L. capreola* (Redtenbacher, 1891), *L. triura* Liu, 1997, *L. kevani* Gorochov, 1998, *L. martynovi* Gorochov, 1998, and four new species described here.

***Leptoteratura (Rhinoteratura) pulchra*, sp. nov.**

(Figs. 35–39)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 7 males, 9 females, same data (ZIN).

**Description.** Male (holotype). Coloration light yellowish green with a pair of intensively yellow stripes running from eyes and along lateral edges of pronotal disc to hind edge of this disc as well as light brown both distal part of region of stridulatory ap-

paratus and stripe along anal edge of tegminal lateral part. Upper surface of head flat; upper rostral tubercle lamellar and with rounded apex (see from above). Pronotum with flat disc and distinct carina along upper edge of lateral lobes. Wings long; hind wings and tegmina almost equal in length. 10th abdominal tergite with shallow hind notch; epiproct small, rounded; cerci straight, with 2 medial lobes and almost spine-like apical part (Figs. 35, 36); genital plate with almost truncate apex and very short styles (Fig. 37); genitalia membranous, but with small median sclerite and several very small spinules around it.

Variation. Some specimens with lighter (whitish yellow) stripes on pronotum.

Female. General appearance as in male, but pronotum slightly shorter and light brown stripe runs along both anal edge of lateral tegminal part and lateral edge of dorsal tegminal part. Genital plate with roundly angular distal part (Fig. 38); ovipositor with proximal and middle parts wider (higher) than distal one, and apex of upper and lower valves narrowly rounded (Fig. 39).

Length in mm. Body: male 9.5–11.5, female 9–10.5; body with wings: male 18.5–20, female 19–20.5; pronotum: male 3.1–3.3, female 2.8–3; tegmina: male 15–16, female 15.5–16.5; hind femora: male 7–7.4, female 7.2–7.7; ovipositor 4–4.3.

**Comparison.** The new species differs from *L. sharovi* (Figs. 40–45) by the longer male cerci with the less curved proximal lobe, by the very small styles of male genital plate, by the much longer female genital plate, and by the ovipositor without any apical hook; from *L. symmetrica* and *L. borneoensis*, by the straight apical part of male cerci; and from all congeners of unknown subgeneric position, by the female genital plate somewhat shorter or wider and with more or less rounded apex (for comparison see Figs. 38, 46, 49, 51).

***Leptoteratura* (? subgenus) *uniformis*, sp. nov.**  
(Fig. 52)

**Type material.** Holotype – female, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratype – female same data (ZIN).

**Description.** Female (holotype). Size, coloration and structure of body similar to those of *L. pulchra*, but pronotum with whitish yellow stripes, tegmina with very light brownish stripe along anal edge of lat-

eral part and without any stripe along lateral edge of dorsal part, hind wings slightly longer than tegmina, and genital plate distinctly shorter and with widely truncate apex (Fig. 52).

Variation. Genital plate of paratype with somewhat more rounded posterolateral corners.

Male unknown.

Length in mm. Body 9.5–10; body with wings 19.5–20.5; pronotum 3; tegmina 16.3–16.7; hind femora 8; ovipositor 4.2–4.4.

**Comparison.** The differences between *L. uniformis* and *L. pulchra* are given above. From *L. sharovi*, the new species differs by the less transverse female genital plate and by the ovipositor without any apical hook, from all other congeners, by the short and widely truncate female genital plate.

***Leptoteratura* (? subgenus) *raoani*, sp. nov.**  
(Figs. 53, 54)

**Type material.** Holotype – female, Vietnam, province Ha Tinh, village Huong Son on river Rao An, 18°21'N, 105°13'E, primary forest, 04.2000, N. Orlov (ZIN).

**Description.** Female (holotype). Size, coloration and structure of body similar to those of *L. pulchra*, but pronotum with almost indistinct yellowish stripes, tegmina uniformly light, hind wings slightly longer than tegmina, genital plate widened in proximal part and with narrow rounded apical part (Fig. 53), ovipositor with distal part wider (higher) than its other parts and hardly developed hook at apex of lower valves (Fig. 54).

