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TAXONOMY OF THE KATYDIDS (ORTHOPTERA: TETTIGONIIDAE) FROM EAST ASIA AND ADJACENT ISLANDS. COMMUNICATION 10

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Two new genera (*Epiproctopsis* gen. n. and *Borneopsis* gen. n.) and 16 new species and subspecies from the genera *Xiphidiopsis* Redt., *Alloteratura* Heb. and *Kuzicus* Gor. are described from Malaysia and Indonesia: *Epiproctopsis silvamontana* sp. n.; *Borneopsis divulsa* sp. n.; *B. contigua* sp. n.; *Xiphidiopsis tembelingi* sp. n.; *X. beybienkoi mada* subsp. n.; *X. b. thaica* subsp. n.; *X.? jugata* sp. n.; *Alloteratura breviuscula* sp. n.; *A. sarawaki* sp. n.; *A. eubispina* sp. n.; *A. megaspina* sp. n.; *A. longicercata sulawesi* subsp. n.; *A. parvispina* sp. n.; *A. triloba allopatrica* subsp. n., *A. vietnami* sp. n.; *Kuzicus? mirus* sp. n. One former genus is reduced up to a subgenus (*Meconemopsis* Karny, stat. n.) of the genus *Alloteratura*. A previously unknown male of *A. curta* Gor. is also described. New data on geographic distribution, morphological characters and generic belonging of some other species are given.

KEY WORDS: Orthoptera, Tettigoniidae, Meconematinae, Meconematini, new taxa, Malaysia, Indonesia.

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Из Малайзии и Индонезии описаны два новых рода (*Epiproctopsis* gen. n. and *Borneopsis* gen. n.) и 16 новых видов и подвидов из родов *Xiphidiopsis* Redt., *Alloteratura* Heb. и *Kuzicus* Gor.: *Epiproctopsis silvamontana* sp. n.; *Borneopsis divulsa* sp. n.; *B. contigua* sp. n.; *Xiphidiopsis tembelingi* sp. n.; *X. beybienkoi mada* subsp. n.; *X. b. thaica* subsp. n.; *X.? jugata* sp. n.; *Alloteratura breviuscula* sp. n.; *A. sarawaki* sp. n.; *A. eubispina* sp. n.; *A. megaspina* sp. n.; *A. longicercata* sulawesi subsp. n.; *A. parvispina* sp. n.; *A. triloba* allopatrica subsp. n., *A. vietnami* sp. n.; *Kuzicus? mirus* sp. n. Один род понижен в ранге до подрода (*Meconemopsis* Karny, stat. n.) рода *Alloteratura*. Описан также неизвестный ранее самец *A. curta* Gor. Приведены новые данные по географическому распространению, морфологическим признакам и родовой принадлежности некоторых видов.

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INTRODUCTION

This paper is the tenth communication in the series of papers on taxonomy and faunistics of Indo-Malayan and Papuan Tettigoniidae. The previous communications of this series contain descriptions of 58 new taxa from the subfamilies Phaneropterinae, Conocephalinae and Meconematinae (Gorochov, 2011a, b, c, 2012a, b, 2013 a, b, 2014 a, b). In the present communication, seven genera of Meconematinae are considered: *Epiproctopsis* gen. n.; *Borneopsis* gen. n.; *Xiphidiopsis* Redtenbacher, 1891; *Alloteratura* Hebard, 1922; *Kuzicus* Gorochov, 1993; *Pseudoteratura* Gorochov, 1998; *Dinoteratura* Gorochov, 1998. The study is based on material from collection of the Zoological Institute, Russian Academy of Sciences, St. Petersburg (all types of new species and subspecies are deposited at this institute).

NEW DATA ON TAXONOMY AND DISTRIBUTION

Subfamily Meconematinae Tribe Meconematini

Genus Epiproctopsis Gorochov, gen. n.

TYPE SPECIES. Epiproctopsis silvamontana Gorochov, sp. n.

DIAGNOSIS. General appearance typical of Meconematini. Body small. Head hypognathous with rather large and almost spherical eyes, moderately short and conical upper rostral tubercle directed forwards and having slight and very narrow median groove on dorsal surface, weakly inflate anterior part of epicranium near (under) antennal bases, narrow area between antennal cavities (this area approximately thrice narrower than scape), and with maxillary palpi having three distal segments moderately long and thin as well as almost equal to each other in length. Pronotal disc with almost straight anterior edge, roundly angular posterior edge, and with lateral parts roundly turning into vertical lateral lobes; each of latter lobes with

weakly oblique (almost vertical) anterior edge, more or less straight (almost parallel to disc) and rather short ventral edge, and strongly oblique (sloping) and somewhat sinuate posterior edge; humeral notches of pronotum practically indistinct; hind pronotal lobe elongate, completely covering tegminal stridulatory apparatus in male and slightly shorter in female (Figs 1, 4). Wings long; tegmen distinctly projected behind apex of hind femur, rather narrow but having RS not fused with MA, and with more or less narrowly rounded apical part; hind wing significantly projected behind tegminal apex. Legs thin and moderately long, with both tympana open and rather large, with fore and middle legs having spines only on ventral parts of tibiae. and with hind leg having rounded distal parts of both (inner and outer) apical lobules on femur as well as numerous dorsal and much less numerous ventral spinules on tibia. Abdomen: last tergite of male with short and almost angular posterodorsal lobe; male cercus more or less finger-like but somewhat flattened in distal half; male epiproct well sclerotized and very long (clearly protruding behind abdominal apex); male genital plate rather small (short) and with a pair of styles at its apices (Figs 11–13); male genitalia with rather small and somewhat spinose sclerite (Figs 2, 3); female genital plate moderately short and wide, with narrower (but well distinct) posteromedian lobule (Figs 14, 15); ovipositor rather long, slightly curved upwards (weakly arcuate), and with distal part gradually narrowing to acute apex (Fig. 4).

INCLUDED SPECIES. Type species only.

COMPARISON. The new genus is most similar to *Dinoteratura*, but it is differs from the latter genus as well as from all the other related genera in the following combination of characters: three distal segments of the maxillary palpi are almost equal to each other in the length; male cerci are rather simple in the shape; male epiproct is very long and well sclerotized; male genitalia have a small spinose sclerite; female genital plate is wide and with a posteromedian lobule.

ETYMOLOGY. This generic name consists of parts of the following words: Latin morphological term "*epiproctum*" (because this structure in male is unusually long) and generic name *Xiphidiopsis*.

Epiproctopsis silvamontana Gorochov, sp. n. Figs 1–4, 11–15

MATERIAL. Holotype $- \Im$, **Malaysia**: Malacca, Pahang State, Cameron Highlands near Tanah Rata Town, 1300–1500 m, secondary forest, on leaf of small tree at night, 25–27.XI 2014, A. Gorochov, M. Berezin, E. Tkatsheva. Paratypes: 2 \Im , 2 \bigcirc , same data as for holotype; 4 \bigcirc , same state, Fraser's Hill near border with Selangor State (17–18 km SW of Raub Town), 1000–1300 m, primary forest, on leaves of bushes at night, 15–23.IV 2010, A. Gorochov, M. Berezin, E. Tkatsheva.

DESCRIPTION. Male (holotype). Colouration of body yellowish with brownish grey eyes, numerous small brownish spots on antennal flagellum, whitish palpi having brownish apical circle an each maxillary palp, small light brown marks on fore tibia near tympana and in its apical part, brownish spines of fore and middle tibiae, three small brown spots on apical part of hind femur, brown dorsal spinules of hind tibia,

slightly darkened distal part of this tibia, more darkened (almost brown) third segments of all tarsi, and numerous small brownish and light brown spots on anal part of tegmen (but all veins and crossveins between these spots light; Fig. 1). Apex of upper rostral tubercle on head rounded (almost shortly finger-like); shape of lateral lobes of pronotum as in Fig. 1; tegminal RS long, with 4 branches in distal part and with distinct longitudinal veinlets between them; exposed part of hind wing about 1 mm in length; structure of last abdominal tergite and of cerci as in Figs 11, 12; epiproct



Figs 1–10. *Epiproctopsis* gen. n. and *Borneopsis* gen. n.: 1-4 - E. *silvamontana* sp. n.; 5-9-B. *divulsa* sp. n.; 10-B. *contigua* sp. n. Body of male from side (1); body with wings of female (4) and of male (5) from side; male genitalia from above (2, 8) and from side (3, 9); apex of hind femur with base of hind tibia from side (6); female abdominal apex with ovipositor from side (7, 10).

S-shaped in profile, with rather deep and wide median groove on proximal half of dorsal (posterior) surface, with oval and almost cup-like distal part having distinct hairs on convex dorsal surface (ventral surface of this part shallowly concave) (Figs 11, 12); genital plate with small (short) and almost angular posteromedian notch between styles (Fig. 13); sclerite of genitalia as in Figs 2, 3.

Variations. Posterior part of pronotal disc sometimes slightly darker (almost light brown) than rest parts; tegminal RS with 4–5 branches.

Female. Body similar to that of male in colouration and structure, but pronotum with slightly shorter hind lobe (Fig. 4), tegminal stridulatory apparatus undeveloped, last abdominal tergite and epiproct small and unspecialized, last (7th) abdominal sternite also unspecialized (not partly membranous and with roundly rectangular posterior part), cerci rather small and almost conical (typical of other females of Meconematini), genital plate somewhat wider than its length and with posteromedian lobule as in Figs 14 and 15, and hind femur 1.7–1.75 times as long as ovipositor (Fig. 4).

Length (in mm). Body: \bigcirc 7–7.5, \bigcirc 6.5–9; body with wings: \bigcirc 14.5–15.2, \bigcirc 15.5–18; pronotum: \bigcirc 2.4–2.6, \bigcirc 2.2–2.5; tegmina: \bigcirc 11.5–12, \bigcirc 12–14.5; hind femora: \bigcirc 8.7–9, \bigcirc 9–9.5; ovipositor 5.2–5.6.

ETYMOLOGY. This species name originates from the Latin words "*silva*" (forest) and "*montana*" (mountain) in connection with the species localities.

Genus Borneopsis Gorochov, gen. n.

TYPE SPECIES. Borneopsis divulsa sp. n.

DIAGNOSIS. Body medium-sized for this tribe. General appearance (including structure of most body parts) similar to that of *Epiproctopsis* but with following differences: apical segment of maxillary palpi slightly longer than each of their two subapical (third and fourth) segments; ventral edge of pronotal lateral lobe shorter and somewhat less parallel to disc (more arcuate; Fig. 5); hind lobe of pronotum almost completely (but not completely) covering tegminal stridulatory apparatus in male; distal part of hind wing, exposed behind tegminal apex, distinctly longer; hind femur distinguished from that of *Epiproctopsis* by presence of a pair of very small lateral spinules at apex (Fig. 6); abdomen with a pair of almost finger-like but somewhat dorsoventrally flattened posteromedial lobules on male last tergite and rather long and shallow median concavity situated on dorsal surface of this tergite from bases of above-mentioned lobules to almost its anterior part (this concavity bordered by low keel in shape of reversed U; Fig. 16), with posteroventral corners of latter tergite somewhat projected backwards and lobe-like, with rather long and medially curved as well as almost lamellar male cerci having two medial lobules on proximal half and widened distal half (cercus widest near its middle and somewhat narrowing to apex; Figs 16, 17), with moderately large but short male paraprocts, with small (very short) and almost lobular male epiproct, with rather small but elongate male genital plate having truncately rounded apex and a pair of thin and elongate styles on its posterolateral parts (Fig. 18), with almost membranous male

genitalia (but they having small and slightly sclerotized plate; Figs 8, 9), and with female genital plate distinguished from that of *Epiproctopsis* by presence of low keel-like structure along edges of anterior half of this plate and by absence of narrow posteromedian lobule (Figs 19, 20).

INCLUDED SPECIES. Type species and B. contigua sp. n.

COMPARISON. The new genus is most similar to *Sumatropsis* Gorochov, 2011 also having spinules at the apex of hind femur and somewhat projected posteroventral corners of the male last tergite, but it differs from the latter in a specialized median area on the dorsum of male last tergite, the presence of two small posteromedial lobules of this tergite (*vs.* four much larger lobules), a non-bifurcate apex of the male cercus, and the absence of distinctly sclerotized paired structures in the male genitalia. From *Xiphidiopsis* rather similar to *Borneopsis* in more or less lamellar and curved male cerci with characteristic ventromedial lobules, the new genus is distinguished by the presence of spinules on the apex of hind femur and by the absence of rather deep posteromedian notch of the last male tergite, and from *Epiproctopsis* somewhat similar to the new genus in the general appearance, by the characters listed in the description.

Borneopsis divulsa Gorochov, sp. n.

Figs 5-9, 16-19

MATERIAL. Holotype -3, **Malaysia**: Borneo, Sabah State, southern part of Kinabalu National Park, 1500–2000 m, primary forest, at light, 26.IV–1.V 2013, A. Gorochov, M. Berezin, E. Tkatsheva. Paratypes: 13, same data as for holotype; 12, same state, Sandakan Division, environs of Sukau Vill. on Kinabatangan River (~35 km from sea), ~sea level, secondary-primary forest, at light, 8–13.V 2013, A. Gorochov, M. Berezin, E. Tkatsheva.

DESCRIPTION. Male (holotype). Colouration of body yellowish with greenish tinge (probably light green in living insect), numerous small light brown and brown spots on antennal flagellum, almost whitish palpi having light brown apical circle on maxillary palp, small brown spot on each (inner and outer) side of apex of fore and hind femora, light brown spot on each tympanal membrane, light brown majority of spines and spinules on tibiae, a few very small light brown marks on distal half of tegmen near its anal edge (Fig. 5), and slightly darkened distal two thirds of cerci. Shape of head and of pronotum in profile as in Fig. 5; tegmina distinctly protruding behind apices of hind femora, with RS having its base in middle part of tegmen and with 5-6 branches in distal half of this vein; distal part of hind wing, exposed behind tegminal apex, about 2.5 mm in length (Fig. 5); a pair of apical spinules of hind femur very short (Fig. 6); dorsal part of last abdominal tergite as in Figs 16, 17; cercus rather long, strongly curved medially, with proximal half almost not lamellar and having longitudinal inner concavity and not large rounded proximal lobe near base as well as smaller and narrower ventromedial lobule near middle of cercus, and with distal half vertically lamellar and lacking additional lobes or lobules (Figs 16, 17); rounded apices of a pair of posteroventral lobes of last tergite somewhat curved medially under cercal bases (genital plate damaged); genitalia as in Figs 8, 9.

Variations. Maxillary palpi with additional darkish circles on apices of third and fourth segments; genital plate as in Fig. 18 (hind legs missing; dorsal part of last abdominal tergite strongly deformed).



Figs 11–27. *Epiproctopsis* gen. n., *Borneopsis* gen. n. and *Xiphidiopsis* Redt.: 11–15 – *E. silvamontana* sp. n.; 16–19 – *B. divulsa* sp. n.; 20 – *B. contigua* sp. n.; 21–26 – *X. tembelingi* sp. n.; 27 – *X.*? *jugata* sp. n. Male abdominal apex from above (11, 16) and from side (12, 17); male genital plate from below (13, 18, 24); female genital plate from side (14) and from below (15); posteromedian process of male last tergite from behind and slightly above (21); male right cercus without base from above (22); distal half of male left cercus (deformed) from below (23); female genital plate with seventh abdominal sternite (25, 26) or with its posterior part (19, 20, 27) from below.

Female. General appearance as in males, but pronotum slightly shorter, small darkish marks on tegmina slightly more numerous, stridulatory apparatus absent, structure of abdominal apex more or less similar to that of female of *E. silvamontana* and distinguished from latter one by following characters: posterior edge of genital plate obtusely angular; proximal half of this plate somewhat narrower and having keel-like structure along its anterior and lateral edges; this keel-like structure almost angular in shape (in ventral view) (Figs 7, 19); ovipositor with apex of each lower valve having very small hook directed downwards (Fig. 7).

Length (in mm). Body: \bigcirc 10.5–11, \bigcirc 11.5; body with wings: \bigcirc 22–23, \bigcirc 24; pronotum: \bigcirc 3.7–3.8, \bigcirc 3.7; tegmina: \bigcirc 16.5–17, \bigcirc 18; hind femora: \bigcirc 12, \bigcirc 12.5; ovipositor 8.7.

ETYMOLOGY. This species name is the Latin word "divulsa" (separated).

Borneopsis contigua Gorochov, sp. n.

Figs 10, 20

MATERIAL. Holotype – \bigcirc , **Malaysia**: Borneo, Sarawak State, environs of Miri Town, Lambir Hills National Park, 100–300 m, primary forest, on leaf of bush at night, 29.III–1.IV 2012, A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov.