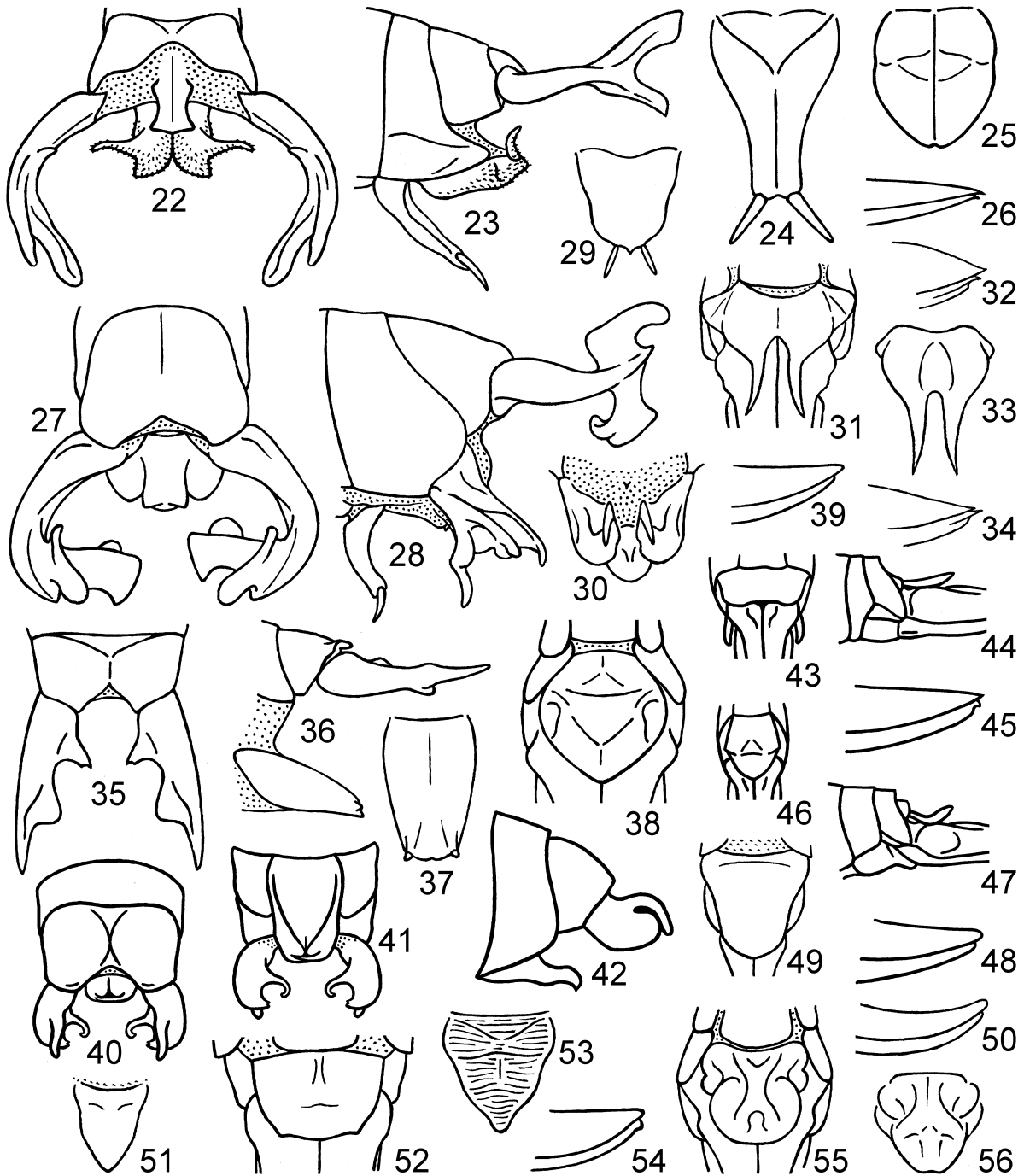
Male unknown.

Length in mm. Body 10.5; body with wings 18.7; pronotum 3; tegmina 14.8; hind femora 7.7; ovipositor 4.4.

**Comparison.** The new species is distinguished from all other congeners by the narrow, but not acute, apical part of female genital plate. From *L. kevani* having partly similar shape of distal part of this plate, it additionally differs by the wider proximal part of this plate and presence of hardly distinct hook at the apex of lower valves of ovipositor (in *L. kevani*, this apex without any hook).

***Leptoteratura* (? subgenus) *gialai*, sp. nov.**  
(Fig. 55)

**Type material.** Holotype – female, Vietnam, province Gia Lai, 20 km N of town Kannack, village



**Figs. 22–56.** *Pseudoteratura* Gor. and *Leptoteratura* Yam. (membranous parts dotted): 22–26, *P. bella* sp. n.; 27–30, *P. subtilissima* sp. n. (holotype); 31, 32, *P. koncharangi* (Gor.) (holotype); 33, 34, *P. sugonjaevi* (Gor.) (holotype); 35–39, *L. pulchra* sp. n. (35–37, holotype); 40–45, *L. sharovi* Gor. (40–42, holotype); 46–48, *L. capreola* (Redt.); 49, 50, *L. martynovi* Gor. (holotype); 51, *L. kevani* Gor. (holotype); 52, *L. uniformis* sp. n.; 53, 54, *L. raoani* sp. n.; 55, *L. gialai* sp. n.; 56, *L. cemande* sp. n. Male abdominal apex from above (22, 27, 35, 40), from side (23, 28, 36, 42), and from below (41); male genital plate from below (24, 29, 37); female genital plate from below (25, 33, 51, 53, 56); apex of ovipositor from side (26, 32, 34, 39, 45, 48, 50, 54); male genitalia from below (30); region of female genital plate from below (31, 38, 43, 46, 49, 52, 55) and from side (44, 47).



Buon Luoi, primary forest, 22–31.03.1995, A. Gorochov (ZIN).

**Description.** Female (holotype). Size, coloration and structure of body similar to those of *L. pulchra*, but pronotum with whitish yellow stripes, tegmina uniformly light, wings somewhat shorter, hind wings slightly longer than tegmina, genital plate with round distal part and not widely truncate apex (Fig. 55), and ovipositor as in *L. raoani*.

Male unknown.

Length in mm. Body 8.5; body with wings 16.8; pronotum 2.9; tegmina 13.2; hind femora 7.3; ovipositor 4.3.

**Comparison.** The new species differs from all other congeners by the not shortened female genital plate provided with the round distal part and truncate apex.

***Leptoteratura* (? subgenus) *cemande*, sp. nov.**

(Fig. 56)

**Type material.** Holotype – female, Indonesia, Java, 20–25 km SE of city Bogor, Mts Pangrango, village Cemande, 1000 m, forest, 27.11–7.12.1999, A. Gorochov (ZIN).

**Description.** Female (holotype). Size, coloration and structure of body similar to those of *L. pulchra*, but pronotum with whitish yellow stripes, tegmina uniformly light, wings somewhat shorter, hind wings slightly longer than tegmina, genital plate with oval distal part (this part distinctly narrowing to apex) and small apical notch (Fig. 56), and ovipositor as in *L. raoani*.

Male unknown.

Length in mm. Body 9.5; body with wings 17; pronotum 2.8; tegmina 13.4; hind femora 7.2; ovipositor 4.3.

**Comparison.** The new species differs from all other congeners by the same characters as *L. gialai*, and from the latter species, by the narrower apical part of female genital plate with small notch at apex.