DESCRIPTION. Female. Colouration and structure of body similar to those of female of *B. divulsa* but with following differences: ventral part of pronotal lateral lobe almost round (its edge not divided into more vertical anterior edge and almost straight and obliquely horizontal ventral edge); tegminal RS with 5 branches in distal half; distal part of hind wings, exposed behind tegminal apices, about 3 mm in length; last (7th) abdominal sternite partly membranous, with characteristic (sclerotized and almost finger-like) posteromedian process (Figs 10, 20); posterior edge of genital plate roundly truncate with slightly (very shallowly) notched median part; proximal half of this plate not narrower than its distal half; keel-like structure, situated on this plate along its anterior edge, more arcuate and less strongly curved in shape (in ventral view) (Figs 10, 20); ovipositor clearly shorter (hind femora about 1.8 times as long as ovipositor; in *B. divulsa*, this ratio about 1.4) (Fig. 10).

Male unknown.

Length (in mm). Body 11; body with wings 24.5; pronotum 3.6; tegmina 17.8; hind femora 12; ovipositor 6.5.

COMPARISON. The new species is distinguished from *B. divulsa* by the characters listed above, in the description.

ETYMOLOGY. The species name is the Latin word "contigua" (adjacent, neighboring).

Xiphidiopsis (Xiphidiopsis) tembelingi Gorochov, sp. n. Figs 21–26, 28

MATERIAL. Holotype -3° , **Malaysia**: Malacca, Pahang State, Taman Negara National Park on Tembeling River, ~100 m, primary forest, on leaf of tree at night, 28.XI–5.XII 2014, A. Gorochov, M. Berezin, E. Tkatsheva. Paratypes: 2 \bigcirc , same data as for holotype.



Figs 28–45. Xiphidiopsis Redt. and Alloteratura Heb.: 28 - X. tembelingi sp. n.; 29 - X? jugata sp. n.; 30-32 - A. (Meconemopsis) breviuscila sp. n.; 33 - A. (M.) curta Gor.; 34-36 - A. (M.) sarawaki sp. n.; 37 - A. (M.) longa Gor.; 38-40 - A. (M.) eubispina sp. n.; 41 - A. (Alloteratura) megaspina sp. n.; 42 - A. (A.) longicercata sulawesi subsp. n.; 43 - A. (A.) parvispina sp. n.; 44 - A. (A.) triloba allopatrica subsp. n.; 45 - A. (A.) vietnami sp. n. Body with wings of female (28, 29, 34, 38) and male (30) from side; outer side of hind leg (31, 39); same side of apical part of hind femur (32, 33, 36, 37, 40–45); same side of fore tibia (35).

DESCRIPTION. Male. Colouration of body yellowish with greenish tinge (light green in living specimen) and with very small and very sparse brownish spots on antennal flagellum, small brown mark near distal part of stridulatory apparatus and rather numerous very small darkish spots on anal half of lateral field in each tegmen, small brown spot on each side (outer and inner) of apex of hind femur, light brownish grey spot on each tympanal membrane, and slightly darkened majority of spines and spinules of tibiae and areas on third tarsal segments. Size and structure of body similar to those of other representatives of subgenus Xiphidiopsis, but with following peculiarities: shape of head and pronotum in profile as in Fig. 28; tegminal RS with its base situated in middle part of tegmen and with 5 branches in middle and distal parts of this vein; exposed part of hind wings behind tegminal apices 0.7–0.8 mm in length; last abdominal tergite with rather large (deep) posteromedian notch and characteristic median process crossing this notch from its deepest part and most similar to that of X. fallax Redtenbacher, 1891, X. jambi Gorochov, 2008 and X. padangi Gorochov, 2008 (this process distinguished from that of these species by its apical widening wider, i. e. more widened in relation to middle part of this process, and by its left lateral lobule invisible in posterior view, because it covered with median part of this process; for comparison see Fig. 21 and Gorochov, 2008: figs 1, 5, 8); cerci as in Figs 22 and 23; genital plate rather small, somewhat elongate, with widely rounded apex and a pair of moderately thin and long styles at posterolateral corners (Fig. 24).

Female. General appearance (Fig. 28) as in male, but tegmina without distinct brown marks on dorsal field before its narrow part and sometimes with stripe consisting of darkish dots along proximal half of anal edge, stridulatory apparatus absent, and abdominal apex similar to that of other congeners but with genital plate rather short and wide as well as having more or less angular posterior part (lateral edges of this part sinuate and somewhat variable in shape; Figs 25, 26).

Length (in mm). Body: \bigcirc 10, \bigcirc 8–9; body with wings: \bigcirc 20.5, \bigcirc 21–22; pronotum: \bigcirc 3.2, \bigcirc 3.3–3.5; tegmina: \bigcirc 17, \bigcirc 17.2–18; hind femora: \bigcirc 10, \bigcirc 10–10.5; ovipositor 7.5–7.8.

COMPARISON. The new species is most similar to *X. fallax, X. jambi* and *X. padangi*, but it differs from them in the above-mentioned characters of male last tergite, a somewhat different shape of male cerci (left cercus is with a wider narrowed part before the apical lamellar widening and with a less narrow inner apical lobule on this widening than in *X. fallax* and *X. jambi*, and with the latter lobule much narrower than in *X. padangi*; right cercus is with a shorter ventral lobe near the apical widening than in *X. jambi*, and with this lobe situated more near the latter widening than in *X. fallax* and *X. padangi*), and a shorter posteromedian lobe and less distinct notches around it in the female genital plate.

ETYMOLOGY. This species is named after the Tembeling River.

Xiphidiopsis (Xiphidiopsis) beybienkoi Gorochov, 1993 Figs 46–49

MATERIAL. Holotype of X. b. mada subsp. n. - \bigcirc , Vietnam: Dong Nai Prov., Vinh Cuu Distr., Vinh Cuu Nature Reserve (= Ma Da Forest), "TW Cuc Forest Sta-

tion", 11°25'51" N, 107°03'44" E, 75 m, 18.VI 2011, L. Anisyutkin, A. Anichkin. Holotype of *X. b. thaica* subsp. n. - \bigcirc , **Thailand**: Nakhon Ratchasima (= Karat) Prov., environs of Khorn Buri Lake, 2.VIII 2009, V. Bezborodov.

DESCRIPTIONS. Two new subspecies of this species are very similar to the nominotypical subspecies and to each other in all the female characters (including the structure of genital plate; Gorochov, 1998: figs 5, 6) excepting only some characters given below, in the key to subspecies of *X. beybienkoi* (males of the both new subspecies are unknown):

- Sixth abdominal sternite of female with posterior part narrow and lobe-like (somewhat projected backwards behind anterior edge of seventh abdominal sternite; Figs 48, 49). Vietnam: Gia Lai Prov.

X. beybienkoi beybienkoi Gorochov, 1993

- Sixth abdominal sternite of female small (approximately 1.7 times as wide as seventh abdominal sternite of same female) and distinctly transverse (almost 1.5 times as wide as long; Fig. 47). Vietnam: Dong Nai Prov. [Data on type material see in paragraph about material for *X. beybienkoi*; length (in mm): body 10.5, body with wings 23, pronotum 3.7, tegmina 19, hind femora 11, ovipositor 9.]
 X. beybienkoi mada Gorochov, subsp. n.

COMPARISON. Differences between all the subspecies of this species are listed above, in the key. These differences are very distinct, and I cannot exclude that these subspecies may be three or two separate species.

Xiphidiopsis? jugata Gorochov, sp. n.

Figs 27, 29

MATERIAL. Holotype – \bigcirc , **Vietnam**: Lam Dong Prov., Loc Bao Distr., 35 km NW of Bao Loc Town, 11°50'12''N, 107°38'25''E, 650 m, IV–V 2012, A. Abramov.

DESCRIPTION. Female. General appearance more or less similar to that of female of *X. tembelingi*, but body more unicolorous (light yellowish with dark brown eyes and apical parts of mandibles as well as with light brown distal parts of spines on legs and of tarsal claws), apical and subapical (fourth) segments of maxillary palp almost equal to each other in length, lateral lobes of pronotum as in Fig. 29, wings distinctly protruding behind apices of hind femora, hind wings exposed behind tegminal apices by 0.8 mm, tegminal RS with base situated in proximal half of tegmen and with 5–6 branches in distal two thirds of this vein, hind femur without spinules on both apical lobules, seventh abdominal sternite rather large and elongate (not shortened and undivided into a pair of rather small convexities), genital plate slightly transverse and with distal part narrowing to rather narrowly truncate apex, ventral surface of this plate with a pair of keel-like folds running from lateral parts of latter apex to almost anterolateral parts of genital plate and with strong arcuate transverse ridge near anterior edge of this plate (Fig. 27), and ovipositor long (approximately equal to hind femur in length) and almost straight as well as with distal part gradually narrowing to acute apex (Fig. 29).

Male unknown.

Length (in mm). Body 11.5; body with wings 23; pronotum 4; tegmina 19; hind femora 9.5; ovipositor 9.5.



Figs 46–54. *Xiphidiopsis* Redt., *Alloteratura* Heb. and *Kuzicus* Gor., schematically: 46 – *X. beybienkoi thaica* subsp. n.; 47 – *X. b. mada* subsp. n.; 48, 49 – *X. b. beybienkoi* Gor.; 50 – *A.* (*Meconemopsis*) *curta* Gor.; 51 – *A.* (*M.*) *sarawaki* sp. n.; 52, 53 – *A.* (*Alloteratura*) *triloba allopatrica* sp. n.; 54 – *K.*? *mirus* sp. n. Sixth and seventh sternites of female abdomen with base of its genital plate (46–48); sixth sternite of female abdomen (49); genital plate of male (50, 52) and of female (53) from below; female genital plate without anterior half from below (51); this plate with lower half of ovipositor base from side (54).

COMPARISON. The new species is distinctly differs from all the other congeners and similar species with known female in a very unicolorous body (lacking dark or darkish spots on the apical lobules of hind femora) in combination with a characterristic shape of the female genital plate (having a strong and arcuate transverse ridge near the anterior edge of this plate).

ETYMOLOGY. This species name is the Latin word "jugata" (with ridge).

TYPE SPECIES. *Alloteratura mindanao* (nomen nudum) = *A. backeri* Hebard, 1922 (Philippines).

NOTE. This genus has the maxillary palpi with extremely short apical segments which much shorter than subapical (fourth) ones. It includes numerous species with rather diverse morphological characters and consists of two subgenera: nominotypical one and the former genus *Meconemopsis* Karny, 1922 (the latter was firstly proposed without inclusion of any described species, and a first species of *Meconemopsis* was described only in 1924; Karny, 1922, 1924). Differences between them are given below, in the key to subgenera of the genus *Alloteratura*:

- Each apical lobule (inner and outer ones) of hind femur without spinule, i. e. with rounded distal part (Figs 41-45); male subanal plate large or medium-sized (distinctly visible in dorsal and/or ventral views), partly or completely sclerotized, and articulated or fused with posteroventral corners of last tergite (Figs 96, 97, 99, 100, 102, 103, 105, 107) subgenus Alloteratura s. str. [Included species: type species of genus; Xiphidiopsis longicercata Bolívar, 1905; Teratura simplex Karny, 1920; Amytta gigliotosi Karny, 1924; A. keyica Karny, 1924; A. werneri Karny, 1924; A. subanalis Karny, 1926; A. tahanensis Karny, 1926; A. triloba Karny, 1926; Alloteratura penangica Hebard, 1922; A. podgornajae Gorochov, 1993; A. stebaevi Gorochov, 1993; A. angulata Jin, 1995; A. cylindracauda Jin, 1995; A. multispina Jin, 1995; A. plauta Jin, 1995; A. saimensis Jin, 1995 (this name is corrected as A. siamensis in Orthoptera Species File, because this species is named after Thailand; Jin, 1995); A. tibetensis Jin, 1995; A. kuehnelti Sänger et Helfert, 1996; A. cervus Gorochov, 1998; A. hebardi Gorochov, 1998; A. muntiacus Gorochov, 1998; A. klankamsorni Sänger et Helfert, 2004; A. bachma Gorochov, 2005; A. carinata Gorochov, 2008; A. quaternispina Shi, Di et Chang, 2014; three new species described here; possibly also Teratura xiphidiopsis Karny, 1920 and Alloteratura karnyi Kästner, 1932.]

Some other species, included in *Alloteratura* and *Meconemopsis* by Eades *et al.* (2015), do not belong to the genus studied because they have distinctly longer apical

segments of the maxillary palpi (*Amytta delicatula* Chopard, 1924; *A. sinica* Bey-Bienko, 1957; *Xiphidiopsis quadrinotata* Bey-Bienko, 1971; *Alloteratura nepalica* Kevan et Jin, 1993; *A. thanjavuensis* Kevan et Jin, 1993; *Meconemopsis paraquadrinotata* Wang, Liu et Li, 2015), or belong to this genus but are in need of examination and cannot be put in one of its subgenera at present (*Xiphidiopsis cyclolabia* Karny, 1923; *Amytta longicauda* Karny, 1924; *A. nigrivertex* Karny, 1924).

Alloteratura (Meconemopsis) breviuscula Gorochov, sp. n.

Figs 30-32, 55-58, 69-71

MATERIAL. Holotype $- \delta$, **Malaysia**: Borneo, Sabah State, Tawau Hills National Park near Tawau Town, 200–400 m, secondary-primary forest, on leaf of small tree at night, 14–20.V 2013, A. Gorochov, M. Berezin, E. Tkatsheva.

DESCRIPTION. Male. Body rather small for this genus, yellowish with following marks: antenna with pedicel and proximal part of flagellum having brown areas on ventral surface, with very sparse dark brown spots on proximal and middle parts of flagellum, and with brown distal part of this structure (but this part of flagellum partly missing); fore femur with light brown longitudinal stripe on distal half of outer surface; fore tibia with brown spines and area around outer tympanum, and with light brown line along middle and distal parts of dorsolateral edge; middle and hind tibiae with brown spines and apical part of hind tibia; hind femur with dark brown apices of apical lobules having dark spinules and with small dark brown subapical spot on ventral surface; all tarsi with greyish brown areas on third segments and slightly darkened apical segments; upper tegmen with brown to light brown distal half of stridulatory apparatus (this half visible behind hind pronotal lobe in rest position) crossed by vellowish and slightly lightish veins and veinlets; costal half of both tegmina almost whitish (Fig. 30, 31). Structure of head typical of Alloteratura and more or less similar (excepting palpi) to that of all species previously described here; pronotum with rather low lateral lobes and long hind lobe (Fig. 30); hind femur with rather long spinules on each (inner and outer) apical lobule (Fig. 32); wings slightly shortened, approximately reaching apices of hind femora; tegmina gradually narrowing to narrowly rounded apex and with normal RS (not fused with MA) having its base near middle of tegmen and 3-4 branches in its distal half; hind wings almost not projected (or slightly projected) behind tegminal apices (Fig. 30); last abdominal tergite with shallow posteromedian notch; cercus not long and similar to that of A. borellii, A. nigrigutta, A. longa and A. media in shape but strongly curved upwards in proximal half and with not sloping medial lobe situated in distal half of cercus (Figs 55-58); genital plate almost oval, weakly elongate, and with rather long and thin styles as well as convex posterior edge (between these styles) having very small median notch at apex (Fig. 56); subanal plate small, semimembranous, transverse, and with roundly truncate posterior edge; sclerotized plate of genitalia with a pair of very high spines located in middle part, with somewhat widened subapical parts of this plate in profile, and with its apical parts bifurcated (Figs 69-71).



Figs 55–68. Alloteratura Heb.: 55-58 - A. (*Meconemopsis*) breviuscila sp. n.; 59-62 - A. (*M.*) curta Gor.; 63, 64 – A. (*M.*) sarawaki sp. n.; 65, 66 – A. (*M.*) eubispina sp. n.; 67, 68 – A. (*M.*) bispina Gor. Male abdominal apex from above (55, 59), from below (56, 60), from below/behind (57, 61) and from side (58, 62); female genital plate with ventral parts of 8th and 9th tergites from below (63, 65, 67), from side and slightly below (64), and from side (66, 68).



Female unknown.

Length (in mm). Body 9.5; body with wings 13,5; pronotum 4.2; tegmina 10.8; hind femora 10.5.

COMPARISON. The new species is similar to *A. borellii* (Java) and *A. curta* (Borneo) in slightly shortened wings and rather long apical spinules of hind femora, but it is distinguished from them by the following characters: from *A. borellii*, by the male cercus more strongly curved in the proximal half and with the medial lobe situated clearly behind the middle of cercus (in *A. borellii*, this lobe located almost at the middle of cercus) and by the male genital plate with a convex posterior edge (between styles) having a very small median notch at the apex (*vs.* with widely truncate posterior edge between styles); from *A. curta*, by a light colouration of the epicranium and scapes as well as by the other characters listed below, in the redescription of *A. curta*. From *A. sandakanae*, the new species differs in light both vertex and pronotal lobes as well as shorter wings; and from *A. longa*, *A. media* and *A. nigrigutta*, in distinctly shorter wings, clearly longer apical spinules of the hind femur, and some characters of the male genital sclerite (for comparison see Figs 69–71 and 75–86).