**Genus *Alloteratura* Hebard, 1922**

(Figs. 57–74)

This genus was described by Hebard (1922) for a few species having “extremely short, conical last segment of the maxillary palpi”. Later Beier (1966) and Kevan and Jin (1993) added (in *Alloteratura*) several species with this segment comparatively

long, but Gorochov (1993, 1998) proposed to put such species in some other genera. Recently Ingrisich and Shishodia (2000) divided this genus into three subgenera: nominotypical one with the last segment of maxillary palpi strongly shortened, and two subgenera with this segment long (*Indoteratura* Ingrisich et Shishodia, 2000 with 1 species; *Nefateratura* Ingrisich et Shishodia, 2000 with 2 species). Probably the latter authors consider that some similarity of copulatory organs in these taxa is an evidence of their close relationship. However this similarity is not very great, and these organs in *Alloteratura* and other Meconematini are very diverse and able to form similar structures independently, on the base of general origin. So, I think that the ranks of *Indoteratura* stat. n. and *Nefateratura* stat. n. may be raised to generic ones. Moreover, *Alloteratura mesembrina* Kevan, 1993 included by Ingrisich and Shishodia (2000) in *Nefateratura* possibly belongs to *Decma* Gorochov, 1993 (Gorochov 1998), as its male genitalia are similar to those of the nominotypical subgenus of *Decma*.

***Alloteratura longa*, sp. nov.**

(Figs. 57–63)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 12 males, 16 females, same data (ZIN).

**Description.** Male (holotype). Coloration yellowish green with following marks: distinct brown spots on ventral part of 2nd–14th antennal segments; dark brown sparse rings on antennal flagellum; brown upper rostral tubercle; light brown both median stripe on dorsal surface of rostrum and a pair of spots behind this stripe (between eyes); brown membranes on dorsal tegminal part near hind edge of pronotum (in rest position of tegmina); light brown membranes along anal edge of lateral tegminal part; blackish both spines of all tibiae and small spots on apical lobules of hind femora; brownish spots on distal half of all tarsi. Pronotum with distinct notches between lateral lobes and hind lobe. Both apical lobules of hind femora with short spinules. Wings long; tegmina hardly shorter than hind wings. 10th abdominal tergite with not very deep, rounded hind median notch; epiproct simple, small; cerci rather short and simple, with rounded (see from above) and

sloping medial keel (Figs. 57–59); genital plate elongate, with rounded apex and small styles (Fig. 60); subanal plate (sclerotized lobe between paraprocts and genitalia) almost undeveloped, presented by very small median membranous fold; sclerite of genitalia strongly arched in profile, and its apical hooks directed medially (Fig. 61).

**Variation.** Some paratypes with light brown spots near tympana and brownish median part of hind pronotal edge.

**Female.** General appearance as in male, but hind pronotal lobe slightly shorter and dorsal part of tegmina completely yellowish green (without darkening). Genital plate with rather widely truncate apex (Fig. 62); ovipositor with narrow and acute apex lacking any hook (Fig. 63).

Length in mm. Body: male 10.5–12, female 10–11.5; body with wings: male 21–22.5, female 23–24.5; pronotum: male 3.8–4, female 3.6–3.8; tegmina: male 17.5–19, female 18.5–21; hind femora: male 9–10, female 10–11; ovipositor 10–10.5.

**Comparison.** The new species differs from all congeners by the presence of short spinules at the apical lobules of hind femora and by the male subanal plate practically undeveloped.

***Alloteratura media*, sp. nov.**  
(Figs. 64–67)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 2 males, 7 females, same data (ZIN).

**Description.** Male (holotype). Coloration and structure of body very similar to *A. longa*, but distinguished by following characters: pronotum with brownish spot on hind part of pronotal disc; fore femora with brownish longitudinal line on outer surface; fore tibiae with more distinct brownish spots near tympana; wings distinctly shorter, with small brown spot on distal part of region of stridulatory apparatus and narrow brown stripe along anal edge of lateral tegminal part only; cerci with almost angular (see from above) medial keel (Fig. 64); genital plate with distinctly longer styles (Fig. 65); sclerite of genitalia with apical hooks directed somewhat laterally (Fig. 66).

**Variation.** Coloration of some paratypes with less dark spines (intensively brown) and some other marks.

**Female.** General appearance as in male, but hind pronotal lobe slightly shorter. Genital plate similar to that of *A. longa*, but with somewhat narrower apex having very shallow median notch (Fig. 67).

Length in mm. Body: male 10.5–11.5, female 9.5–11; body with wings: male 17.5–18.5, female 18.5–20; pronotum: male 3.6–3.8, female 3.2–3.4; tegmina: male 14–15, female 15–16; hind femora: male 8.5–9, female 8.7–9.3; ovipositor 8–8.5.

**Comparison.** The new species differs from all congeners by the same characters as *A. longa*, and from the latter species, by the characters listed above.

***Alloteratura curta*, sp. nov.**  
(Figs. 68, 69)

**Type material.** Holotype – female, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratype – female, same data (ZIN).

**Description.** Female (holotype). Coloration and structure of body as in *A. longa*, but distinguished by following characters: scape with brown spot on ventral part; antennal flagellum with almost completely brown ventral part; upper rostral tubercle lighter (light brown); fore femora and tibiae with brown longitudinal stripes on outer surface and more distinct brownish spots near tympana; hind femora with distinctly longer spinules at apical lobules (Fig. 68); wings much shorter, with darkish distal part of hind wings and short brown stripe along proximal part of anal tegminal edge only; genital plate with wide and shallow notch at apex (Fig. 69).

**Variation.** In paratype, upper rostral tubercle dark brown.

Male unknown.

Length in mm. Body 10.5–11.5; body with wings 14.6–14.9; pronotum 3.8; tegmina 11.3–11.5; hind femora 10.7–11.2; ovipositor 8.8–9.3.

**Comparison.** The new species is most similar to *A. longa* and *A. media*, but distinguished from them by the longer apical spinules of hind femora, by the distinctly shorter wings, and by the wider (than in *A. media*) apical part of genital plate having shallow median notch (in *A. longa*, this part is truncate). From all other congeners, *A. curta* differs by the rather long apical spinules of hind femora and characteristic coloration of body parts.

***Alloteratura carinata*, sp. nov.**

(Figs. 70–74)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 4 males, same data (ZIN).