Alloteratura (Meconemopsis) curta Gorochov, 2008

Figs 33, 50, 59-62, 72-74

MATERIAL. **Malaysia**: 1 ♂, Borneo, Sabah State, southern part of Kinabalu National Park, 1500–2000 m, primary forest, on leaf of bush at night, 26.IV–1.V 2013, A. Gorochov, M. Berezin, V. Gorochova, E. Tkatsheva.

DESCRIPTION. Male (nov.). General appearance similar to that of *A. breviuscula* (Fig. 33), but head with brown reversed Y-shaped spot on dorsum of epicranium (occupying also apical part of upper rostral tubercle) and with two brown longitudinal spots on ventral surface of scape (most part of antennal flagellum missing), spines of hind tibia light brown, each tegmen with distal half having narrow brown stripe along anal edge and with brown area on stridulatory apparatus (this area situated in lateral and distal parts of upper tegmen and in middle part of lower tegmen), hind lobe of pronotum slightly shorter than in *A. breviuscula*, tegminal RS with 2–3 more or less distinct branches, cercus somewhat longer and with proximal half less curved upwards as well as with medial lobe situated in proximal half of cercus and having low dorsal keel from this lobe to middle part of cercus (Figs 59–62), genital plate also similar to that of *A. breviuscula* but with roundly convex posterior edge between styles (Fig. 50, 60), and sclerotized plate of genitalia with a pair of rather high spines located in middle part, without subapical widenings of this plate (visible in profile), and with its apical parts bifurcated (Figs 72–74).

Female. For its characters see description in Gorochov (2008: figs 68, 69).

Length (in mm), male. Body 8.5; body with wings 11; pronotum 3.5; tegmina 8.3; hind femora 9.

NOTE. This male is distinguished from the females of this species, collected in another locality of the same state (Trus Madi Mt.), by a somewhat smaller body, the

presence of a distinct brown anal stripe on the distal half of each tegmen (in the above-mentioned females, this tegminal half is uniformly light), and insignificantly shorter wings. I cannot exclude that *A. curta* is represented in different mountains of Sabah (Kinabalu and Trus Madi) by two subspecies.

Alloteratura (Meconemopsis) longa Gorochov, 2008

Figs 37, 75-80

MATERIAL. **Malaysia**: 1 ♂, Borneo, Sabah State, southern part of Kinabalu National Park, 1500–2000 m, primary forest, on leaf of bush at night, 26.IV–1.V 2013, A. Gorochov, M. Berezin, V. Gorochova, E. Tkatsheva.

NOTE. This species is similar to *A. curta* in the colouration of epicranium, but its scapes and legs are almost uniformly light, pronotum is with slightly higher lateral lobes, apical spinules of the hind femur are distinctly shorter (Fig. 37), wings are clearly longer (distinctly protruding behind the apices of hind femora) and with a light brown area on the stridulatory apparatus of upper tegmen in male only, male cercus is with a rather sloping medial lobe and shorter part behind this lobe, and male genitalia are with the sclerotized plate as in Figs 75–80 (this plate differs from that of *A. breviuscula* and *A. curta* in the longest spines clearly shorter and located in its proximal part, and from *A. media*, in these spines also shorter and in the apical parts of this plate bifurcated but not trifurcated). This species, originally described also from Trus Madi Mt., is recorded from another mountain system of Sabah (Kinabalu), but small differences in the shape of genital sclerite do not allow me to put these specimens in different subspecies.

Alloteratura (Meconemopsis) nigrigutta (Karny, 1924)

Figs 84-86

MATERIAL. **Indonesia**: $1 \triangleleft 1 \triangleleft 2$, Sumatra, Sumatera Selatan Prov., environs of Banding Agung Vill. on Ranau Lake [Ranau Danau], 4°48.695'S, 103°55.289'E, 600–700 m, secondary forest, at light, 19–22.IV 2009, A. Gorochov, M. Berezin, E. Tkatsheva.

NOTE. This species, described from the Lampung Prov. of Sumatra, has long wings (distinctly protruding behind the apices of hind femora) and is very similar to *A. longa*; however, its fore leg is with a few darkenings on the outer surface, hind leg is with a slightly darkened apical part of the femur and with the apical femoral spinules slightly longer (but clearly shorter than in *A. breviuscula*, *A. curta* and *A. borellii*), male cercus is with a not sloping medial lobe and somewhat similar to that of *A. media* in the shape, and sclerotized plate of the male genitalia as in Figs 84–86 (this plate differs from that of *A. breviuscula*, *A. curta* and *A. media* in the longest spines clearly shorter and located in its distal part, and from *A. longa*, in the same position of these spines only). Here *A. nigrigutta* is recorded from another locality of the same island.



Figs 69–86. Alloteratura Heb.: 69-71 - A. (*Meconemopsis*) breviuscula sp. n.; 72-74 - A. (*M.*) curta Gor.; 75-80 - A. (*M.*) longa Gor. (75-77, Kinabalu Mt.; 78-80, Trus Madi Mt.); 81-83 - A. (*M.*) media Gor.; 84-86 - A. (*M.*) nigrigutta (Karny). Male genitalia from above (69, 72, 75, 78, 81, 84), from behind (70, 73, 76, 79, 82, 85), and from side (71, 74, 77, 80, 83, 86).

Alloteratura (Meconemopsis) sarawaki Gorochov, sp. n.

Figs 34–36, 51, 63, 64

MATERIAL. Holotype - \bigcirc , **Malaysia**: Borneo, Sarawak State, environs of Kuching City, Kubah National Park on Matang Mt., 200–500 m, primary forest, on leaf of low tree branch at night, 10–17.III 2012, A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov.

DESCRIPTION. Female. Body rather small, yellowish with following marks: epicranium with dark brown reversed Y-shaped spot on dorsum occupying also apical part of upper rostral tubercle (almost as in A. curta, A. longa and A. media); antenna with a pair of large dark brown spots on ventral surface of scape, with dark brown to brown ventral surfaces of several proximal segments in rest part of antenna, and with very sparse and small dark brown rings of flagellum (middle and distal parts of antennae missing); spines and distal tarsal halves of fore and hind legs brown (middle legs missing); fore leg also with brown mark on outer surface of femur, brown areas around outer tympanum, and light brown stripe along dorsolateral edge of rest part of tibia; hind leg (additionally to darkened spines and tarsal half) with small dark brown subapical spot on ventral surface of femur and with brown apical part of tibia; upper tegmen with small brown spot on anal part not far from tegminal base (this spot situated near posterior edge of pronotal disc in rest position, i. e. its distal part clearly visible behind pronotum); distal part of ovipositor light brownish (Figs 34, 35). Structure of body (including length of wings) very similar to that of A. longa, A. media and A. nigrigutta, but with following characteristic features: spinules on both apical lobules of hind femur distinctly longer (Fig. 36) and more or less similar to those of A. breviuscula, A. curta and A. borellii; 8th abdominal tergite without posteroventral lobules but with longitudinal inflation along each ventral edge; genital plate somewhat elongate, gradually narrowing forwards, and having distinct transverse groove (concave fold) and rather small (but distinct) posteromedian notch (Figs 51, 63, 64); ovipositor as in Fig. 34.

Male unknown.

Length (in mm). Body 6; body with wings 19; pronotum 3.2; tegmina 16.2; hind femora 9.5; ovipositor 7.8.

COMPARISON. The new species is clearly distinguished from *A. longa*, *A. media* and *A. nigrigutta* by clearly longer apical spinules of the hind femora; additionally from *A. longa* and *A. media* (both from Sabah), by the presence of large dark spots on the venter of scapes (*A. media* has only small medial darkenings on each scape, and *A. longa* is without darkenings on the scapes); and additionally from *A. nigrigutta*, by the presence of a dark mark on the dorsum of epicranium (*vs.* this dorsum is completely light). All the other representatives of this subgenus differ from *A. sarawaki* in distinctly shorter wings reaching only the apices of hind femora (*A. breviuscula*, *A.curta*, *A. borellii*) or a dark colouration of the dorsum of epicranium and pronotal disc (*A. sandakanae*).

ETYMOLOGY. The new species is named after the Sarawak State of Malaysia.

Alloteratura (Meconemopsis) eubispina Gorochov, sp. n.

Figs 38–40, 65, 66

MATERIAL. Holotype – \bigcirc , Laos: Saysomboune Prov., Muang Cha, 1300 m, 18°54'N, 103°08'E, 22–23.X 2008, Yu. Bezverkhov, V. Sinyaev.

DECRIPTION. Female. General appearance similar to that of female of A. sarawaki but with following peculiarities: body yellowish with brown Y-shaped spot on dorsum of epicranium (this spot occupying also apical part of upper rostral tubercle), brown stripe on scape along ventral part of its distal edge, brown area on ventral surface of pedicel, dark brown ventral surfaces of several proximal segments of antennal flagellum, light brown eyes and rest part of antennal flagellum, light brown longitudinal mark on distal part of outer surface of fore femur, brown area on outer surface of fore tibia around tympanum, brown stripe on this tibia along its dorsolateral edge, darkened distal parts of both apical lobules (including their spinules) in hind femur and apical part of hind tibia, as well as brown all spines and third tarsal segments of all legs (Figs 38, 39); shape of pronotum in profile as in Fig. 38; hind femur with rather small but distinct spinule on each apical lobule (Fig. 40); wings long, protruding behind apices of hind femora; tegmina with RS having 5-6 branches in distal half; hind wings exposed behind tegminal apices by about 1 mm; abdomen with 8th tergite having posteroventral corners projected as distinct angular (acute) lobes directed backwards and slightly laterally (but with apical parts curved slightly medially; Figs 65, 66); genital plate short, with rounded posterior edge having almost truncate (with slightly distinct shallow notch) apical part (Fig. 65); ovipositor long, slightly curved upwards, and with distal half gradually narrowing to acute apex (Fig. 38).

Male unknown.

Length (in mm). Body 10.5; body with wings 22; pronotum 3.4; tegmina 18; hind femora 10.5; ovipositor 8.5.

COMPARISON. The new species is most similar to *A. bispina* in the structure of 8th abdominal tergite which has a pair of angularly projected lobes. However, it is clearly distinguished from the latter species by these lobes situated on the posteroventral parts of 8th abdominal tergite and by the absence of widely rounded additional lobes located on the ventral edges of this tergite before the above-mentioned angular lobes (*vs.* 8th abdominal tergite is with widely rounded and short additional lobes located on its ventral edges, and angular lobes of this tergite are located on its posterior edges somewhat behind and slightly above the rounded lobes; for comparison see Figs 65, 66 and 67, 68).

ETYMOLOGY. The name of this species consists of the Latin prefix "*eu*-" (true, good), originated from Greek roots, and the species name *A. bispina*.

Alloteratura (Meconemopsis) bispina Gorochov, 1993 Figs 67, 68

NOTE. Original description of this species from Sumatra contains an important mistake: it was indicated that "9th abdominal tergite" of female is "with acute train-

gular lobes" (Gorochov, 1993), but these lobes belong to the 8th abdominal tergite of this female in reality (see the comparison for *A. eubispina*). This species additionally differs from *A. eubispina* in these triangular lobes directed more laterally than similar lobes in the latter species (see Figs 65–68).



Figs 87–95. Alloteratura Heb. and Kuzicus Gor.: 87 – A. (Alloteratura) megaspina sp. n.; 88, 89 – A. (A.) longicercata sulawesi subsp. n.; 90, 91 – A. (A.) parvispina sp. n.; 92, 93 – A. (A.) triloba allopatrica subsp. n.; 94 – A. (A.) vietnami sp. n.; 95 – K.? mirus sp. n. Body or its anterior part from side (87, 88, 90, 92, 94); ovipositor from side (89, 91, 93, 95).

Alloteratura (Alloteratura) megaspina Gorochov, sp. n.

Figs 41, 87, 96–98, 115, 116

MATERIAL. Holotype – \mathcal{O} , **Indonesia**: Sulawesi Utara Prov., Bunaken I. (near Manado City on Sulawesi I.), Bunaken National Marine Park, remnants of secondary forest, at light, 18–25.II 2011, A. Gorochov.

DESCRIPTION. Male. Body rather large for this genus, yellowish with a pair of intensively vellow longitudinal stripes on dorsum of epicranium (from eves to posterior part of vertex) and on pronotal disc (along its lateral edges) and with light brown narrow apical ring on 5th segment of maxillary palpi as well as light brown distal part of all spines and claws on legs. Head similar to that of all congeners previously described here, but upper rostral tubercle somewhat dorsoventrally flattened and with large but very shallow concavity on its dorsal surface; scape about 4.5 times as wide as area between antennal cavities under upper rostral tubercle; eves slightly elongate; subapical (4th) segment of maxillary palpi approximately 2.5 times as long as their apical (5th) segment (in Meconemopsis and majority of other congeners, subapical segment 3.5–4 times as long as apical one). Pronotum in profile as in Fig. 87; anterior edge of pronotal disc almost straight, but its posterior edge narrowly rounded, reaching distal part of tegminal stridulatory apparatus in rest position. Wings long, much protruding behind apices of hind femora; tegmen with free RS starting from middle part of tegmen and having 5 branches in distal two thirds of this vein, and with narrowly rounded apex; hind wings exposed behind tegminal apices by about 1 mm. Legs with both apical lobules of hind femur rounded distally and lacking spinules (Fig. 41). Last abdominal tergite with shallow and not wide posteromedian notch; cerci elongate, weakly hooked, and thin but with rather high basal part having large concavity on its inner surface (apical part of cerci almost acute: Figs 96, 98); epiproct small and rounded; paraprocts invisible; subanal plate well developed and sclerotized but not large and with more or less rounded distal part having median hooked spine at apex (Figs 96–98); genital plate almost as wide as long, with distal third narrowing to almost truncate and rather narrow apical part between a pair of more or less thin and moderately long styles (Fig. 97); male genitalia with sclerotized plate as in Figs 115, 116.

Female unknown.

Length (in mm). Body 12.5; body with wings 24; pronotum 4.7; tegmina 19; hind femora 12.5.

COMPARISON. The new species is similar to *A. longicercata* and *A. angulata* in the presence of a median spine on the male subanal plate, but it clearly distinguished from them by this spine much longer and slightly hooked. From all the other congeners with known male, A. megaspina differs in an almost uniformly light body colouration, the male cerci of rather simple shape, and a long spine of the male subanal plate.

ETYMOLOGY. This species name consists of the Latin prefix "mega-" (great, big), originated from the Greek word with the same meaning, and the Latin morphological term "spina" (spine); this name indicates the development of a large spine on the male subanal plate.

Alloteratura (Alloteratura) longicercata sulawesi Gorochov, subsp. n.

Figs 42, 88, 89, 99–101, 108, 117, 118

MATERIAL. Holotype – \Diamond , **Indonesia**: Sulawesi I., Gorontalo Prov. on Minahassa Peninsula, Bogani Nani Wartabone National Park, environs of Wallace Base Camp near Toraut Vill. not far from Doloduo Town, secondary forest, at light, 17–25.I 2011, A. Gorochov. Paratype – \Diamond , same island (central part), Sulawesi Tengah Prov., Lore Lindu National Park, ~45 km SSE of Palu City, environs of Tomado Vill. on Lindu Lake, ~1000 m, secondary forest, at light, 13–17.II 2011, A. Gorochov.

DESCRIPTION. Male. General appearance similar to that of *A. megaspina* (Figs. 42, 88), but body slightly smaller, dorsum of epicranium with a pair of additional yellow longitudinal stripes between eyes, upper rostral tubercle with only slight longitudinal (groove-like) concavity on dorsal surface, subapical (4th) segment of maxillary palpi almost 3 times as long as apical one, pronotum in profile as in Fig. 88, tegminal RS with inconspicuous base and 4–5 branches in distal third of this vein, hind wings exposed behind tegminal apices by 0.6 mm, rounded posteromedian notch of last abdominal tergite insignificantly larger, cerci somewhat shorter and with acute apices, subanal plate similar to that of *A. megaspina* but with much shorter and almost not curved median spine (Figs 99–101), genital plate with slightly smaller styles (Fig. 100), and genitalia with sclerotized plate as in Figs 117 and 118.

Female. Colouration, size and structure of body almost as in male, but tegminal stridulatory apparatus undeveloped, last abdominal tergite and cerci unspecialized (typical of other females in this genus), 8th abdominal tergite with rather large posteroventral lobules having rounded apex (Figs 89, 108), genital plate short and with almost widely truncated (very shallowly notched) posterior part (Fig. 108), and ovipositor as in Fig. 89.