**Description.** Male (holotype). Coloration yellowish green with brown spots on ventral surface of proximal part of antennae, sparse dark brown rings on their middle part, brownish both distal part of antennae and membranes (between veinlets) along distal half of anal tegminal edge, intensively yellow stripes along lateral edges of pronotal disc, light brown tympanal membranes and spines of fore and middle tibiae, almost blackish spines of hind tibiae, and slightly darkened lateral parts of 3rd segment of all tarsi. Wings long; tegmina slightly shorter than hind wings. Apical lobules of hind femora without spinules. Pronotum and abdominal apex similar to those of *A. longa*, but cerci slightly longer and with 2 keels (high dorsal keel in proximal half of cerci, and low medial one at cercal base) (Figs. 70–72), genital plate with narrow and acute apex (Fig. 73), subanal plate rather large and with truncate apex (Fig. 72), and sclerite of genitalia with distinctly narrower proximal part and characteristic apical hooks (Fig. 74).

Variation. Some paratypes with brownish membranes in most part of distal half of tegmina.

Female unknown.

Length in mm. Body 11.5–12.5; body with wings 20.5–21.5; pronotum 3.5–3.7; tegmina 16.5–17; hind femora 8.5–8.8.

**Comparison.** The new species differs from *A. longa*, *A. media*, and *A. curta* by the apical lobules of hind femora without spinules; from two first species, by the well developed subanal plate; from the above mentioned species and other congeners with known males, by the simple male cerci with the high dorsal keel, by the narrow and acute apex of male genital plate, and by the shape of male genital sclerite; and from all other congeners, by the characteristic coloration and long wings.

**Genus *Breviratura*, gen. nov.**

(Figs. 75–78)

**Etymology.** This name originates from *brevis* (Lat.) and the generic name *Teratura*.

**Type species.** *Breviratura brevis* sp. n.

**Diagnosis.** Head weakly conical, with slightly flattened upper rostral tubercle which gradually narrowing forwards and having thin median furrow on dorsal surface; eyes not very large; maxillary palpi with apical segment slightly (but clearly) shorter than subapical one. Pronotum distinctly elongate, with hind lobe of disc narrowly rounded and lateral lobes practically lacking humeral notch. Fore tibiae with both tympana open, 4 pairs of moderately long spines, and 3 short (apical and subapical) spines; hind femora rather thick and without apical spinules. Wings moderately shortened; male stridulatory apparatus well developed and (in rest position) completely covered with hind pronotal lobe. 10th abdominal tergite of male simple; male epiproct rather large, almost globular; male cerci simple and not long, but with strong proximal processes directed forwards and medially (Figs. 76–78); male genital plate short (almost transverse), with small hind median lobe having distinct styles (Figs. 76, 78); male genitalia with characteristic semisclerotized structure provided with 2 sclerites: proximal and distal (Fig. 75).

**Included species.** Type species only.

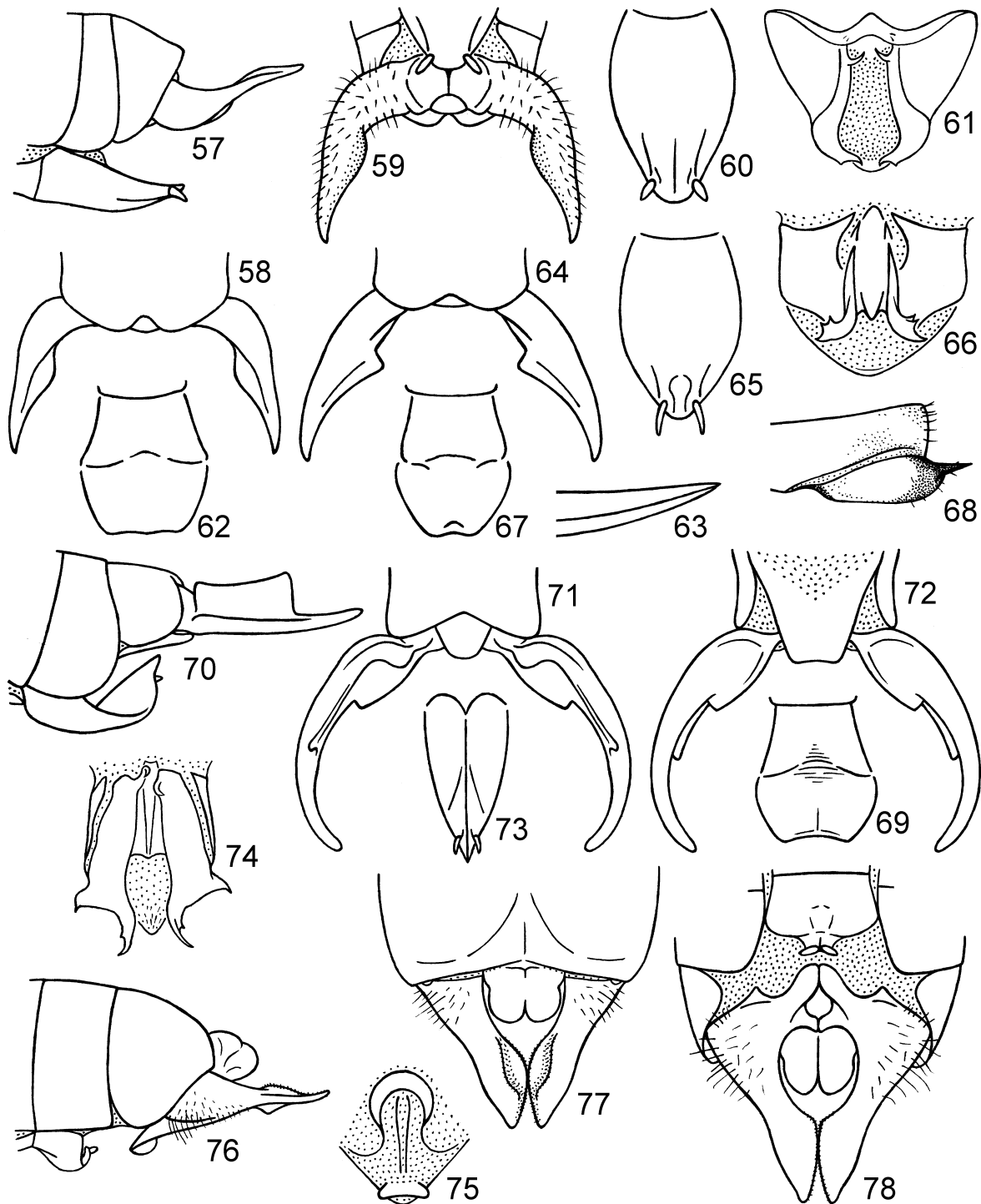
**Comparison.** The new genus differs from all other genera of Meconematini in the characteristic combination of features listed above. No other known genera of this tribe having the globular shape of male epiproct, male cerci with the strong proximal process directed forwards, and male genitalia with the similar sclerotizations.

***Breviratura brevis*, sp. nov.**

(Figs. 75–78)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN).

**Description.** Male (holotype). Coloration yellowish, almost uniform, but with brown narrow and sparse rings on antennae, brownish both spots on tympana and spines of hind tibiae, and light brown some membranes along distal half of anal tegminal edge. Apex of upper rostral tubercle narrowly truncate. Middle and hind parts of pronotal lateral lobes with hardly sinuate lower edge. Apex of tegmina reaching apex of hind wings and almost reaching apex of hind femora; tegminal RS with 3 short branches situated in apical part of tegmina; base of this RS situated



**Figs. 57–78.** *Alloteratura* Heb. and *Breviratura* gen. n. (membranous parts dotted): 57–63, *A. longa* sp. n. (57–61, holotype); 64–67, *A. media* sp. n. (64–66, holotype); 68, 69, *A. curta* sp. n. (holotype); 70–74, *A. carinata* sp. n. (holotype); 75–78, *B. brevis* sp. n. Male abdominal apex from side (57, 70, 76), from above [58, 64, 71 (without subanal plate), 77], and from below [59, 72 (without genital plate), 78]; male genital plate from below (60, 65, 73); sclerotizations of male genitalia from above (61, 66, 74, 75); female genital plate from below (62, 67, 69); apical part of ovipositor from side (63); apical part of left hind femur from side (68).

in proximal half of tegmina. 10th abdominal tergite with very shallow hind notch (Fig. 77); epiproct with rather deep median furrow on ventral and hind parts (Figs. 77, 78); cerci with characteristic very low keel on dorsal surface of distal part having numerous very small denticles; one of proximal cercal processes larger and directed more or less forwards, but other one slightly smaller and directed medially (Fig. 76, 78); genitalia and genital plate as in Figs. 75, 78.

Female unknown.

Length in mm. Body 10.5; body with wings 11.5; pronotum 4; tegmina 8.3; hind femora 7.4.

### Genus *Odonturisca*, gen. nov.

(Figs. 79–83)

**Etymology.** This name originates from the generic name *Odontura*.

**Type species.** *Odonturisca grigoriji* sp. n.

**Diagnosis.** Structure of body similar to that of *Breviratura*, but upper rostral tubercle more flattened, median furrow on its dorsal surface wider and less distinct, apical segment of maxillary palpi almost equal to subapical one in length, pronotum with distinct humeral notch at lateral lobes, wings not shortened (reaching distal part of hind tibiae), male epiproct small (lobule-like) and directed partly downwards/partly forwards, male cerci with rather large distal widening (having short processes) and without proximal processes (Figs. 79–81), male genital plate rather large (elongate) and gradually narrowing to apex (Fig. 80). Male genitalia with characteristic sclerite more or less similar to that of *Breviratura* in shape (Figs. 75, 82); female genital plate with partly membranous proximal part (Fig. 83); ovipositor very slightly curved upwards, with acute apex and distinctly denticulate upper and lower edges of distal part.

**Included species.** Type species and *Amytta serricauda* Karny, 1924.

**Comparison.** The latter species was included in the genus *Xiphidiola* Bolivar, 1906 by Gorochov (1993). However the structure of male copulatory apparatus in *O. grigoriji*, species very similar to *O. serricauda* comb. n., shows that the new genus is well distinguished from *Xiphidiola* by the male cerci with the distal widening as well as characteristic shape of sclerite of male genitalia. From *Breviratura* (which is probably related to *Odonturisca* judging by the structure of male genital sclerotization), the latter genus

differs in the characters given in its diagnosis, and from other genera of Meconematini, in the structure of genital sclerite, cerci, and epiproct in male.

**Remark.** The name *Odonturisca* is given by G.Ja. Bey-Bienko, who was going to describe this genus for *O. serricauda* only. This name was written by him on the label under a female of this species.

### *Odonturisca grigoriji*, sp. nov.

(Figs. 79–83)

**Etymology.** This species is named in memory of orthopterist Grigorij Ja. Bey-Bienko.

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 11 males, 29 females, same data (ZIN).

**Description.** Male (holotype). Coloration uniformly yellowish green, but with traces of whitish yellow stripes along lateral edges of pronotal disc. Rostral apex narrowly truncate. Hind pronotal lobe long, insignificantly shorter than rest of pronotum. Tegminal RS with 3 not long branches situated in distal part of tegmina; base of this RS situated in proximal half of tegmina; stridulatory apparatus almost completely covered with hind pronotal lobe in rest position (only small area of stridulatory apparatus exposed behind this lobe). 10th abdominal tergite with a pair of short and almost angular hind projections; cerci short, with almost lamellar medial part of distal widening; latter widening with angular proximal lobe curved upwards, upper apical spine directed partly upwards, and smaller lower spine directed medially (Figs. 79–81); genital plate with very short styles and moderately narrow apex having very shallow notch (Fig. 80, 81); sclerite of genitalia as in Fig. 82.

Variation. Some paratypes practically without traces of whitish yellow stripes on pronotum. Hind projections of 10th abdominal tergite sometimes with acute apex.

Female. General appearance as in male, but pronotum with slightly shorter hind lobe. Genital plate with deep transverse fold between proximal and distal halves; median part of this proximal half with small well sclerotized transverse convexity and more or less membranous lateral parts; distal half of this plate roundly triangular and with very small (hardly visible) apical notch (Fig. 83).