Length (in mm). Body: \eth 12, \bigcirc 10; body with wings: \eth 21, \bigcirc 20; pronotum: \circlearrowright 4.2, \bigcirc 3.7; tegmina: \circlearrowright 17, \bigcirc 16; hind femora: \circlearrowright 10, \bigcirc 9; ovipositor 7.

COMPARISON. The new subspecies from Sulawesi is very similar to the nominotypical subspecies from New Guinea, but it is distinguished from the latter by a wider posteromedian notch of the male last abdominal tergite, truncate (not slightly sinuate) posterior edge of the male genital plate between its styles, somewhat shorter median spine of the male subanal plate, longer anteromedial projections of the sclerotized plate in the male genitalia, and a relatively longer ovipositor (hind femur in *A. l. sulawesi* is approximately 1.3 times as long as its ovipositor, but this ratio is 1.45–1.5 in *A. l. longicercata*). From *A. angulata* described also from New Guinea and very similar to *A. longicercata*, the new subspecies differs in a longer spine of the male subanal plate, larger sclerotized plate in the male genitalia (in *A. l. longicercata*, this plate is reduced up to a pair of narrow sclerotized ribbons), more distinct posteroventral lobules of the 8th abdominal tergite in female, and a relatively longer ovipositor (in *A. angulata*, ovipositor is almost as in *A. l. longicercata* in length) (Jin, 1995).

ETYMOLOGY. The new subspecies is named after the Sulawesi Island.



Figs 96–107. Alloteratura Heb.: 96–98 – A. (Alloteratura) megaspina sp. n.; 99–101 – A. (A.) longicercata sulawesi subsp. n.; 102–104 – A. (A.) parvispina sp. n.; 105–107 – A. (A.) triloba allopatrica subsp. n. Male abdominal apex from above (96, 99, 102, 105), from below (97, 103), from side and slightly below (98), from below and slightly from side / behind (100), from side (101, 104), from side and slightly above (106), and from side / below (107).

Alloteratura (Alloteratura) parvispina Gorochov, sp. n.

Figs 43, 90, 91, 102–104, 109, 121–123

MATERIAL. Holotype – \mathcal{J} , **Indonesia**: Sulawesi I. (southeast part), environs of Kendari City, 3°57'28''S, 122°34'12''E, primary forest in canyon among hills, on lower leaf surface of tree near brook, 21.IX–2.X 2015, A. Gorochov, M. Berezin, I. Kamskov, E. Tkatsheva. Paratypes: 2 \mathcal{Q} , same data as for holotype.

DESCRIPTION. Male. Body rather small. Colouration yellowish with following marks (Fig. 90): spot on central part of epicranial dorsum, dorsal half of scape, entire pedicel, and proximal part of flagellum very light brown; middle part of flagellum light brown with sparse and very small brown spots; distal part of flagellum brown to dark brown; pronotum with intensively light brown disc and a pair of small black spots near its posterior edge; tegmina with light brown stripe along their anal edge; legs with brownish spines of hind tibiae and brown lateral marks on third segment of all tarsi. Head almost as in previous congener (see description of A. longicercata sulawesi above) in structure, but subapical (4th) segment of maxillary palpi almost 3 times as long as apical one. Pronotum in profile as in Fig. 90. Wings slightly shortened, somewhat not reaching apices of hind femora; tegmen rather narrow, with narrowly rounded apical part and with free RS having base located in proximal half of tegmen and 3-4 more or less distinct branches situated in distal half of this vein; hind wings not exposed behind tegmina but reaching their apices (Fig. 90). Legs typical of Alloteratura, with apical lobules of hind femur rounded distally (Fig. 43). Last abdominal tergite with wide and shallow posteromedian notch; cerci arcuate, not thick, with basal part clearly less high than in A. longicerca and A. megaspina, with narrowly rounded apex, and with moderately short and rather low dorsal keel having posterodorsal corner projected backwards and also narrowly rounded (its apex distinctly not reaching apex of cercus; Figs 102-104); epiproct rather small, short and distally rounded; paraprocts rather small, roundly triangular; subanal plate almost in A. l. sulawesi in shape (Figs 102, 103); sclerotized plate in genitalia with distal parts elongate, directed partly laterally, and having rather numerous denticles on apical parts (Figs 121-123).

Female. General appearance as in male, but tegminal stridulatory apparatus undeveloped and abdominal apex as in female of *A. l. sulawesi* excepting some features: 8th abdominal tergite lacking lobules at its posteroventral corners (Fig. 91, 109), genital plate having almost roundly truncate posterior part with small and very shallow medium notch (Fig. 109), and ovipositor clearly shorter (hind femur almost 1.8 times as long as ovipositor; Fig. 91).

Length (in mm). Body: 3° 9.5, 9° 10–10.5; body with wings: 3° 12.5, 9° 13–13.5; pronotum: 3° 4.1, 9° 3.7–3.9; tegmina: 3° 9, 9° 10.2–10.5; hind femora: 3° 10.7, 9° 10.8–11.2; ovipositor 6–6.2.

COMPARISON. The new species is similar to *A. longicercata* and *A. angulata* in the structure of male subanal plate, but it is distinguished from them as well as from *A. megaspina* (having also a clearly longer spine of this plate) by the male cercus with a characteristic dorsal keel. From all the other congeners with keels on the cerci, *A. parvispina* differs in the male subanal plate with a short and simple spine at the apex.

ETYMOLOGY. The species name consists of the Latin words "parvus" (small) and "spina" (spine); this name is connected with a small median spine on the male subanal plate.



Figs 108–114. Alloteratura Heb. and Kuzicus Gor.: 108 - A. (Alloteratura) longicercata sulawesi subsp. n.; 109 - A. (A.) parvispina sp. n.; 110 - A. (A.) triloba allopatrica subsp. n.; 111, 112 - A. (A.) vietnami sp. n.; 113, 114 - K? mirus sp. n. Female genital plate with ventral parts of 8th and 9th tergites from below (108, 109, 110, 111, 114) and from side (112); anterior part of body from side (113).

Alloteratura (Alloteratura) triloba allopatrica Gorochov, subsp. n.

Figs 44, 52, 53, 92, 93, 105–107, 110, 119, 120

MATERIAL. Holotype – \mathcal{S} , **Malaysia**: Malacca, Pahang State, Fraser's Hill near border with Selangor State (17–18 km SW of Raub Town), 1000–1300 m, primary forest, on leaf of bush at night, 15–23.IV 2010, A. Gorochov, M. Berezin, E. Tkatsheva. Paratype – \mathcal{Q} , same data as for holotype, but at light, 26.IV–4.V 2011, M. Berezin.



Figs 115–123. Alloteratura Heb.: 115, 116 – A. (Alloteratura) megaspina sp. nov.; 117, 118 – A. (A.) longicercata sulawesi subsp. nov.; 119, 120 – A. (A.) triloba allopatrica subsp. nov.; 121–123 – A. (A.) parvispina sp. nov. Male genitalia from above (115, 117, 119, 121) and from side (116, 118, 120, 122, 123).

DESCRIPTION. Male. General appearance similar to that of *A. megaspina* and *A. longicercata*: body parts uniformly yellowish but with light brown distal halves of antennae and small spots on membranes of tegminal cells situated in distal two thirds of anal half of each tegmen; upper rostral tubercle of epicranium somewhat dorsoventrally flattened and with slight median groove on dorsal surface; subapical (4th) segment of maxillary palpi approximately 2.5 times as long as apical one; pronotum in profile as in Fig. 92; wings very long, reaching distal parts of hind tibiae;

tegminal RS free, with base in proximal half of tegmen, and with 6 branches in distal two thirds of this vein; hind wings slightly projected behind tegminal apices; hind femur without spinules on both apical lobules (Fig. 44); last abdominal tergite hardly notched posteriorly; epiproct rather small and almost oval; cercus arcuate, with dorsal carina, more or less flat inner surface and rounded apex; subanal plate wide in proximal half, distinctly narrower in distal half, and with clearly widened apical part having a pair of lateral tubercles (directed downwards and somewhat laterally) and practically straight posterior edge between them (Figs 105–107); genital plate as in Fig. 52; sclerotized plate of genitalia with 2 pairs of apical lobules (narrow and almost vertically lamellar but rather low medial lobules situated near each other and having rather numerous dorsal denticles, and more horizontal and somewhat wider lateral lobules with denticulate lateral edges; Figs 119, 120).