Length in mm. Body: male 9.5–11, female 8.5–10; body with wings: male 16.5–17.5, female 17.5–18.5; pronotum: male 3.6–3.8, female 3.2–3.5; tegmina: male 13.5–14.3, female 15–16; hind femora: male 7.5–7.8, female 7.7–8; ovipositor 5.5–5.7.

**Comparison.** The new species differs from *O. serricauda* (from Sumatra) by the longer ovipositor and by the female genital plate almost without hind median notch (in *O. serricauda*, length of female hind femora 8.5, and of ovipositor 5 mm).

**?*Odonturisca epipectalis*, sp. nov.**

(Figs. 84–88)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratype – male, same data (ZIN).

**Description.** Male (holotype). Coloration uniformly yellowish. Structure of body similar to that of *O. grigoriji*, but distinguished by following characters: hind pronotal lobe hardly shorter; tegminal RS with 4 branches; stridulatory apparatus only partly covered with hind pronotal lobe in rest position (all areas of distal part of stridulatory apparatus exposed behind this lobe); 10th abdominal tergite with slight folds on lateral parts, and hind projections more rounded; epiproct large (elongate), directed partly backwards/partly downwards, and with distinct apical notch (Figs. 86, 88); cerci rather thin and arched, with group of dense hairs on medial surface of distal part (Figs. 84, 85); genital plate with roundly truncate apex and distinctly longer styles (Figs. 85, 86); sclerite of genitalia with shorter lateral arms and wider proximal lobe (Fig. 87).

Variation. Paratype with noticeably narrower apex of genital plate.

Female unknown.

Length in mm. Body 10–12; body with wings 18.5–19; pronotum 3.5–3.7; tegmina 15.4–16.4; hind femora 8–8.3.

**Comparison.** The new species is included in this genus only tentatively. It is related to *Odonturisca* as it has some similarity to the type species of this genus in the structure of head, pronotum, 10th abdominal tergite of male, and male genitalia. However the new species is significantly distinguished from *O. grigoriji* by the simple cerci and large epiproct in male. Possibly ?*O. epipectalis* is a

representative of a new genus or a separate subgenus of *Odonturisca*.

**Genus *Borneratura*, gen. nov.**

(Figs. 89–104)

**Etymology.** This name originates from Borneo I. and the generic name *Teratura*.

**Type species.** *Borneratura modesta* sp. n.

**Diagnosis.** Structure of body similar to that of *Breviratura*, but distinguished by following characters: head distinctly conical; maxillary palpi with apical segment significantly shorter than subapical segment (second one about 1.5 times as long as first one); pronotum moderately long and almost without humeral notch at lateral lobes (middle part of ventral edge of these lobes slightly sinuate); fore tibiae with 1–3 apical and subapical spines; hind femora moderately thick; wings long, reaching middle or distal parts of hind tibiae; tegmina reaching apex of hind wings or slightly shorter; male epiproct small (lobule-like) and directed partly downwards/partly forwards; male cerci rather long and with only medial (or dorsomedial) lobe or without it (Figs. 89–91, 94–96, 99–101); male genital plate elongate and gradually narrowing to apex (Figs. 90, 95, 100); male genitalia without distinct sclerotizations or with hardly visible semimembranous areas around apex of genitalia (Figs. 97, 102). Proximal part of female genital plate more or less separated from distal one and without large membranous areas (Figs. 92, 104); ovipositor slightly S-shaped, with smooth edges and acute apex having very small ventral hook (Fig. 93).

**Included species.** Type species; *B. sinuata* sp. n.; *B. lobata* sp. n.; probably *Xiphidiopsis borneensis* Karny, 1925 and *X. mjobergi* Karny, 1925 (both from Borneo).

**Comparison.** The new genus is similar to *Breviratura* and *Odonturisca*, but distinguished from them by the significantly shortened apical segment of maxillary palpi and by the male genitalia without sclerotizations or with another type of sclerotizations. From all other genera of Meconematini, the new genus differs by the same characters as well as conical head, long wings, sinuate ventral edge of lateral pronotal lobes, simple structure of 10th abdominal tergite in male, small epiproct of male, comparatively simple male cerci, and rather primitive type of male genital plate.

***Borneratura modesta*, sp. nov.**

(Figs. 89–93)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 2 males, 5 females, same data (ZIN).

**Description.** Male (holotype). Coloration uniformly yellowish green, but with slight brownish stripe along anal edge of tegmina (excepting more or less transparent region of stridulatory apparatus). Hind lobe of pronotum completely covering region of stridulatory apparatus. Wings reaching middle part of hind tibiae; tegmina reaching apex of hind wings; tegminal RS with 3 branches, which situated at distal part of tegmina, and base situated approximately at their middle part. 10th abdominal tergite with almost straight hind edge; cerci weakly sinuate and without distinct lobes (Figs. 89–91); genital plate with roundly angular apex between styles (Fig. 90); genitalia membranous.

Variation. 10th abdominal tergite sometimes with slight and shallow hind notch. One of paratypes with only 2 branches of RS in left tegmen.

Female. General appearance as in male, but pronotum hardly shorter and proximal part of tegmina without brownish marks. Genital plate distinctly divided into 2 parts by rather deep transverse fold; proximal part of this plate very short and wide, but distal one somewhat longer, with almost rounded hind edge and truncate apex (Fig. 92).

Length in mm. Body: male 9–10, female 10–11; body with wings: male 15–16, female 16.5–18; pronotum: male 3.6–3.9, female 3.4–3.7; tegmina: male 11.5–12.5, female 13–14; hind femora: male 8.3–8.8, female 9–9.7; ovipositor 5.5–6.

**Comparison.** There are two species from Borneo (*B. borneensis* comb. n. and *B. mjobergi* comb. n.) having the more or less similar structure of abdominal apex, but they differs from the new species by the male cerci with the distinct lobe at the middle.

***Borneratura sinuata*, sp. nov.**

(Figs. 94–98)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN).

**Description.** Male (holotype). Coloration and shape of body parts similar to those of *B. modesta*, but hind pronotal lobe covering only half of region of stridulatory apparatus, wings longer (reaching distal part of hind tibiae), tegmina slightly not reaching apex of hind wings and with several dark brown dots on lateral part (near distal half of anal edge), tegminal RS with 4 branches, 10th abdominal tergite with shallow hind notch, cerci strongly sinuate and with rather small medial lobe (Figs. 94–96, 98), genital plate with truncate apex between styles (Fig. 95), and genitalia with slight apical sclerotization (Fig. 97).

Female unknown.

Length in mm. Body 11; body with wings 21.5; pronotum 3.4; tegmina 17.5; hind femora 8.2.

**Comparison.** The differences from *B. modesta* are listed above. From *B. borneensis*, the new species differs by the almost S-shaped male cerci and by the male genital plate with the distinct styles, and from *B. mjobergi*, by the distinctly shorter medial lobe of male cerci.

***Borneratura lobata*, sp. nov.**

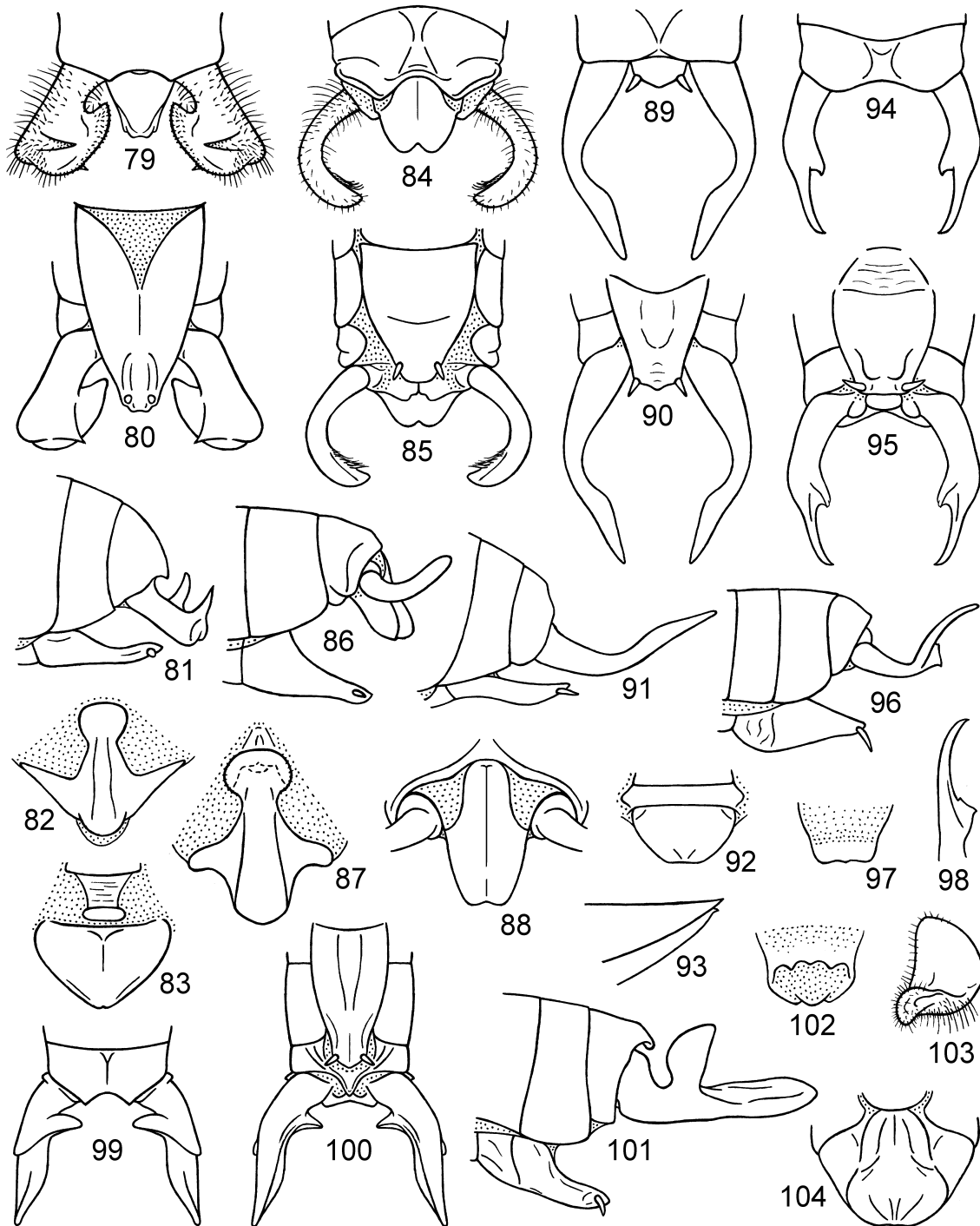
(Figs. 99–104)

**Type material.** Holotype – male, Malaysia, state Sabah (North Borneo), Mt. Trus Madi, 1000–1200 m, partly primary/partly secondary forest, at light, 13–25.05.2007, A. Gorochov (ZIN). Paratypes: 2 females, same data (ZIN).

**Description.** Male (holotype). Coloration and shape of body parts similar to those of *B. modesta*, but tegmina practically without brownish longitudinal stripe and with several dark brown dots on lateral part (near distal half of anal edge), structure of pronotum and wings almost as in *B. sinuata*, 10th abdominal tergite with a pair of short angular hind projections and rounded notch between them, cerci with straight distal half and large dorsomedial lobe at middle (distal part of cerci depressed laterally; cercal lobe almost lamellar and with slightly concave hind surface) (Figs. 99–101, 103), genitalia with slight subapical sclerotization (Fig. 102).

Female. General appearance as in male, but pronotum hardly shorter. Genital plate with large median concavity (see from below) and hind edge almost as in *B. modesta*, but transverse fold of this plate weakly distinct (Fig. 104).