Female. Colouration and structure of body as in male, but proximal part of tegmina and abdominal apex similar to those of *A. parvispina*; however, shape of genital plate and length of ovipositor somewhat different (Figs 53, 93, 110).

Length (in mm). Body: \bigcirc 11.5, \bigcirc 9; body with wings: \bigcirc 19.5, \bigcirc 19.5; pronotum: \bigcirc 3.5, \bigcirc 3.3; tegmen: \bigcirc 16, \bigcirc 16.2; hind femur, \bigcirc 8.2 (in female, hind legs missing); ovipositor 6.1.

COMPARISON. The new subspecies differs from the nominotypical subspecies (described from another locality of the same state: Cameron's Highlands) in the apical part of male subanal plate clearly wider than its subapical part and not trilobate in dorsal view (*vs.* this part is not wider than subapical one and distinctly trilobate posteriorly; see Karny, 1926: fig. 41). Sclerotized genital plate of the male from Perak State of Malaysia (Malacca) determined by Jin (1995: fig. 48) as *A. triloba* is distinguished from that of the new subspecies by a shorter row from small denticles on the both medial lobules and shallower posterior notches around these lobules.

ETYMOLOGY. The species name is the Latin biogeographic term "*allopatrica*" (allopatric).

Alloteratura (Alloteratura) vietnami Gorochov, sp. n.

Figs 45, 94, 111, 112

MATERIAL. Holotype – \bigcirc , **Vietnam**: Dak Lak Prov., Krong Kmar Distr., Chu Yang Sin National Park, 12°25'26'' N, 108°21'52'' E, 950 m, V 2014, A. Abramov. Paratype – 1 \bigcirc , same national park, but 12°23'48'' N, 108°20'59'' E, 1000 m, IV 2012, A. Abramov.

DESCRIPTION. Female (holotype). Body medium-sized for this genus. Colouration yellowish with light brown proximal part of antennal flagellum having small and very sparse brown and blackish spots, with brown to dark brown middle part of this flagellum (its distal part missing), with small brown spots in tegminal cells between MA and anal tegminal edge as well as between MA and distal half of RS (but proximal third of tegmina without such spots), with partly brown all tarsal claws as well as spines of hind tibia, and with light brown ovipositor having somewhat darkened apical part (Fig. 94). Structure of upper tubercle of head rostrum similar to that of *A. triloba*; subapical segment of maxillary palpi about 2.8 times as long as

apical one; pronotum in profile as in Fig. 94; wings long, significantly protruding behind apices of hind femora; tegmina reaching apices of hind wings (Fig. 94), rather narrow, with apical part narrowly rounded, and with RS free and having 3 branches in distal half; hind femur with both apical lobules distally rounded (Fig. 45); abdominal apex also similar to that of *A. triloba* including structure of 8th abdominal tergite (this tergite with posteroventral corners almost rounded, i. e. lacking distinct lobules), but genital plate somewhat elongate and narrowing in distal part as well as having small distinct angular notch at apex and small acute projections around this notch (Figs 111, 112), and ovipositor slightly curved upwards and having distal third gradually narrowing to acute apex (Fig. 94).

Variations. Second female with brownish eyes and slightly shallower apical notch of genital plate.

Length (in mm). Body 9.5-10.5; body with wings 16.5-18; pronotum 3.7-3.9; tegmina 13-14; hind femora 9.2-9.8; ovipositor 8-8.5.

COMPARISON. The new species is distinguished from all the other congeners with known females by a rather uniformly light colouration, long wings having tegminal apices reaching apices of hind wings, rounded posteroventral corners of the 8th abdominal tergite in female, and an almost angular distal part of the female genital plate having a small but distinct notch at the apex. From 4 previously described Vietnamese species, *A. vietnami* differs in a narrower (from *A. stebaevi*) or wider (from *A. bathma*) distal part of the female genital plate, in yellowish antennal scapes (from *A. hebardi*), in distinct humeral notches of the pronotum (from *A. cervus*), and in clearly longer wings (from the both latter species).

ETYMOLOGY. This new species is named after the country (Vietnam), where it was collected.

Kuzicus? mirus Gorochov, sp. n.

Figs 54, 95, 113, 114

MATERIAL. Holotype $- \bigcirc$, **Thailand**: Trat Prov., Chang I. in Siam Bay, hills near sea, partly primary / partly secondary forest, on leaf of tree at night, 5–20.XI 2000, A. Gorochov, L. Anisyutkin.

DESCRIPTION. Female. Body moderately large for this genus. Colouration yellowish with following marks: upper rostral tubercle of head with a pair of brown longitudinal stripes on lateral surfaces; head dorsum behind rostrum with a pair of larger and elongate light brown areas; each antennal cavity with dark brown border along medial edge; scape with large darkened (from brown to light brown) ventral and medial areas; pedicel also with large brown marks on ventral surface; proximal part of antennal flagellum yellow with brown proximal segment and numerous small brown to light brown spots; middle part of this flagellum with distinctly larger (longer) light brown and yellowish spots (these spots almost equal to each other in length); pronotum with light brown median band which very narrow near middle, slightly widened forwards, moderately widened backwards, with yellowish median line, and with almost dark brown narrow stripes along anterior and posterior edges

of this band (these edges coinciding with median parts of anterior and posterior edges of pronotum); tegmen with brown stripe along anal edge, light brown membranes in cells located near this stripe, and several small light brown spots in areas between RA and these cells; legs with partly darkened tarsal claws, distal edges of 3rd segment in all tarsi, and spines of hind tibia; ovipositor with light brown distal half having brown apical part (Figs 95, 113). Shape of head and pronotum typical of this genus (Fig. 113); upper rostral tubercle almost spine-like, directed forwards, and its apex reaching anterior apices of antennal cavities; wings long; tegmina distinctly protruding behind apices of hind femora and almost reaching apex of ovipositor, with narrowly rounded apices, and with RS vein starting near middle of tegmen and not fused with MA as well as having 5 branches in distal half of RS; hind wings much longer, significantly protruding behind tegminal apices; abdominal apex also typical of female of Kuzicus, but genital plate divided into 3 lobes by very deep notches reaching basal part of this plate (median lobe very long and with rather widely rounded apex; lateral lobes much shorter and slightly bilobate in ventral part), and ovipositor with a pair of large and elongate ventral lobes at base (these lobes directed forwards, slightly sinuate, widened at base and almost contacting with each other in one place; they partly covering median lobe of genital plate in ventral view; Figs 54, 95, 114).

Male unknown.

Length (in mm). Body 16; body with wings 30; pronotum 3.8; tegmen 19; hind femur 13; ovipositor 11.

COMPARISON. The new species is clearly distinguished from all the other representatives of Meconematini with known females by a very characteristic structure of the female genital plate (strongly trilobate in the shape, *vs.* not trilobate or distinctly less trilobate) and ovipositor base (with large ventral lobes, *vs.* without such lobes or with much smaller ones). Questionable belonging of this species to *Kuzicus* is supposed by me on the base of similarity in the general appearance and shape of female genital plate (in *Kuzicus*, this plate is often trilobate). From *K. aspercaudatus* Sänger et Helfert, 2006 described after males only, the new species differs in completely light clypeus, labrum and sternites (*vs.* with distinct dark brown areas on these structures).

ETYMOLOGY. This species name is the Latin word "mirus" (wonderful).

Pseudoteratura (Subtilotura) subtilissima Gorochov, 2008

MATERIAL. Malaysia: 1 ♂, Borneo, Sabah State, Sandakan Division, environs of Sepilok Vill., low forest, 1–6.II 2014, M. Berezin.

NOTE. This species originally described from Trus Madi Mt. in the same state (Gorochov, 2008) is here recorded from a different locality with much lower altitude.

Dinoteratura punctata (Karny, 1924), comb. n.

NOTE. The species was originally described as *Xiphidiopsis punctata* from Sumatra: "Lampongs" (Karny, 1924). Another related species was described as *X*.

beieri by Bey-Bienko (1971) from a different locality in Sumatra: "Soekaranda". For the latter species, the monotypic genus *Dinoteratura* was established by Gorochov (1998); holotype (male) of this species deposited in Muzeum i Institut Zoologii (Polska Akademia Nauk, Warszawa) was restudied, and some additional illustrations of its abdominal apex and genital sclerite were published (Gorochov, 1998: figs 216–218). The presence and structure of this sclerite (it is rather long, distinctly protruding behind abdominal apex, and with different lobes and projections) as well as characteristic (complicated) shape of male cerci are most important characters for separation of *Dinoteratura* from all the other related genera. These characters allow me to add the above-mentioned Karny's species in this genus.

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