Length in mm. Body: male 12.5, female 8.5–11; body with wings: male 21.5, female 21–22; pronotum:



**Figs. 79–104.** *Odonturisca* gen. n. and *Bomreratura* gen. n. (membranous parts dotted): 79–83, *O. grigoriji* sp. n. (79–82, holotype); 84–88, ?*O. epiproctalis* sp. n. (holotype); 89–93, *B. modesta* sp. n. (89–91, holotype); 94–98, *B. sinuata* sp. n.; 99–104, *B. lobata* sp. n. Male abdominal apex from above (79, 84, 89, 94, 99), from below (80, 85, 90, 95, 100), and from side (81, 86, 91, 96, 101); male genital sclerotization (82, 87, 97, 102); female genital plate from below (83, 92, 104); male epiproct partly from above/partly from behind (88); apical part of ovipositor from side (93); distal part of male left cercus partly from below/partly from behind (98); male left cercus without base from behind (103).



male 3.4, female 3.1–3.2; tegmina: male 17, female 17–17.5; hind femora: male 8.4, female 8.5–8.7; ovipositor 5.9–6.1.

**Comparison.** The new species is well distinguished from all congeners by the large lamellar dorsomedial lobe of male cerci having slightly concave (almost flat) hind surface.

### Genus *Grigoriara* Gorochov, 1993

Sänger & Helfert (2004) synonymized this generic name with *Satunia* Sänger et Helfert, 1996 as well as *G. alia* Gorochov, 1998, with *S. tassirii* Sänger et Helfert, 1996. However *Satunia* may be used as a subgeneric name (this genus has diverse structure of copulative organs), and the latter synonymy is probably erroneous. Here *G. alia* nom. ressur. is restored from synonyms of *G. tassirii*, as it differs from the latter species in the wider distal half of male cerci and “absence of styles of male genital plate” (Gorochov 1998: 118), but in *G. tassirii*, this plate is “with short styli” (Sänger, Helfert 1996: 613; Figs. 11, 12). The reexamination of holotype of *G. alia* confirms this opinion.

### ACKNOWLEDGEMENTS

This study is supported by the Program of Presidium of the Russian Academy of Sciences “Origin and Evolution of Biosphere” and by the Russian Foundation for Basic Research (grant No. 07–04–00540). This work is based on collections of the Zoological Institute of RAS, which are supported by Rosnauka for UFC No. 2–2.20.

### REFERENCES

- Beier M. 1966. Tettigoniidae: Subfam. Meconematinae, Mecopodinae, Phyllophorinae. *Orthopterorum Catalogus*, **9**: 247–342. Gravenhage.
- Bey-Bienko G. Ja. 1971. A revision of bush-crickets of the genus *Xiphidiopsis* (Orthoptera, Tettigoniioidea). *Entomologicheskoe Obozrenie*, **36**: 401–417. [In Russian]
- Gorochov A. V. 1993. A contribution to the knowledge of the tribe Meconematini (Orthoptera: Tettigoniidae). *Zoosystematica Rossica*, **2**: 63–92.
- Gorochov A. V. 1995. System and evolution of the suborder Ensifera (Orthoptera). Part 1. *Trudy Zoologicheskogo Instituta Rossijskoj Akademii Nauk (Proc. Zool. Inst., Russian Acad. Sci.)*, **260**: 1–224. [In Russian]
- Gorochov A. V. 1998. New and little known Meconematinae of the tribes Meconematini and Phlugidini (Orthoptera: Tettigoniidae). *Zoosystematica Rossica*, **7**: 101–131.
- Gorochov A. V. 2001 [2002]. A new subgenus of *Leptotera* for a new species from Sumatra (Orthoptera: Tettigoniidae: Meconematinae). *Zoosystematica Rossica*, **10**: 280.
- Gorochov A. V. 2005. Three new species of Meconematini from tropical Asia (Orthoptera: Tettigoniidae: Meconematinae). *Zoosystematica Rossica*, **14**: 36.
- Hebard M. 1922. Studies in Malayan, Melanesian and Australian Tettigoniidae (Orthoptera). *Proceedings of the Academy of Natural Sciences of Philadelphia*, **74**: 121–299.
- Ingrisch S. 2002. Orthoptera from Bhutan, Nepal, and North India in the Natural History Museum Basel. *Entomologica Basiliensia*, **24**: 123–159.
- Ingrisch S. and Shishodia M. S. 2000. New taxa and distribution records of Tettigoniidae from India (Orthoptera: Ensifera). *Mitteilungen München Entomologische Gesellschaft*, **90**: 5–37.
- Jin X.-B. and Yamasaki T. 1995. Remarks on the genus *Leptotera* Yamasaki, 1982 and a new species from North Borneo (Grylloptera: Tettigoniioidea: Meconematidae). *Proceedings Japanese Society Systematic Zoology*, **53**: 81–84.
- Kevan D.K.McE. and Jin X.-B. 1993. New species of the *Xiphidiopsis*-group from the Indian region (Grylloptera Tettigoniioidea Meconematidae). *Tropical Zoology*, **6**: 253–274.
- Liu X.-W. and Zhang W.-N. 2000. Studies on Chinese katydids, 1. Ten new species of the tribe Meconematini (Orthoptera: Tettigoniioidea: Meconematidae) from China. *Entomotaxonomia*, **22**: 157–170. [In Chinese with English summary]
- Mao Sh.-L. and Shi F.-M. 2007. A review of the genus *Leptotera* Yamasaki, 1982 (Orthoptera: Tettigoniidae: Meconematinae) from China. *Zootaxa*, **1583**: 37–42.
- Sänger K. and Helfert B. 1996. New Meconematinae (Ensifera: Tettigoniidae) from Thailand. *European Journal of Entomology*, **93**: 607–616.
- Sänger K. and Helfert B. 2004. Four new species and new records of Meconematinae in Thailand (Insecta, Ensifera, Tettigoniidae). *Senckenbergiana biologica*, **84**: 45–58.

Submitted May 28, 2008; accepted August 4, 2008.